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for the degree of Doctor of Philosophy
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COMIC-BASED DIGITAL STORYTELLING

*The use of digital storytelling in forms of comics for reflecting on situations involving
conflicts*



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STATEMENT OF CONTRIBUTION

This disclaimer is to state that the research reported in this thesis is primarily the work of the author and was undertaken as part of the doctoral research.

The work presented in *Chapter 5, 6 and 7* has already been published in the following papers:

- Rutta, C. B., Schiavo, G., & Zancanaro, M. (2018, December). *Interactive Digital Storytelling and Self-expression in the Context of Young Male Migrants*. In International Conference on Interactive Digital Storytelling (pp. 621-626). Springer, Cham.
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The content of these papers has been re-interpreted, rewritten and expanded from the original version.

Other researchers in FBK developed the digital storytelling tool, named *Communics*, presented in *Chapter 4*. In the chapter, their contribution is clearly stated. It consisted of software development and interface design based on the feedback collected in previous studies. The author of this thesis conducted the rest of the research work.

ABSTRACT

This thesis presents three case studies in which comic-based digital storytelling is adopted as a means to support the reflection on particular situations involving conflicts. The potential of digital storytelling combined with the comic's genre has been identified in previous works. Anyway, there is a need of empirical evidence on the advantages and disadvantages on which this approach can be based. Moreover, in most of the research, it has to be noted that digital comics have been identified, in the majority of the research, as a medium to access content, not to create them. Consequently, this thesis contributes to the investigation of employing digital storytelling based on comics informed by previous practices to narratives' use. Therefore, the case studies are conducted to deeply explore how comic-based digital storytelling can support the reflection of significant troubling experiences. Quantitative and qualitative methods, related to both the user experience and the comics' construction, are used, which show the benefits and drawbacks when adopting digital storytelling in the form of comics. Finally, the strengths and weaknesses of this approach are described in the conclusion. As a matter of fact, in the conclusion, we report a final reflection on the engagement, stakeholder involvement, collaboration, technology, comics, and reflection concepts while considering possible future works on the research topic.

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TABLE OF CONTENT

1.	INTRODUCTION.....	16
1.1	BIOGRAPHICAL INTRODUCTION.....	17
1.2	PROBLEM SETTING.....	19
1.3	RESEARCH QUESTION.....	20
1.4	THREE CASE STUDIES.....	23
2.	RELATED WORK.....	26
2.1	DIGITAL STORYTELLING.....	27
2.1.1	DIGITAL STORYTELLING AT SCHOOL.....	29
2.1.2	DIGITAL STORYTELLING FOR MIGRANTS' INCLUSION	31
2.1.3	FIELDWORK CHALLENGES IN MIGRANTS' COMMUNITY.....	32
2.2	COMICS AND DIGITAL COMICS.....	33
2.3	DIGITAL STORYTELLING TECHNOLOGIES FOR CHILDREN: BEYOND DIGITAL COMICS.....	35
3.	THEORETICAL FRAMEWORK.....	39
3.3.1	COUNTERSTORY AND MASTER NARRATIVE.....	40
3.3.2	REFLECTIVE PRACTICE.....	41
3.3.3	NARRATIVE SYSTEMS.....	42
4.	APPLICATION OVERVIEW: <i>COMMUNICS</i>	45
4.1	A PLATFORM FOR DIGITAL STORYTELLING.....	46
4.1.1	<i>NEGOTIATION AND NARRATION TABLE</i>	46
4.1.2	<i>COMMUNICS: THE DESIGN</i>	47
4.2	<i>COMMUNICS: MAIN FEATURES</i>	48
4.3	<i>COMMUNICS SESSION MANAGER</i>	49
4.4.	<i>COMMUNICS: ASSUMPTIONS</i>	49

5.	CASE STUDY: MIGRANTS AND STEREOTYPES.....	52
5.1	PROBLEM DEFINITION.....	53
5.2	RESEARCH QUESTION and SUB-RESEARCH QUESTIONS.....	54
5.2.1	FIRST SUB-RESEARCH QUESTION.....	55
5.2.2	SECOND SUB-RESEARCH QUESTION.....	55
5.2.3	THIRD SUB-RESEARCH QUESTION.....	56
5.3	METHODOLOGY.....	56
5.4	PROCEDURE AND PARTICIPANTS.....	57
5.4.1	STAGE ONE: INTERVENTION DESIGN.....	58
5.4.2	STAGE TWO: CONTENT CREATION PROCESS.....	58
5.4.3	STAGE THREE: NARRATIVES' COMPOSITION.....	61
5.5	RESULTS.....	64
5.5.1	NARRATIVE FORM AND CONTENT.....	65
5.5.2	MIGRANTS' INTERVIEW.....	68
5.5.3	FIELDWORK CHALLENGES.....	70
5.6	DISCUSSION.....	71
5.6.1	COMIC-BASED DIGITAL STORYTELLING FOR REFLECTION.....	71
5.6.2	COUNTERSTORY AND VALANCE OF COMIC STRIP TO SUPPORT REFLECTION.....	72
5.6.3	FIELDWORK CHALLENGES.....	72
5.7	CONCLUSION.....	73
5.7.1	LIMITATIONS AND FUTURE WORK.....	73
5.7.2	ACCESS TO THE FIELD.....	74
6.	CASE STUDY: CHILDREN AND SCHOOL CONFLICTS WITH PEERS.....	76
6.1	PROBLEM DEFINITION.....	77
6.2	RESEARCH QUESTIONS and SUB-RESEARCH QUESTIONS.....	78
6.2.1	FIRST SUB-RESEARCH QUESTION.....	79
6.2.2	SECOND SUB-RESEARCH QUESTION.....	79
6.2.3	THIRD SUB-RESEARCH QUESTION.....	80
6.3	METHODOLOGY.....	80
6.4	PROCEDURE and PARTICIPANTS.....	82
6.4.1	STAGE ONE: INTERVENTION DESIGN.....	83

6.4.2	STAGE TWO: EDUCATIONAL INTERVENTION.....	86
6.4.3	STAGE THREE: REFLECTION ON THE STUDY.....	88
6.5	RESULTS.....	89
6.5.1	NARRATIVE FORM AND CONTENT.....	89
6.5.2	CHILDREN'S SHORT FEEDBACK TEXTS, INTERVIEWS AND OBSERVATION.....	95
6.5.3	TEACHERS' INTERVIEWS.....	98
6.6	DISCUSSION.....	100
6.6.1	COLLABORATIVE AND INDIVIDUAL DIGITAL STORYTELLING.....	100
6.6.2	CHILDREN'S PERCEPTION.....	102
6.6.3	TEACHERS' EXPERIENCE.....	102
6.7	CONCLUSION.....	103
6.7.1	LIMITATIONS AND FUTURE WORK.....	104
6.7.2	ACCESS TO THE FIELD.....	105
7.	CASE STUDY: YOUNG STUDENTS AND ETHICS, GENDER AND RELIGION CONFLICT.....	107
7.1	PROBLEM DEFINITION.....	108
7.2	RESEARCH QUESTIONS and SUB-RESEARCH QUESTIONS.....	109
7.2.1.	FIRST SUB-RESEARCH QUESTION.....	109
7.2.2.	SECOND SUB-RESEARCH QUESTION.....	110
7.2.3.	THIRD SUB-RESEARCH QUESTION.....	111
7.3	METHODOLOGY.....	111
7.4	PROCEDURE and PARTICIPANTS.....	113
7.4.1	STAGE ONE: INTERVENTION DESIGN.....	113
7.4.2	STAGE TWO: CONTENT CREATION PROCESS.....	114
7.4.3	STAGE THREE: EDUCATIONAL INTERVENTION.....	116
7.4.4	STAGE FOUR: REFLECTION ON THE EXPERIENCE.....	116
7.5	RESULTS.....	117
7.5.1	NARRATIVE FORM AND CONTENT.....	117
7.5.2	STUDENTS' OBSERVATION, QUESTIONNAIRES, FOCUS GROUP AND NARRATIVE LOG ANALYSIS.....	121
7.5.3	TEACHER'S INTERVIEW.....	126

7.6	DISCUSSION	128
7.6.1	COMIC-BASED DIGITAL STORYTELLING FOR REFLECTIVE PRACTICE.....	128
7.6.2	ADOPTING COMIC-BASED DIGITAL STORYTELLING EXPERIENCE IN A SECONDARY CLASSROOM.....	129
7.6.3	TEACHERS' PERCEPTION IN USING COMIC-BASED DIGITAL STORYTELLING.....	130
7.7	CONCLUSION	131
7.7.1	LIMITATIONS AND FUTURE WORK.....	131
7.7.2	ACCESS TO THE FIELD.....	132
8	CONCLUSION	134
8.1	SUMMARY	135
8.2	REFLECTIONS ON THE STUDY	138
8.3	FUTURE WORKS	140
	BIBLIOGRAPHY	142
	APPENDIX	166
	LIST OF FIGURES	167
	LIST OF TABLES	168
	CASE STUDY: MIGRANTS AND STEREOTYPES	169
	GRAPHICAL AND TEXTUAL CONTENT ELEMENTS.....	168
	SET OF QUESTIONS FOR THE INTERVIEW.....	176
	CASE STUDY: CLASSROOM'S CONFLICT IN A PRIMARY SCHOOL	177
	GRAPHICAL AND TEXTUAL CONTENT ELEMENTS.....	177
	SET OF QUESTIONS FOR THE INTERVIEW.....	181
	CASE STUDY: YOUNG STUDENTS AND ETHNIC, GENDER AND RELIGION CONFLICT	182
	GRAPHICAL AND TEXTUAL CONTENT ELEMENTS.....	182
	SET OF QUESTIONS FOR THE INTERVIEW.....	187

1. INTRODUCTION

1. INTRODUCTION

This thesis focuses on the adoption of comic-based digital storytelling for facing and reflecting on discriminated and stereotyped conflictual situations. Considering this powerful means, the investigation on how it could support different communities has paved.

This introductory chapter presents the motivations for this work; it introduces the research questions, it explains the contributions of the thesis, and it outlines the case studies chosen.

1.1 BIOGRAPHICAL INTRODUCTION

My own journey into digital storytelling began in 2016, while I was attending the Post-Master Course in *Smart Community Design and Management* at the Department of Computer Science at the *University of Trento*, in Italy. The Master was designed to equip students with methodological and technological skills needed to design, build, coordinate and monitor communities of users engaged in socially impactful projects. In this Post-Master programme, digital storytelling was included in a core-course named *Computer Supported Learning*, held by Professor Ronchetti. Digital storytelling was adopted as a tool for students to elaborate digital narratives reflecting on a significant experience from the past. I decided to elaborate a narrative about a journey through the *Walking of Santiago*, a pilgrimage of Medieval Origin to the Cathedral of Santiago de Compostela in Galicia, an incredibly meaningful experience for me. At the moment of showing the work to the class, I was surprised by the benefits offered by digital storytelling: it had an impact on both the author, me, and the audience, my colleagues. Working on past experience through storytelling led my colleagues and me to a profound reflection, while I was being creative, enthusiastic and inspired by the benefits of technology. Digital storytelling represents a successful means, in terms of a combination of audio, visuals, text and animation, that can fully embrace the experience described and show it to the audience.

To receive the course degree, it was mandatory to attend a four months internship; I decided that my topic was going to be related to digital storytelling, and, therefore, that I wanted to experiment with it. *Fondazione Bruno Kessler*, and in particular, *the Intelligent Interfaces and Interaction unit*, allowed me to work with Professor Massimo Zancanaro and Doctor Gianluca Schiavo. My work there consisted in investigating how digital storytelling, and specifically the genre of comics, could support migrants when reflecting on situations involving stereotypes towards them. I spent 4 months exploring the use of digital storytelling in the community of migrants while evaluating the narratives created.

This experience led my curiosity to use digital storytelling in other contexts; therefore, I applied for the *PhD in Human-Computer Interaction* with a project that, in the beginning, focused on exploring the potential advantages and disadvantages in using digital comic-based digital storytelling within the migrants' community, and then - due to external factors - children and young students.

This thesis is the result of my willingness to satisfy my curiosity, grounded in my philosophical background, and to discover about the HCI world.

1.2 PROBLEM SETTING

Digital storytelling consists in the process of telling stories through the support of digital-based tools. As a matter of fact, digital storytelling is a short form of expression that combines narration and digital multimedia (e.g. music, audio, photographs and pictures). The combination of these two elements - narration and digital elements - provides the storytelling's author¹ with different ways for expressing the self. Still, the readers can benefit from other's digital storytelling work, evoking interest, being rich in terms of multimedia contents (Couldry, 2008; Lambert, 2013).

During the last years, many researchers, practitioners and amateurs show interests in using digital storytelling in different contexts. In many works, digital storytelling has been successfully integrated within an educational context, including pre-schools (Bratitsis, 2016, Campos, 2017), primary schools (Glowacki, 2017; Oberhuber et al., 2017; Kumar, 2018), secondary schools (Powell et al., 2018; Skaraas et al., 2018), high schools (Wood et al., 2017; Coenraad, 2019) and universities (Ikeda et al., 2019). It was also used in other social contexts such as homes (Christensen et al., 2019; Axelrdo et al., 2019), at libraries (Wood et al., 2014; Detlor et al., 2016; Boffi, 2018), at hospitals (Bers et al., 2001; Mamykina et al., 2020), at museums (Cesario et al., 2020; Hammdy et al., 2020; Spence et al., 2020) and at cultural sites (Katifori et al., 2020; Calvi, 2020).

As a matter of fact, digital storytelling can support the construction of digital narratives, being potentially personalized, diversified in terms of scenarios, compelling, engaging while providing real-life examples of different situations (Ohler, 2013; Robin, 2018). Still, it might support meaningfully the discussion about specific topics, the comprehension of difficult subjects and the articulation of the author' thoughts, among many other benefits (Alismail, 2015; Robin, 2018).

In this thesis, therefore, we propose to use digital storytelling as a means for presenting and facing situations involving conflicts. This approach can support authors when creating digital narratives, thanks to the possibility to fully express themselves. The author, then, is invited to participate in the process of creating the narratives, supported by the multimedia.

¹ For "author", we do not include only professionals, but everyone who writes a story

Specifically, we suggest the combination of digital storytelling and comics, intended as a combination of graphical elements and text into an expressive and flexible language to convey sequences of events (McCloud, 1993, 2000). Comic-based narrations can provide a motivating, fun and engaging genre for the author to further meaningfully express the self by combining graphical and textual elements (Norton, 2003). Author, therefore, might appreciate the benefits of using comics, which facilitate the possibility to take different perspectives while remaining engaged in the digital storytelling process (Farinella, 2018). Moreover, to support the composition process, the use of a library of graphical and predefined textual materials is proposed as a scaffolding mechanism (Mencarini, 2015).

In order to investigate the opportunities and drawbacks when using digital storytelling for comics generation to reflect on situations involving conflicts, we conducted a qualitative and quantitative research project that include three different case studies.

1.3 RESEARCH QUESTION

In general, comics have been extensively used as a way to access contents or elaborate narratives with different communities. It was employed among students (Bitz, 2004; Norton, 2003), children (Morrison et al., 2002), and clinical patients (Czerwiec et al., 2017; McNicol, 2017). Yet, comics have been used for different purposes such as teaching literacy (Schwarz, 2002), teaching history (Ravelo, 2013), and increasing reading comprehension in a foreign language (Liu, 2004). Its wide use is motivated by the benefits that this genre can give, as it is shown in several works (Hallenbeck, 1976; McCloud 1993; McNicol, 2017). Comics, in fact, can promote an emotional connection between the author and the characters, lead to a deeper immersion in the story composition (Versaci, 2001), capturing and maintaining the readers' interests through the graphical elements (Yang, 2003), and allow both the author and the readers to take different perspectives (Bolton, 2011).

Digital storytelling has been widely employed in different communities such as hospital patients (Bers et al. 2001), children (Umaschi, 1996), migrants (Prins et al., 2015),

pre-schoolers (Di Blas et al. 2009) and students (Rubegni et al., 2014). It was used for different purposes such as constructing identities in diabetes management (Mamykina et al., 2010), developing professional identity in health and social care (Marin et al., 2018), teaching english (Müller et al., 2020) and supporting programming at school (Kelleher, 2009). In these and other works, digital storytelling was identified to support creativity (Lu et al., 2011; Rubegni et al., 2015; Makini et al., 2020; Zarei et al., 2020), collaboration (Lu et al., 2011; Bonsignore et al., 2013; Garzotto et al., 2006; Long, 2017; Rizzo, 2018; Rubegni et al. 2014, 2015; Ryokai et al., 1999), inspiration (Russell, 2010; Ryokai et al., 1999), imagination (Zarei et al., 2020), and motivation (Rubegni et al., 2010) among the many benefits.

However, although the literature indicates a strong interest in digital storytelling and comics practices, only few works (Vassilikopoulou et al., 2011; Sagri et al., 2018; Andrews & Baber, 2014; Maldonato & Yuan, 2011) have combined digital storytelling with comics. For example, digital comics have been used in language teaching in high schools (Vassilikopoulou et al., 2011). In this work, it emerged that comics represent a beneficial tool for teaching language, and help students acquire linguistic skills and support their imagination. In another study (Sagri et al., 2018), digital storytelling based on comics is introduced in the course of renewable energy. The results show that both students and teachers support the idea of actively participating in the design of the learning process and create their comics to learn the lessons. In their study, Andrews and Baber (Andrews & Baber, 2014) investigate the design and evaluation of a branching comic to compare how readers recall a visual narrative when presented as an interactive, digital program, or as a linear sequence on paper within an educational context. This study indicates that comics in the digital and interactive form are more engaging than the paper-based version, and that the interactions embedded in the digital comic have the capability of directing attention more generally. Finally, authors (Maldonato & Yuan, 2011) introduce digital comics as an alternative pathway to literacy compositions. The study reveals that digital comics can offer opportunities beyond enriching students' traditional writing skills; they can create an immersive literacy experience for students that couldn't exist just with the traditional "single" writing mode.

In general, regarding the use of technology to support conflict resolution, few studies (Zancanaro et al., 2012; Zancanaro et al., 2019; Ioannou & Antoniou, 2016; Ioannou et al., 2013; Stock et al., 2008) focus on the investigation of the design of the different tools. For example, Zancanaro and colleagues (Zancanaro et al., 2012) investigate the use of multi-user tabletop interfaces to support the reconciliation of a conflict through the creation of shared narrations. The results demonstrate that the experience with the tabletop interface appears to be motivating and, most importantly, produces at least a short-term shift of attitude toward the other. Again, Zancanaro and colleagues (Zancanaro et al., 2019) present an automated approach to support remote interactions between pairs of participants via storytelling. In this work, the authors focus on the analysis of the automated mediator that supports interactions and helps achieving positive outcomes. Ioannou and Antoniou (Ioannou & Antoniou, 2016) explore the use of tabletop for shared interactive spaces as a way to reflect on conflicts. The authors suggest that collocated collaboration around tabletops can mediate peace within conflict-laden groups, giving a chance in conflict to share a common space, shifting attitudes and improving collaboration. Other works (Ioannou et al., 2013; Stock et al., 2008) discuss more in general the support of technology, such as tabletop, and co-located interface.

In this thesis, the research aim consists in exploring the use of digital storytelling for generating comics while reflecting on situations involving particular troubling experiences. The interest in investigating this research aspect prompts a series of exploration into the following research question:

How can comic-based digital storytelling support the reflection on situations involving conflict?

Therefore, of particular interest in this thesis are (1) the creation of comic strips, through a digital tool, named *Communics*, and (2) the experience of the author when using digital storytelling to elaborate cases involving disputes. As a matter of fact, on the one hand, the narratives created can be analyzed to investigate the story composition when reflecting on situations involving conflicts. On the other hand, focusing on the author's experience can lead to a deep understanding of comic-based digital storytelling use.

1.4 THREE CASE STUDIES

We address the research question conducting three different case studies. As a matter of fact, we believe that it is more useful to select various case studies, including subjects that offer an interesting, unusual and particularly revealing set of circumstances.

The case studies selected are the following:

- *Migrants and stereotypes.* The use of comic-based digital storytelling is explored in the context of young male migrants (aged between 19 and 32) in a reception center based in Italy. In particular, we focus the investigation on how comic-based storytelling can facilitate this community to express and support themselves when reflecting on real-life examples of situations involving discrimination and stereotypes. In particular, we, first, explore (1) the migrants' experience in using comic-based digital storytelling to reflect on situations involving stereotypes and discriminations, and, then, (2) the use of comic-based digital storytelling for reflection. Moreover, we report (3) the fieldwork challenges encountered during the study.
- *Children and school conflicts with peers.* Comic-based digital storytelling is used in a primary school with children (aged between 9 and 10). The study aims to understand how comic-based digital storytelling can support primary school children when reflecting on situations involving classroom's conflicts. In particular, we concentrate on three specific aspects: (1) the differences of digital story composition conducted collaboratively or individually, (2) the children's perception when using digital storytelling to reflect on situations involving conflicts, and, last, (3) the teachers' experience of adopting comic-based digital storytelling in the classroom context.
- *Young students and ethics, gender and religion conflict.* Digital storytelling in the form of comics is used in a secondary school among young students (aged between 12-14). Specifically, the work focuses on how digital storytelling in the form of comics can support the reflection on daily situations reporting ethnic, religion and gender discriminations. In particular, we focus the investigation on three specific aspects: (1) the use of comic-based digital storytelling for the reflective practice, (2) the experience of the

young students when using comic-based digital storytelling, and, then, (3) the teacher's perception when including this tool in the school curricula.

2. RELATED WORK

2. RELATED WORK

In this chapter, a concise overview of the scholarly works in which this PhD research is positioned, is presented.

The related work section is divided into three subsections that addresses the use of (1) *Digital storytelling*, (2) *Comics and digital comics* and (3) *Digital storytelling technologies for children: beyond digital comics*. The first subsection includes works and researches related to the use of digital storytelling at school and technologies for migrants. The second one reports studies on the use of comics and digital comics in different contexts. The last one introduces other innovative technologies that explore the use of digital storytelling including tangible or smart objects.

2.1 DIGITAL STORYTELLING

Digital storytelling intended as a means to create meaningful and significant narratives is being widely used in different domains, contexts and areas.

In the field of health and wellbeing, many projects focus on how patients can be supported in experiencing their illness through digital storytelling (Czech et al., 2020; Bhardwaj et al., 2020). The central assumption is that digital storytelling can be used as a way to help patients cope with their conditions. Bers and colleagues (Bers et al., 1998), for example, explore the use of a storytelling environment, named *SAGE*, for young patients to tell personal stories and create interactive characters, as a way to cope with cardiac illness, hospitalizations, and invasive medical procedure. The findings indicate that digital storytelling can help young patients to express themselves with different modes of interaction, depending on their mindset and health conditions. Again, Bers and colleagues (Bers et al., 2001) explore the use of *Zora*, an identity construction environment specifically designed to help young patients to explore identity issues, while engaging them in a participatory virtual community. It emerged that *Zora* actually helps these patients and, therefore, they support and interact with each other. Others (Mamykina et al., 2010) investigate how a health-monitoring application, featured with digital storytelling, can help individuals with considerable diabetes experience to construct and negotiate their identities as persons with a chronic disease. The results show that these individuals enthusiastically engaged with the digital tool, named *MAHI*,

as a problem-solving and troubleshooting tool to address the many diabetes-related challenges they face daily. Santos and colleagues (Santos et al., 2020) describe a chatbot that leverages storytelling strategies to listen to children as they share emotional events they experienced, then guides them through reflective discipline to devise the next course of action (similarly to a therapist). Authors suggest design considerations for a conversation flow that anchors on storytelling to support child-agent interaction. Finally, Bellini and colleagues (Bellini et al., 2020) describe the design of Choice-Point: a web-based application that allows perpetrators to adopt the role of different fictional characters in an abusive scenario for conveying the essential skill of perspective-taking. Authors discuss challenges in using such technologies - such as our system - for engagement; the value of perpetrator agency in supporting non-violent behaviours, and the potential to positively shape perpetrators' journeys to non-violence within social care setting

Digital storytelling has also been used in different contexts to collect memories (Jones & Ackerman, 2021). Ahmed and colleagues (Ahmed et al., 2019) describe a study in which families from Bangladesh collect their family story to preserve them via digital storytelling. It emerged that this means can help families paint a picture of the past, capture transitions in society and culture over time, and remember the personal experience of critical historical events and periods. Another study (Axelrod & Kahan, 2019) examines how youth and parents explore their personal family migration histories - their autobiographies - and broader socioeconomic, historical trends using dynamic data visualization tools in the form of storytelling. In this study, the results show that digital storytelling can support productive intergenerational dialogue about social, economic, or even scientific issues. Tolentino and Mosher (Tolentino & Mosher, 2020) introduce Kurios. Kurios is a smartphone web application for saving and sharing audio stories embedded in physical objects. People can use Kurios to preserve their memories sparked by family photos, heirlooms, travel souvenirs, and trophies into the objects themselves. The project aims to not only preserve past stories but also promote the bonds and sense of community that come with storytelling itself.

As a pedagogical approach, digital storytelling has been used for different purposes. For instance, Umaschi (Umaschi, 1996) explores the counselling and self-awareness

possibilities of storytelling by presenting a new type of storytelling environment, named *SAGE*, that allows children to design their sage storyteller agents, and create their databases of inspirational stories and interact with them. The findings show that, by constructing their storyteller agents, children start to explore the dynamics of storytelling and the complexity of meaning and interpretation in communication. Considering older students, Marin and colleagues (Marin et al., 2018) present a study based on exploring in what way digital storytelling can be used as a suitable pedagogical strategy for the construction of professional identity. The results reveal that this innovative learning activity helps students develop a more nuanced understanding of what being a professional in their respective fields actually means.

As it can be noted in these works, digital storytelling is used in many fields, for different beneficial reasons. Digital storytelling, in fact, can support self-expression (Bers et al., 1998; Ahmed et al., 2019; Umaschi, 1996), identity's exploration (Bers et al., 2001; Mamykina et al., 2010; Marin et al., 2018), and reflection (Mamykina et al., 2010; Axelrod & Kahan, 2019).

2.1.1. DIGITAL STORYTELLING AT SCHOOL

The interest that researchers and educators show towards digital storytelling in the educational context is motivated by the potential advantages brought by this means. Digital storytelling has been included in different educational frameworks, such as for teaching history (Mystakidis et al., 2014; Rammos & Bratitsis, 2018), computer science (Burke & Kafai, 2012; Keller, 2009; Smith et al. 2020; Berreth et al., 2020), applied ethics (Melcer et al., 2020; Melcer et al., 2020), poetry (Zhao & Ma, 2020), digital health (Gonzalez-Rodríguez et al., 2020) and English as a foreign language (Normann, 2011; Nassim, 2018; Muller et al., 2010). Digital storytelling has been successfully integrated within the school curricula to support competencies such as literacy (Di Blas & Boretti, 2009; Daffara et al., 2020), creativity (Rubegni & Landoni, 2015; Di Blas & Boretti, 2009), and collaboration (Rubegni & Paolini, 2010; Russell, 2010).

Di Blas and Boretti (Di Blas & Boretti, 2009), for example, present a case study of an authoring tool, named *1001stories*. In the paper, the authors provide evidence that

multimedia storytelling can be beneficial in the teaching practice, to increase literacy ability, to raise curiosity, to engage students, and to enhance creativity. Faruk and colleagues (Farurk et al., 2018) investigate the use of digital storytelling in mathematics to create, use, and evaluate digital stories. In this study, it emerged that digital storytelling can effectively capture the attention of students, supporting the teacher when presenting the subject in an exciting way. Another author (Kocaman, 2015) compares the conceptual understanding of preschool students using digital storytelling in a classroom with children in traditional storytelling classrooms. The findings indicate that this means helps the preschoolers to build a more holistic understanding of the subject matter, instead of leading them to focus on one particular part of the lesson. Again, Werner and colleagues (Werner et al., 2009) focus on how middle school students can be supported by *Storytelling Alice* when making games. In this work, the results show that creating games with this digital tool does engage middle-school students in different aspects of IT fluency.

As already mentioned, among the many benefits, digital storytelling can support collaboration. Garzotto and Forfori (Garzotto & Forfori, 2006) present *Fate 2*, a project that combines storytelling, edutainment, and collaboration to promote learning in children, aged 7-11. In this study, it emerged that digital storytelling, supported by *Fate2*, can facilitate social interaction among children since they can introduce themselves, and express who they are to one another. Other authors (Bonsignore et al., 2013) investigate the use of mobile storytelling applications to allow children to collaboratively create stories, combining photos, audio, text and drawings, and to share them online. This study shows that mobile devices can inspire collaborative and creative processes and enrich the storytelling experience. *StoryMat* (Ryokai, & Cassell, 1998; Cassell & Ryokai, 2001) is a part of a large-scale research program addressing the design of technologies to foster storytelling play in children, intending to support peer collaboration, language learning, and exploration of self and culture. In this study, the result shows that children collaboratively advocate and incite one another to create their narratives. Rubegni and colleagues (Rubegni & Landoni., 2014; Rubegni & Sabiescu, 2014) evaluate the impact of a mobile storytelling application, named *Fiabot*, on educational activities in two primary schools. These studies (Rubegni & Landoni 2014; Rubegni & Sabiescu, 2014) underline the positive effects of digital storytelling on creativity, digital literacy and

collaboration for in-class activities. Again, Sylla (Sylla, 2013) describes research on designing a tangible system for collaborative storytelling, which addresses preschool children. In the author's work, it emerged that one of the strongest affordances of the platform is the extent to which it promoted collaboration, showing that the children were highly motivated to engage and collaborate in each other's stories. Finally, Liu and colleagues (Liu et al., 2019) analyze the data collected from a 2-year collaborative digital storytelling activity to understand students' participation in the long-term activity. In this study, it is found that students' learning performance, sense of engagement, and collaborative experience improve and are sustained as the dynamic teaming strategy is applied to the collaborative storytelling activity.

Other digital tools are introduced in school contexts for supporting collaborative storytelling with children, as, for example, *Pogo* (Rizzo et al., 2018), *Q-Tales* (Long et al., 2018), *KidPad* (Hourcade et al., 2004), *ToonTastic* (Russell, 2010), *Cast* (Caniglia, 2020), *WAWLT* (Kreminski et al., 2020), *TOK* (Sylla et al., 2014; Sylla et al., 2015; Sylla et al., 2015), and *Mobeybou* (Sylla et al., 2019; Sá et al., 2019).

As shown in these works, digital storytelling can represent a meaningful tool to facilitate educational activities. Digital storytelling, at school, can support different competencies such as literacy (Di Blas & Boretti, 2009), holistic comprehension (Kocaman, 2015), creativeness (Bonsignore et al., 2013; Rubegni & Landoni, 2014; Rubegni & Sabiescu, 2014), and digital literacy (Rubegni & Landoni, 2014; Rubegni & Sabiescu, 2014). Moreover, digital storytelling facilitates students to be engaged (Faruk et al., 2018; Glenn et al., 2020), creative (Rubegni & Landoni, 2015; Di Blas & Boretti, 2009), and collaborative (Rubegni & Paolini, 2010).

2.1.2. DIGITAL STORYTELLING FOR MIGRANTS' INCLUSION

Regarding the migrants' community, the role of storytelling has not been widely explored. Prins and colleagues (Prins et al., 2015), for example, use a narrative approach to study the identity negotiation among Moroccan-Dutch young adults, representing a minority group in the Netherlands. In this study, the aim is to collect stories of discrimination and injustice, and re-evaluate them with the scope of reaffirming the identities of the Moroccan-Dutch. It emerged that, when facing negative stereotypes regarding their ethnic and religious background, Moroccan-Dutch young adults variously accept, reject,

and act about those stereotypes. Another study (Weibert, 2017) introduces digital storytelling and tangible artefacts as an enabling means for migrant women communities to have their voices heard in public discourse. The activity helps simultaneously to foster technological and creative learning, and adapt to the people and surrounding neighbourhood's pace and discourse needs. In another work (Moutafidou & Bratitsis, 2018), digital storytelling dynamic is explored in strengthening vulnerable and marginalized people's voices and promoting social inclusion. It follows that digital storytelling serves as a tool to enable migrants to find and amplify their voices to empower their social, economic and political inclusion.

In these studies, it emerges that digital storytelling can represent a practical approach to get migrants involved in the process of reflection. However, as already mentioned, this approach was not as widely used as expected, given the successful results. In this context, we believe that digital storytelling can be beneficial when reflecting on stereotypes and discriminations.

2.1.3 FIELDWORK CHALLENGES IN MIGRANTS' COMMUNITY

Despite supportive ICT services (e.g. for language learning, job search, integration) have high potential to ease inclusion, especially for newly arrived migrants with low education, not many studies have been conducted within this community. However, many works explore the process of ICT technology design, reporting limitations and benefits in working migrants. Fisher and colleagues (Fisher et al., 2014) investigate how migrants and refugees help others in everyday life through information and technology, and how these behaviors can be supported by youths' when designing interactive technologies and services. In their work, the authors develop the *Teen Design Day* methodology for supporting interaction design with youth migrants. Another study (Fisher et al., 2016) conducts participatory design workshops to learn how Syrian youth helps others by using information and technology. The findings show that the young migrants are just like ordinary young people all over the world with a strong aptitude for ICT wayfaring and in need of support to develop their ideas, and education paths. Again, authors (Bishop & Fisher, 2015) focus on the exploration of information technology and services that intersect with the crucial role of the youth as information navigators for their families, friends and communities. The study reveals that migration experiences are manifested in

the teens' ICT wayfaring practices, and that the youth creatively plays invaluable, albeit sometimes hidden, roles in systemically supporting everyday information and technology needs across communities. In another study (Bobeth et al., 2013), involving Turkish and Arabic immigrants, the user-centred design approach is used to inform the development of supportive ICT services (e.g. for language learning or job search). The results show implications on the different aspects such as the trust between migrants and researchers, the collaboration with nongovernmental organizations (NGOs), and the participants' recruitment. Duarde and colleagues (Duarde et al., 2018), in the context of visualization and interaction with open geospatial data, share some initial findings of the HCI methods used among migrants and refugees. Authors encounter fieldwork challenges related to the languages spoken, the trust and the recruitment process aspects.

As it emerged in these studies, while working with vulnerable communities, such as the one represented by migrants, it is necessary to take into consideration the needs and requirements to rigorously and meticulously empathize with them. In particular, we consider the process of migrants' recruitment, the collaboration with the NGO' operators, and the disadvantages of speaking different languages. Crucial to the success of the case with migrants is the establishment of trust between them and the researchers. Therefore, it is necessary to build a collaboration between the researchers and the NGO operators who can introduce the researchers as a trustworthy person. Again, migrants do not have to feel forced to participate in the study; but invited to collaborate. Finally, we consider, on the one hand, to include researchers who speak at least French, English and Italian, and, on the other, to translate the content in English, French and Italian.

2.2 COMICS, AND DIGITAL COMICS

Comics is a combination of graphical elements and text into an expressive and flexible language to convey sequences of events (McCloud, 1993). In general, comics have been extensively used for meaningfully composing narratives by different communities, such as students (Berkowitz & Packer, 2001; Norton, 2003; Bitz, 2004; Herbst et al., 2011), children (Morrison et al., 2002), educators (Frey & Fisher, 2008), and clinical patients (Czerwiec, M. K., & Huang, 2017; McNicol, 2017). Considering the school

context, comics have been used for different purposes such as teaching literacy (Schwarz, 2002; Makini et al., 2020), teaching history (Ravelo 2013), and increasing reading comprehension in a foreign language (Liu, 2004).

Comics wide use is motivated by the benefits that this genre can bring, as shown in several works. For instance, the study by Yang (Yang, 2003) highlights that comics can capture and maintain the readers' interests through graphical elements. Moreover, the combination of visual and textual elements can promote an emotional connection between the author and the characters in the comics' narrative (Versaci, 2001), leading to a deeper immersion in the story composition. Furthermore, comics layout, having permanent and visual components, in contrast to film and animation, can dictate the pace of the gaze (Williams, 1995; Yang, 2003). Comics, in fact, are sequential not in time but spatially; therefore, the panels result to be positioned side by side and this can enhance the readers' concentration (McCloud, 1993). Still, comics can be beneficial when developing conceptual or logical abilities, such as sequencing and abstract thinking (Hallenbeck, 1976).

In their study, Andrews and Baber (Andrews & Baber, 2014; Andrews et al., 2012) show that digital comics can be more goal-oriented than paper-based comics. Bolton (Bolton, 2011) argues that different forms of text, such as the one represented by the comics, allow the reader to take a different perspective, intensifying the critical review.

In this sense, comic-based digital storytelling might facilitate different communities in expressing themselves, being motivated and engaged in the story composition while taking different perspectives. Considering the communities of the selected case studies of this thesis, migrants, young students and children can benefit from the combination of graphical and textual content. Authors can be engaged by the composition of comics, including written language and sequential images. Moreover, comics can convey a large amount of information in a short time. It can be especially useful among children and migrants. As a matter of fact, on the one hand, children and young students can be creative while remaining focused on the story creation; on the other hand, migrants do not need to express themselves using articulate Italian.

2.3 DIGITAL STORYTELLING TECHNOLOGIES FOR CHILDREN: BEYOND DIGITAL COMICS

Recent works have witnessed a shift towards different media than comics for storytelling, in particular towards the Internet Of Things, which have the advantage of being tangible and hence to elicit different forms of collaborative reflections than screens (Uğur et al., 2017). The Internet of Things (IoT) is a technology that allows physical objects to be interconnected through the Internet (Angelini et al., 2018). In 2008, the European Commission defined IoT as: “*Things having identities and virtual personalities operating in smart spaces using intelligent interfaces to connect and communicate within social, environmental, and user contexts*” (European Commission, 2008). IoT has been applied to different areas, such as education, health, traffic, agriculture, and public services.

Digital storytelling, as described before, has emerged as a powerful tool to engage with different communities (as patients, families, and children) for specific purposes such as teaching history (Ravelo 2013), increasing reading comprehension in a foreign language (Liu, 2004) and constructing identities in diabetes management (Mamykina et al., 2010) in the last few decades. However, attention has been paid to the challenges and failures faced in using digital storytelling as a tool (Williams & Do, 2009; Chen et al., 2020; Baranauskas & Posada, 2017). Rubegni and colleagues (Rubegni et al., 2020), for example, explore the use of digital storytelling for reducing negative gender stereotypes in children. The authors describe a participatory design-inspired approach involving 43 among children, experts and teachers in three workshops with the purpose of exploring this design space. The results report 9 concepts to guide the design of a digital storytelling tool to support children to become more aware of gender role models and negative stereotypes, and a method for developing design concepts to help to change stereotypical approaches in children. In another study, Zarei and colleagues (Zarei et al., 2020) propose to support free imagination in creative storytelling through an enactment based approach that allows children to embody an avatar and perform as the story character. The results indicate that self-avatars, namely the identification of his/herself in

an avatar, can create a stronger sense of identification and embodied presence, while story-relevant avatars can provide a scaffold for mental projection. Again, Wallbaum and colleagues (Wallbaum et al., 2017) developed an interactive storytelling prototype to help children and parents explore emotional situations. The findings revealed how children engaged with tangible storytelling, how they explored emotional states in narratives, and what challenges they faced.

IoT, and in particular smart objects, namely objects that are equipped with positioning and communication technologies and are integrated into a communication network, have been gradually introduced in the educational environment. In several studies (Elhai et al., 2018; Gennari et al., 2017; Erel et al., 2020), in fact, it is observed that the design of tangible interfaces for children is incorporating the use of IoT devices, adopting collaborative and participatory design approaches. Similar to digital storytelling (and digital storytelling as a tool) the design and development of IoT can be used for teaching turn-taking process (Gennari et al., 2017; Gennari et al., 2018), enhancing engagement (Gennari et al., 2020) and foster co-creativity (Divitini et al., 2017).

Gennari and colleagues (Gennari et al., 2020), for example, describe a workshop with 27 children, aged between 11 and 14 years, designing their own smart objects. The research considers design as a learning empowerment opportunity for children, based on recent debates concerning the role of children in design. In particular, results concerns two aspects of engagement: affective engagement and behavioural. In another work (Gennari et al., 2018), a tangible, *TurnTalk*, was adopted by a primary school class in 2017, with children, aged 9–10, and teachers. The tangible was introduced as a medium to teach children how to manage conversations, such as turn-taking, a concept not easy for children. The results from this work show design possibilities for tangibles for conversation. Uğur and colleagues (Uğur et al., 2017) involved children in the design process to create scenarios for future smart objects in co-design workshops. In this work, it emerged that serendipity that lays in game play and storytelling can give rise to new ideas and future scenarios in designing interaction for smart objects.

3. THEORETICAL FRAMEWORK

3. THEORETICAL FRAMEWORK

The theoretical framework described in the following subsections regards specific philosophical theories that are used in the three case studies of this thesis. Each framework was selected based on the specific community taken into account. To sum up and further explain later, the first framework (*Counterstory and Master narrative*) is aligned with the investigation of the migrants' community. The second one (*Reflective practice*) is chosen as it represents an approach to explore the narratives created by young students. Finally, the third one (*Narrative system*) is selected to fit better the needs of exploring stories created by children.

3.1 COUNTERSTORY AND MASTER NARRATIVE

A nurse discussed with a colleague about a specific episode, narrowed by doctors, regarding her "surface" job. The nurse, frustrated with the doctor's perspective about her career, decides to replace the episodes with one that represents herself – and, in general, the nurses' community - in a more respectful way. Starting from this stereotyped episode related to the nurse job, Nelson explains the notions of counterstory and master narrative (Nelson, 2001). The author defines the story narrowed by the doctor as a master narrative, while the other one, reshaped by the nurse, as a counterstory. On the one hand, master narratives are stories that exercise a captive force over a vulnerable group that damages their identity. In the episode above, the master narrative reduces the nurse to an inferior status, defining her job as airy. On the other hand, counterstories are defined as stories that resist an oppressive identity and attempt to replace the master narrative with one that commands respect.

These two concepts are introduced in many studies as models to investigate if and how vulnerable communities restore moral agency. For example, Thommesen (Thommesen, 2010) examines the role of master narratives in self-narratives told by people with both mental health and drug problems. The author highlights that the personal stories expressed by them are infiltrated and dominated by master narratives about drug abusers. Hume (Hume, 2017) investigates the construction and impact of the master narrative on breast cancer. The author focuses on how the breast cancer counterstories, which resist and replace the master narrative, reconstruct the powerless community

identities, and restore moral agency. Espino (Espino, 2008) uncovers and contextualizes the ways that Mexican American PhDs resist and reproduce power relations, racism, sexism, and classism through master narratives constructed by the dominant culture to justify low rates of Mexican American educational attainment.

The process of elaborating the master narratives in counterstories is also used among seniors in the field of narrative gerontology study (De Medeiros, 2016) among students in a primary literacy classroom (Kelly, 2017), and within women, transexual, and lesbian communities (Nelson, 2001).

In this thesis, these concepts, counterstory and master narrative, are introduced among the migrants' community as specific processes of expression. In particular, the focus is on adopting them to support migrants to reflect on specific troubled situations that can be reflected on themselves.

3.2 REFLECTIVE PRACTICE

Reflective practice is defined as the process to reflect on personal experience, deeply and consciously understanding the past actions (Shön, 1983). Practically, a specific troubled situation is deliberately reframed to generate a complete comprehension of the event represented. In this sense, the person who reflects considers what happened, what he or she thought or felt about a specific situation, why, who was involved and when, taking different perspectives and elaborating his or her point of view (Shön, 1983; Bolton, 2010).

The concept of reflective practice has found different applications in the health field, for example, for the nurse community (Somerville, 2004) as well as in the educational area, for learners, teachers and those who teach teachers (Ivala et al., 2013; Kearney, 2009).

In most of the studies (Bolton, 2010; Loughran, 2002), the narration is strongly indicated as a means to support the reflective practice, inviting practitioners to think and do through interrogating, rediscovering, making comprehensible and redefining particular experience (Bruner, 2009; Chambers, 2003).

As a narration process, specifically, for leading to reflection, digital storytelling has been involved in different domains and contexts of use. Most of the works (Barrett, 2006; Dogan & Robin, 2008; Heo, 2009; Robin, 2008) describe case studies in which the

focus lays on the use of digital storytelling within the pre-service teachers' community. In these studies, digital storytelling is indicated to improve the reflection practice quality further. It can embrace many benefits such as making the reflection concrete and visible, enhancing teaching and learning practice, and being considered highly motivating. Regarding the students' population, the work of Sanders and Murray (Sanders et al., 2018), for example, shows that digital storytelling can effectively and successfully engage undergraduate medical students in reflecting through the careful consideration of why they collect, select and present different images. In another study (Dreyer, 2017), digital storytelling for reflective practice is introduced among postgraduate students for their professional growth. In this study, digital storytelling is suggested as beneficial when facing reflective practice in terms of engagement and motivation.

In these works, reflective practice is indicated as a beneficial process that people can use to deeply comprehend the past events; narration, and in particular, digital storytelling seems to be the right means to embrace it. Therefore, we include this framework in the community of young students from middle school. Students of this age, in fact, can benefit from engaging in reflective practice as it can foster, from adolescence, the critical thinking and decision making necessary for continuous learning and professional improvement (Bolton, 2010; Loughran, 2002). In this sense, we believe that young students can be supported by this approach, facing, and consequently, reflecting on specific conflictual situations, including stereotypes and discriminations.

3.3 NARRATIVE SYSTEMS

The question "*What makes a text a story?*" can be answered exploring two different dimensions: the first one regards the content of the story while the second one is related to the structure of the story. However, taking into account these dimensions separately can weaken the complexity of the story itself.

In this context, two well-known authors' models are introduced to embrace this rich duplicity while proposing a theory to assess whether the proposed text can represent a story.

Following Prince theory (Prince, 1984), the story has to include a minimum of three specific segments. These three segments include: (1) the story beginning, (2) a middle including an event, and finally (3) an end. In this context, the end should represent a

transformation from the beginning; and the segments should respect the *consecutio temporum*. Prince reports that, in addition to this minimal story plot, the story can expand into the narrative core, considering for example, other episodes. Another author, Bremond (Bremond, 1996), criticized Prince's structure, as the author did not take into account the characters' intention (Ferraro, 2015). Therefore, the author questioned Prince's narratives model and, consequently, modified it. For Bremond, the structure of the story plot consists of the following phases: 1. A beginning; a middle including 2. an event raising and 3. an event overcoming. 4. An end. Considering Bremond's model, the character's intention is included in the story composition.

These models are adopted to explore the narratives created by children from a primary school in the second case study presented in this thesis. These models support us in assessing whether the text can be considered as a story, taking into consideration the minimum dimensions explored by Bremond, while reflecting on conflictual situations. As a matter of fact, the framework gives us a structure to deeply analyse the content and the structure of the story plot.

4. APPLICATION OVERVIEW: *COMMUNICS*

4. APPLICATION OVERVIEW: COMMUNICS

In order to address the main research question, we needed to adopt a digital platform for the composition of comics strips. In this context, *Communicis* is proposed as an authoring tool for storytelling in the form of comics, combining both graphical and textual elements.

4.1 A PLATFORM FOR COLLABORATIVE STORYTELLING

In this section, the *Communicis*' history is reviewed with the aim to comprehend the design choices that were made.

4.1.1 NEGOTIATION AND NARRATION TABLE

In the last years, the urge to promote technology to facilitate peace in world conflict is increasing (Shneiderman, 1991; Hourcade & Bullock-Rest, 2011). Technology, in fact, on the one hand, can intensify the action of harming one another; but, on the other, it can also be used to support peace both as a collectivity and as individual level. In this context, it was designed the *Negotiation and Narration Table (NNR table)* (Figure 1) (Zancanaro et al., 2019). The *NNR Table* aimed to support conflict reconciliation intervention, with the specific goal of encouraging users to reconsider hostile attitudes towards another. Technology, in this context, supports the co-creation of shared narratives that can lead to a greater understanding of other participants' perspectives.

The *NNR Table* was provided with something more than just functionalities of recording and manipulating; therefore, it was adopted as a way to visualize and manage disagreements to allow participants to learn during real problem solving (Dewey, 1933).

This technology was adopted in the specific context of the conflict between Israelis and Palestinians, one of the major conflict fields of the contemporary age (Zancanaro et al., 2019). The *NNR Table* features three user interfaces: two participants and one mediator that helps the users to understand the application's functionality, translate the recording audio content of the participants from one language to another and support them in the Point of Disagreement (POD). The narration activity, in fact, is based on the idea of recording audio from both participants while developing the narration together. If one user disagrees with a part of the storytelling, he can insert a POD that can be removed only if they drag it out in a joined action. With the POD, the presence of conflict in the

interaction appears, and it can be solved only if the users find a solution: the story cannot be finalized until all of those symbols of conflicts are eliminated.



Figure 1: a photo of the *NNR table*, including the position of the two participants and the moderator

4.1.2 COMMUNICS: THE DESIGN

Communics was designed to support the reconciliation in a remote collaborative narration approach. It was provided with similar functionalities to the *NNR Table*, but it addressed the limitations derived from it. One of the biggest problems, arising from experience, was the content of audio: the mediation of human translators might have influenced the outcome of the storytelling. Moreover, it has to be taken into account the high cost of a translator during the different sessions. To overcome this problem and to make a monitored translation possible, *Communics* was equipped with constrained-text in two languages in order not to need a simultaneous translation. This decision was made while investing the use of the free-text and predefined-text. The investigation has proved that the constrained approach, although it does not give free rein to creativity, can drive more on-topic narratives rather than the free approach (Mencarini et al., 2015). Also another study has shown that the predefined-text can represent satisfactory support when building up the story at an equally free-text level (Mencarini et al., 2014).

Another limitation, concerning the co-location of the users, was addressed in *Communics*. The tool was provided to support the remote collaboration between narrators. *Communics*, in fact, can be used by 2-users that collaborate on different computers, remotely.

4.2 COMMUNICS: MAIN FEATURES

Communics (Figure 2) is a web-based tool designed to support the production of visual stories, combining both graphical and textual elements, in the form of comics. The users compose an illustrated story by choosing backgrounds, characters, objects and emoticons from a content library. The users can freely add the textual elements of the story (dialogues and descriptive texts). A library of predefined textual elements is also provided to support the creation of stories and to stimulate thoughts on specific narrative structures.

The narratives can be created both collaboratively and individually. Collaboratively, the stories are composed by 2-users in a turn-based way. Each participant, sitting in the same or different rooms but using two computers, adds as many elements as he or she wants and then passes the turn to the other user.

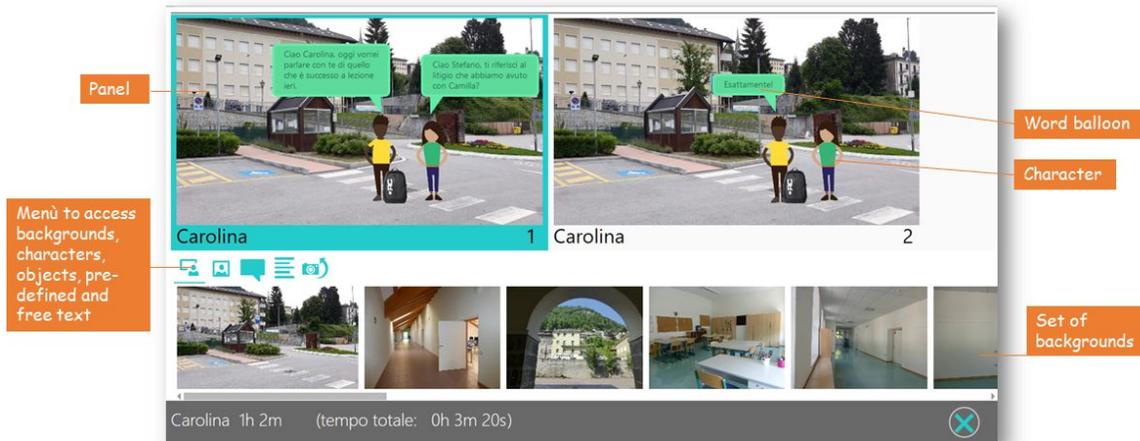


Figure 2: the interface of *Communics*

4.3 COMMUNICS: SESSION MANAGER

To upload the graphical and textual content and manage the narratives, the researcher uses the *Communics Session Manager* (Figure 3). The *Communics Session Manager* is a tool needed to organize sessions based on the different contents of the case studies. On the one hand, the researcher can upload backgrounds, characters, objects as well as predefined textual material; on the other hand, it is possible to create, modify, and remove the narratives.

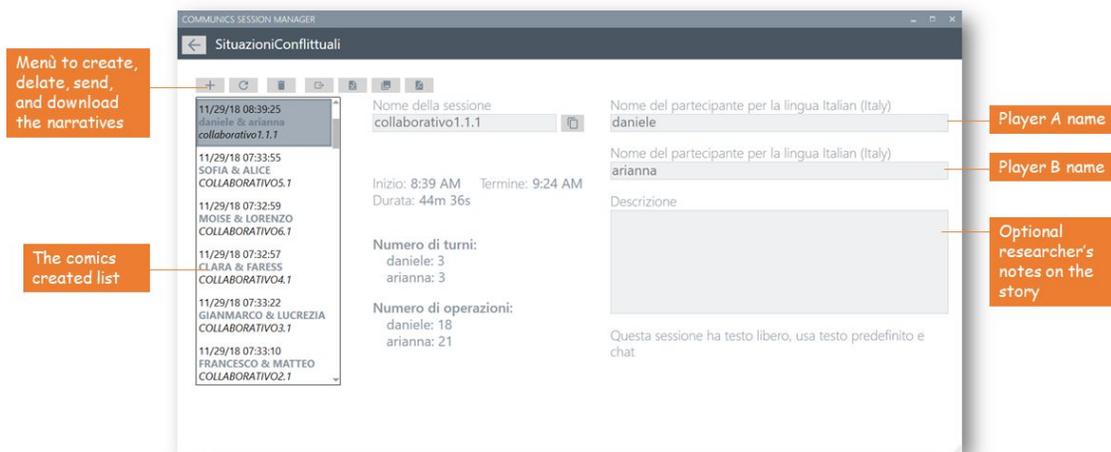


Figure 3: the interface of the *Communics Session Manager*

4.4. COMMUNICS: ASSUMPTIONS

In this context, we assumed that comic-based digital storytelling, supported by *Communics*, might be beneficial when reflecting on situations involving conflicts for the following reasons:

- *Comics*: the generation of comics can represent a meaningful process to elaborate specific narrations. The combination of graphical and textual elements can let the users express themselves while being creative, satisfied, and expressive. The presence of the gutter (i.e. the space between two panels) can create a transition from one moment to the next within a story, giving users the possibility to not fill the gap between panels.

Still, the comic format conveys large amounts of information in a short time. The colour and the playful dimension can let users be more engaged and focused on the story plot and content.

- *Predefined textual elements*: providing a library of predefined text can help users to overcome the "*blank page syndrome*" (i.e. when an author finds it difficult to come up with ideas to produce a story (Joyce, 2009)), to elaborate narratives, to recall to the mind past experiences, and as a scaffolding mechanism.
- *Free text*: the possibility of using free text can enrich the narratives' composition while considering the unlimited articulations of users' thoughts. Free text can let users be creative, while freely expressing themselves. Moreover, users can be inspired by the predefined textual elements, but write the text slightly differently by using free text.
- *Graphical and textual elements*: users can combine visual and textual material to compose their narrative. Therefore, we believe that users can create new educational proposals, through identifiable details, focus on the content of the stories rather than on the drawings and define the content as a scaffolding material.

5. CASE STUDY: MIGRANTS AND STEREOTYPES

5. CASE STUDY: MIGRANTS AND STEREOTYPES

The benefits and drawbacks of using digital storytelling were discussed in many studies, as already mentioned in the literature review (*Chapter 2*); in this specific case study, we focused on exploring the adoption in the context of migrants. As a matter of fact, this case study was selected to partially answer the main research question for its complexity and richness. Migrants are a vulnerable community, including socioeconomic background; immigration status; limited language vocabulary; state, and local policies; residential location; and stigma and marginalization. They are from different countries, speak other languages and have different cultural backgrounds. In this context, we aimed at embracing these dissimilarities while supporting them when reflecting on stereotypes and discriminations against them.

5.1 PROBLEM DEFINITION

The number of migrants in Europe is increasing, especially in France, Italy and Germany. More than half of the requests come from asylum seekers from Syria, Afghanistan and Iraq while the number of applications from people coming from Sub-Saharan countries, such as Guinea, Nigeria and Ghana, is rapidly growing (Report UNHCR). When arriving in the new host country, migrants often experience situations in which they are stereotyped and discriminated due to cultural, sociological and historical differences (Rapport, 1995). In most cases, they do not have many outlets to express themselves and to reflect on these experiences. This situation might lead to negative feelings such as social isolation and difficulties when settling and integrating into the host country. In this context, we propose a storytelling approach to support the reflection on stereotyped and discriminated episodes. Storytelling can represent a meaningful process for individuals to explore themselves and to reflect on personal experiences. In this respect, storytelling is often used to help people understand their personal experiences (Baumeister, 1994), to negotiate their cultural identity (Hammack, 2008) and to overcome challenging life situations (Nelson, 2001). Furthermore, we propose storytelling supported by technology. Digital storytelling, in fact, has been used within the migrants' community reporting different benefits such as the full expression of the persona (Prins et al., 2015), fostering technology use, creative learning (Weibert, 2017), and strength of vulnerable people while empowering their social, economics, and political inclusion (Moutafidou & Bratitsis, 2018). Finally, we propose to combine digital storytelling with comics to support migrants' expression further.

In this study, the research aim consists in understanding how comic-based digital storytelling can support migrants when reflecting on situations involving discriminated and stereotyped situations. In particular, we investigate three specific aspects: (1) the migrants' experience when using comic-based digital storytelling, with specific attention to comics, technology and *Communics*, (2) the narratives' composition to reflect on situations involving conflicts, including Nelson's philosophical framework (Nelson, 2001), and (3) fieldwork challenges in working with migrants.

In order to explore these aspects, we conducted an exploratory case study with migrants in a reception centre, located in Italy. The case study includes three phases. In the first phase, we discuss the intervention together with the centre operators. In the second one, we conducted a focus group with migrants to examine typical daily situations involving stereotypes and discriminations against them. This stage is useful to create and, then, upload in *Communics*, both graphical and textual elements. Finally, in the last stage, migrants reflect on different situations reporting stereotypes or discriminations via *Communics*. Moreover, an interview is conducted to investigate the experience profoundly.

5.2 RESEARCH QUESTION and SUB-RESEARCH QUESTIONS

The research question concerns the investigation of how comic-based digital storytelling can support migrants when reflecting on situations involving discriminations and stereotypes. In particular, we focus the inquiry on three specific sub-research questions.

5.2.1 FIRST SUB-RESEARCH QUESTION

S-RQ1: How do migrants use comic-based digital storytelling for reflecting on situations involving stereotypes and discriminations?

As reported in the literature review (*Chapter 2*), the use of digital storytelling is not widely investigated in the community of migrants. Digital storytelling, for example, has been presented as a support for re-affirming migrants' identities (Prins et al., 2015), for migrant women to have their voices heard in public discourse (Weibert, 2017), and for promoting social inclusion (Moutafidou & Bratitsis, 2018). As shown in these works, digital storytelling can fully support different activities within the migrants' community. In this context, we aim to investigate the use of this meaningful means to support migrants when reflecting on situations involving stereotypes and discriminations. In particular, we focus on the use of comics, technology, and *Communic*. As a matter of fact, we believe that comics as a genre can facilitate narrative productions of migrants; and that *Communic* can support the scaffolding, offering different functionalities such as the predefined text, graphical elements, and the free-text.

5.2.2 SECOND SUB-RESEARCH QUESTION

S-RQ2: How can counterstories be used in the context of digital comics to support migrants' reflection on situations involving discriminations?

We believe that it's essential to explore the meaning of the narratives created by migrants. In this regard, we propose to introduce the philosophical theory proposed by Nelson (Nelson, 2001) as a framework for narratives' reflection assessment. As already mentioned in the literature review chapter (*Chapter 2*), Nelson explains the concepts of master narrative and counterstory. On the one hand, the master narratives are stories that exercise a captive force over a minority group, in this case young male migrants, damaging their identity. On the other hand, counterstories are narratives that resist an oppressive identity and attempt to replace the master narrative providing a different perspective of the story.

5.2.3 THIRD SUB-RESEARCH QUESTION

S-RQ3: *What are the fieldwork challenges when working with migrants?*

Many works, in the field of HCI, investigated the problems and issues related to the conduction of studies with the specific community of migrants. For example, Duarde and colleagues (Duarde et al., 2018) highlight problems related to the trust aspect, and the recruitment process. In another study (Bobeth et al., 2013), the challenging process of collaboration with non-governmental organizations is described. In light of these studies, we decided to also investigate different challenges when working with migrants in a reception centre.

5.3 METHODOLOGY

To answer the sub-research questions, we conducted a case study, in which we mainly use a qualitative methodology. Through qualitative research, we aim to gather an in-depth understanding of migrants' behaviour and all the reasons for such behaviour (Adams et al., 2018). Qualitative data are collected through ethnographic observations (Reeves et al., 2008), semi-structured interviews to migrants (Fedyuk & Zentai, 2018), and narratives' composition by migrants (Duncan & Smith, 2012).

Ethnographic observations are used to understand behavioural patterns. In particular, we focus on observing migrants' dynamics when using technology.

At the beginning of the study, we collected info on demographics, in the form of semi-structured interviews in order to gain more in-depth insights about the experience in Italy, and the main problems and issues encountered in the host country.

The following dimensions are, therefore, explored before creating the narratives: (1) *Personal history and general demographics*, and (2) *Experience including stereotypes and discriminations' episodes*.

Then, migrants' post-task interviews are employed to gather information on the experience of narrative creation. The following dimensions are explored, after creating the narratives: (1) *Degree of the reality of the story*, (2) *Impact of the reflection on future*

experience, (3) Self-representation in the narratives, and (4) Advantages and disadvantages in using the digital platform.

The analysis of the narratives composed aimed at investigating the use of specific elements, such as graphical and textual elements, and the presence of counterstory and master narratives.

5.4 PROCEDURE AND PARTICIPANTS

The study was conducted in a migrant reception centre, named Residenza Fersina (*Figure 4*), located in Trento, in the Northern part of Italy. In this centre, migrants stayed for a limited time (maximum 24 months) while waiting for the paperwork for the Italian residence permit. For logistic reasons, only males are hosted in this centre. A total of twenty-two (6 participants for the content creation stage plus 16 participants for the narratives composition stage) migrants, and nine (9) centre's operators were involved in the study conducted from August 2017 to May 2018. The overall intervention at the reception centre was articulated in three stages.



Figure 4: the reception centre, named Residenza Fersina, which the study took place

5.4.1 STAGE ONE: INTERVENTION DESIGN

Participants. Nine (9) centre's operators (3 F and 6 M, aged between 30 and 54) participated in this first stage.

Procedure. In order to structure the intervention, we organized two focus groups: 5 centre's operators participated in the first one, and 4 centre's operators participated in the second one. with 9 centre's operators. During this first phase, we discussed how to integrate digital storytelling in the reception centre context. Initially, operators were more oriented towards using the tool in an educational activity to teach migrants the rules of the centres and elements of civic education. Yet, in the focus groups, it emerged an interest towards the notion of counterstories as a way of getting in touch with migrants and understanding their point of view. However, the educational perspective remained a critical aspect for them. Furthermore, it emerged the awareness that some topics of discussion might be sensitive for some migrants or for the delicate balance of the life in the reception centre that housed people with diverse cultures, from northern Africa to east Asia. In this respect, *Communics* was positively assessed since the library with predefined material helped in directing the theme of the stories.

5.4.2 STAGE TWO: CONTENT CREATION PROCESS

Participants. Six (6) male migrants participated in this stage. They were between 23 and 30 years old ($M=26$, $SD=3$), and came from Sub-Saharan African countries (Cameroon, Guinea, Niger and Nigeria). Four participants spoke English and two French as the primary language, while all of them had a good understanding of Italian.

Procedure. The content creation process included the collection of the graphical and textual elements to be inserted in *Communics*.

With the help of the centre's operators, we organized the focus group with the migrants and we were introduced to the participants. In the focus group, the participants were asked to discuss situations involving discrimination or stereotype targeting the migrants' community.

Three general master stories involving discrimination were identified as the most common ones locally. The first concerns when migrants approach local people with the intent of asking for directions: usually they are ignored, or they immediately receive a

negative answer, such as "*I don't carry cash*", "*Go away*" or "*Stop begging!*". A second situation represents migrants stereotyped as thieves: a typical case is when a police officer stops a migrant riding a bike asking if he had stolen the bike. The last master narrative concerns migrants stereotyped as unclean and as a threat to the public decorum; for example, migrants who do not dispose of the trash properly because they cannot read the label on the trash bins.

Based on these situations, we built an initial set of materials (photos of local places, images for backgrounds, objects, and characters as well as predefined textual expressions) and populated the *Communics'* library with these elements. For the backgrounds, fifteen (15) pictures, including photos of the reception centre, and the main streets and squares, were collected. Thirty (30) images including objects were gathered representing elements, such as a policeman's car, a policeman, and a bin. Eight (8) characters were included representing people from different ethnicities and genders (*Figure 5*). Finally, one-hundred thirty-four (134) textual elements were prepared and revised (*Figure 6*). These texts were designed with the aim of supporting migrants when expressing themselves, of avoiding the black page syndrome, and of letting them stick to the story. The predefined textual elements were defined based on the sentences mentioned during the focus group.

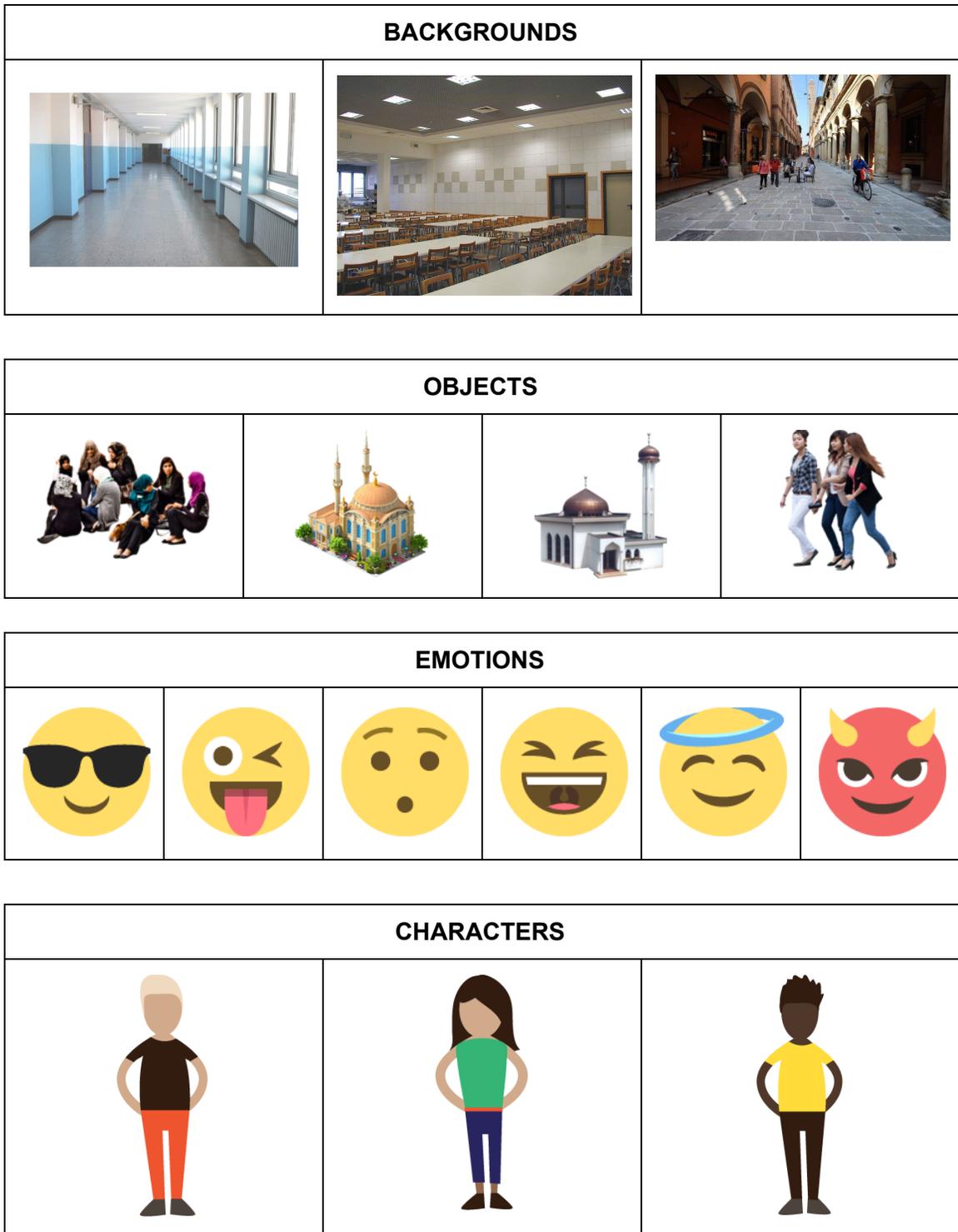


Figure 5: examples of graphical elements, including backgrounds, objects, characters and emoticons (see *Appendix* for the full list)

PREDEFINED TEXT	
I.	Hello
II.	Hi
III.	See you tomorrow
IV.	See you soon
V.	Talking with you was a waste of time
VI.	I hope we will never meet again
VII.	I would like to have more opportunities to share the cultures
VIII.	Thank you
IX.	I hope we will meet again
X.	It was interesting talking to you

Figure 6: examples of predefined texts (see *Appendix* for the full list)

5.4.2 STAGE THREE: NARRATIVES' COMPOSITION

Participant. Sixteen (16) young male migrants participated in the study. They were between 19 and 32 years old ($M=24$, $SD=4$), from African or Asian countries (*Table1*). All participants spoke English or French as primary languages, while most of them had a good understanding of Italian. All of the participants were in the country for less than 24 months.

ID	AGE	COUNTRY	PRIMARY LANGUAGE	# MONTHS IN ITALY
M1	24	Senegal	French	15
M2	23	Algeria	Arabic, French	18
M3	20	Liberia	English	6
M4	22	Mali	French	6
M5	32	Guinea	French	20
M6	23	Liberia	English	10
M7	22	Guinea	French, English	15
M8	26	Algeria	Local Algeria Language,	20

			English	
M9	25	Pakistan	Urdu, English	\
M10	26	Nigeria	English	18
M11	27	Nigeria	English	18
M12	21	Guinea	French, Local Guinea Language	12
M13	29	Ghana	French, Arabic, English	20
M14	23	Nigeria	English	12
M15	26	Guinea	French, Local Guinea Language	9
M16	19	Bangladesh	Bengali, English	12

Table 1: study's participants identified with an ID, age, birth country, languages spoken and months spent in Italy

Preparation: three story incipits based on the three master narratives described above were prepared (*Figure 7, 8, and 9*). Each of them comprised two panels and represented the start of a situation involving a potential conflict but without any suggestions for a possible resolution.

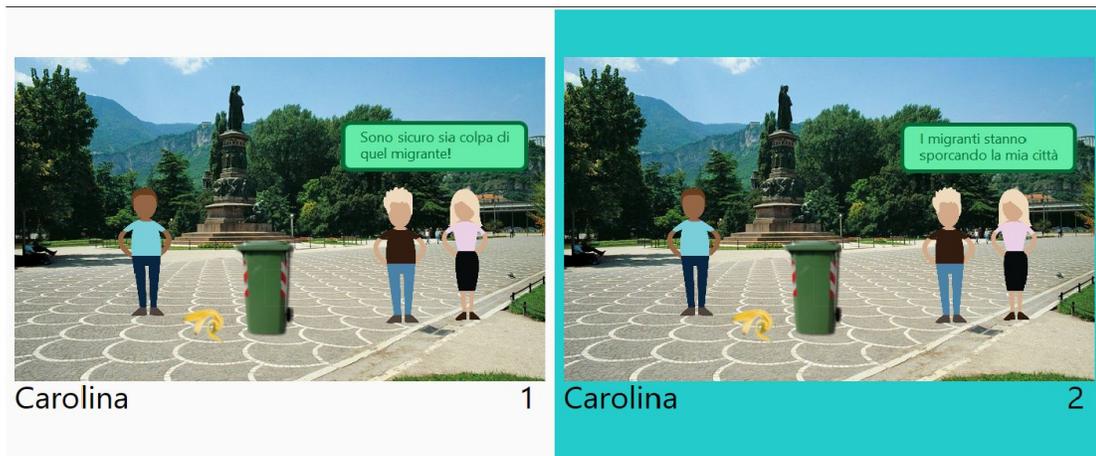


Figure 7: the scene represents two Italians blaming a migrant for the dirt in a city



Figure 8 : the scene represents a migrant asking for directions, while an Italian answers that he has to stop begging

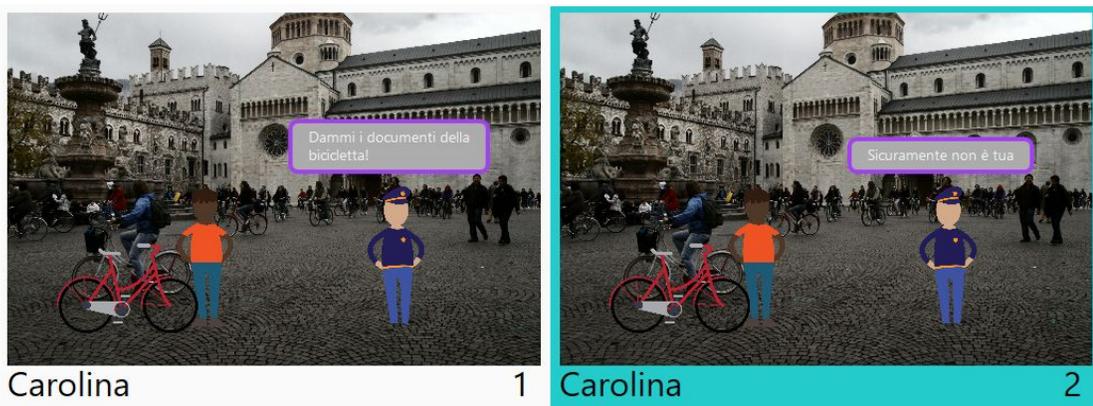


Figure 9: the scene represents a policeman blaming a migrant for stealing a bike

Procedure. Each session was individual and lasted about 60 minutes. Before starting the session, each participant was informed of the procedure, and some questions were addressed. Then, they were briefly trained to use *Communics* (Figure 10). The researchers also presented some visual stories made with *Communics* to make participants more familiar with the language of comics. Then, participants were asked to create two stories (Figure 11). They could choose two of the three story incipits and they were asked to continue or modify the situation presented. Researchers did not participate in the creation of the story. They intervened only when migrants faced technical issue. At the end of the session, participants were interviewed.



Figure 10: a researcher tutoring one of the participants on the *Communics*' Interface



Figure 11: one of the participants using *Communics*

5.5 RESULTS

The results presented are divided into three sub-sections: the (1) narrative form and content, (2) migrants' interviews and (3) fieldwork challenges encountered during the study.

5.5.1 NARRATIVE FORM AND CONTENT

The 32 digital narratives were analyzed considering the form of the stories, (e.g. the number of graphical and textual elements), and the story content, investigating the underlying message of each story. Two researchers independently reviewed and then identified the different elements (namely the valence of the story, and the presence of master narratives and counterstory) in the narratives. At the end of the coding, two researchers met up to revise the results collected, and disagreements were discussed till researchers agreed.

Use of textual material. Out of 127 dialogues present in the comics, 63 are predefined textual sentences selected from *Communics'* Library. The average of dialogues for comics strips is 4, while the standard deviation is 3. The sentences most used are the following: "Hi, could you please...." (5 times); "You don't understand: I just want to know the directions for the station!" (4 times); "You stole this bike!" (4 times); "No, I do not want to talk with you" (4 times) (Table 2).

Objects. Some objects were in comic strips. The total number of objects used were 34. The average number of objects per comic strip was 2, while the standard deviation was 3. The principal used objects are the policemen (4 times) and the bicycle (8 times) (Table 2).

Characters. The total number of characters was 119. The average number of characters per comic strip is 4, while the standard deviation was 3. The most used characters were a black-skin guy with an orange shirt and brown hair, and a white-skin guy with a black shirt and blonde hair. (Table 2).

Panels. The total number of panels per comic strip was 54. The average number of panels per comic strip was 2, while the standard deviation was 1. The most used backgrounds for the panels were the two main squares and the main street in Trento (Table 2).

Word balloon. The number of balloons inserted in the stories was 127. The average number of word balloons per comic strip was 4, while the standard deviation was 3. It has to be noted that some authors inserted many word balloons in a single panel, instead of creating different panels with a fewer number of balloons. This eventually made it hard for some stories to be read (*Table 2*).

Narrative elements	Total #	Average	Standard deviation
Textual materials	127	4	3
Objects	34	2	3
Characters	119	4	3
Panels	54	2	1
Word Balloons	127	4	3

Table 2: the table represents the graphical and textual material used to create the comics

Dialogue structure. Not all dialogues created as part of the stories followed the conventional order in which the word balloons should be read (from left to right, from top to bottom). Some balloons were placed from right to left, others also in different panels. Moreover, not all balloons were placed next to the related character.

Valance. Since all the incipits introduced stories with a potential negative discriminant situation, the valence code assessed whether the participant (i) should change the narrative to a positive condition, (ii) should emphasize the negative aspects of the story or (iii) maintained the pre-existing narration. Many stories (18) emphasized the negative situation, depicting a negative stereotype or prejudice in which the migrant is discriminated by other characters. All of them represent master narratives (*Figure 12*). Seven (7) stories described instead positive events, in which the discrimination is overcome (*Table 2*).

Narrative elements	Positive	Negative	Neutral
Valence	7	7	18

Table 3: the table represents the stories' valence



Figure 12: an example of a master narrative

Counterstories elements. We also analyzed the stories for its narrative elements indicating counterstories (that is a story or part of it that contrasts to the discriminant incipit narrative). Six (6) stories included sentences (attributed to the migrant character in the story) that were used to explain the prejudice and express the migrant's point of view, representing an attempt to resist stereotyped situations (*Figure 13*). These stories were created by 6 different participants (*Table 4*).

Narrative elements	Yes	No
Counterstory	6	26

Table 4: the table represents the counterstory's presence



Figure 13: an example of a counterstory

5.5.2 MIGRANTS' INTERVIEWS

The data collected for the investigation on migrants' experience consists of a total of 16 interviews. The data analysis includes the transcription, and then the coding, using the thematic analysis with a deductive approach (Braun & Clarke, 2006), among two researchers. Based on the interview questions (*see Appendix*), researchers took into consideration different elements as follows: participants preference for using English or Italian, the backgrounds and textual material use motivation, the identification with the fictional characters, the possible different utilization of the platform, the use of comic-based digital storytelling, and the relation between the comics plot and the real-life. At the end of the coding, the two researchers met up to revise the results collected, and disagreements were discussed till researchers agreed.

Participants' preference for using English or Italian. Participants could choose whether to use English or Italian in the tool interface. Many participants (9) preferred using Italian because they claimed that they wanted to practice it. Two participants reported that they mixed two languages in creating the narratives..

Background elements selection. Some participants associated *Communics'* backgrounds with their experiences. Familiar backgrounds helped them in engaging the storytelling process, producing meaningful and experienced stories. M9 said: *"Sketches were really good, and images are really good for memory"*.

Self-representation in the narration. In the majority of stories (23), participants represented themselves as the main character of the narrative. M9, for example, said: *"I was in the story because I experienced a similar situation"*. Those participants who do not represent themselves in the comic strips created a fictional story. M2 said: *"I did not represent myself as the main character of the story, but I imagine two guys from Nigeria and their reactions to the episode."*

Textual elements Use. It emerged that predefined text was useful to inspire participants when producing the narrative; they still claimed that they wanted to personalize the language sentences, typing in their text. M7 for example reported: *"Having predefined textual elements is good, because with sentences already written you can express better yourself."* Another participant said: *"It was very helpful to have the predefined text. Moreover, when necessary, I add text written by myself (M9)"*.

Comic-based storytelling utilization. Participants enjoy working with *Communics*, as it was easy to use. Moreover, comics support them when expressing themselves. M7 said: *"Comics really help me write the dialogue while expressing myself"*. They found useful the comic construction also to reflect: *"Comics help me. It makes me think. It helps me to understand people. The comic dialogue helps me understand (M5)"*.

Alternative use of Communics. Participants expressed the desire of sharing stories among people from the hosting country to facilitate mutual understanding. For example,

M5 reported: *"I was interested in giving my own opinion in what I think. The message has to pass over. People have to understand."* Still M6: *"I want people to understand that they can rely on us "*. M11 said: *"I want to tell the people that we are all the same"*.

Comics plot vs Real-life episodes. Most of the migrants (14) said that they experienced the situation reported in the comic strip. M2 said: *"An episode similar to this one happened to me. I asked a girl the direction for the library; then, she left and she did not answer."* M3 said: *"I asked a passenger for the train station, and he answered me: "Fuck off". I feel really terrible. I was really sad."* Again M4 said: *"I asked a guy the direction for the train station and he told me that he didn't want to talk to me."*

5.5.3 FIELDWORK CHALLENGES

During the study, we collected notes by observing migrants' and their behaviour. The field notes were analysed by two researchers using the grounded theory method (Strauss & Corbin, 1997). At the end of the coding, researchers met up to revise the results collected and disagreements were revised till researchers came to an agreement.

Recruiting process. The process of recruiting migrants for the study was particularly time-consuming and challenging. NGO operators got in contact with them to explain the study aim, the process and the procedure. It emerged that some of the migrants did feel comfortable to participate in the study. Some of them couldn't join because they felt anxious in speaking with strangers; while others did not speak English nor French neither Italian.

Trust. Participants needed to be continuously reassured about the project's objectives and scope because they fear that the material collected could be used to question their right to stay in the host country. For example, the informed consent that was requested before starting the activities discouraged some people from participating in the projects.

Collaboration with NGO operators. The NGO operators helped in facilitating contacts and trust as they presented the researchers as trustworthy people. Nevertheless, the overall interaction was sometimes less smooth because of this indirectness.

Mother-tongue and second language communication. We selected the host country language, Italian, as the primary language for all the activities. It was expected that most of the participants wanted to train with it. Using the Italian language as a shared language was also possible based on the information provided by the NGO operators. We also offered English as an additional language. In this context, some of the participants felt uncomfortable expressing themselves in Italian; then, we switched the conversation into English and they created their narratives in English.

Story sharing with locals. Participants expressed the desire to share the story among people from the hosting country in order to facilitate mutual understanding. It seemed that the narrative intervention needed to be embedded in a larger project that provided meaning to the activity.

5.6 DISCUSSION

In this section, the results are discussed considering the three sub-research questions. We describe the significance of our findings in light of what was already known based on the literature review, and to explain any new understanding.

5.6.1 COMIC-BASED DIGITAL STORYTELLING FOR REFLECTION

In this case study, we explore the use of comic-based storytelling, via *Communics*, to support migrants when facing, and reflecting on situations involving stereotypes and discriminations. From the literature review (*Chapter 2*), it emerged that digital storytelling can support migrants in re-affirming their identities (Prins et al., 2015), have a voice in public discourse (Weibert, 2017) and promote social inclusion (Moutafidou & Bratitsis, 2018). In this study, it emerged, in general, that comics represent a meaningful genre for migrants to express themselves. On the one hand, dialogue supports their expression, backgrounds recall their memory of past episodes, and predefined textual elements help them communicate. On the other hand, the objects were not used as much as expected. It seemed that migrants focused on the content of their comic strip, not on the visual experience. Still, many word balloons were placed in one panel. This is probably due to their lack of familiarity with the language of comics.

5.6.2 COUNTERSTORY AND VALENCE OF COMIC STRIP TO SUPPORT REFLECTION

From Nelson's theory (Nelson, 2001), it emerged that facing a master narrative with the aim of reflecting on the stereotypes and/or discrimination can lead to elaborate a counterstory. Many studies (Espino 2008; Thommesen, 2010; De Medeiros, 2016; Hume, 2017; Kelly, 2017) adopted this theoretical framework to investigate narratives' use for reflecting on situations involving conflicts. In our study, in particular, we investigate if and how the community of migrants would elaborate potential daily discriminant stories in counterstory. In general, it emerged that the stories created by migrants, for the majority, weren't counterstories. As already emerged in (Thommesen, 2010), it can be argued that the migrants' personal stories are infiltrated and dominated by master narratives on discriminations and stereotypes. Only 6 stories created represent a counterstory. It appeared that migrants needed a broader intervention in order to fully elaborate the master narratives created. Moreover, as it emerged in the *Valence analysis*, participants emphasized the negative situation presented in the incipit.

5.6.3. FIELDWORK CHALLENGES

Many works in the field of HCI (Fisher et al., 2014; Fisher et al., 2016; Bishop & Fisher, 2016; Bobeth et al., 2013; Duarde et al., 2018) investigated the problems and issues related to the conduction of studies with migrants. In our study, we report the main issue encountered. During the case study, in fact, we faced some challenges from the fieldwork. As reported in other studies on the design of digital solutions targeting migrants, working with this community required cultural sensitivity and interpersonal skills. As already mentioned in (Bobeth et al., 2013, Duarde et al., 2018), we encountered some implications regarding the trust between migrants and researchers. Again, it was not easy to establish and maintain trust with the participants. The contribution of the NGO operators was essential: they supported us during the entire intervention. Nevertheless, migrants still needed to be reassured many times on the scope of the intervention as they fear that the study could question their right to stay in the country. Moreover, we reported issues related to the language and the consequences of rough communication. Still, it emerged the migrants' needed to share the stories with locals in order to fully gain benefits from mutual communication.

5.7 CONCLUSION

This case study reports the investigation of *Communics* as a digital tool to support self-expression, reflection and narration of discriminant situations within the community of migrants. In particular, the work discusses (i) the use of comic-based digital storytelling in an operator centre, (ii) the adoption of comic-based digital storytelling when reflecting on situations involving stereotypes and discriminations and (iii) the challenges encountered in the fieldwork.

Summing up the conclusions, the use of comic-based digital storytelling as support to promote reflection had both positive and negative consequences. On the positive side, participants enjoyed the possibility of reflecting on (or at least presenting) their experience using the tool. The combination of graphics and text allowed the participants to create narratives with relative easiness. The possibility of offering story incipits and predefined textual expressions facilitated the creative process. The use of constrained language expressions helped some of the participants when elaborating the counterstory elements in their narrations, reflecting on the story meaning and planning the plot of their narratives. On the negative side, the lack of familiarity with the comics' genre produced disorganized visual stories in which the rules of comic composition were not followed. Finally, some implications related to the conduct of study with this vulnerable community, including trust, language issues, and relation with NGO operators, are reported too.

In conclusion, although migrants were not familiar with the comic language, creating visual stories seemed a promising approach for them in the approach of storytelling. A digital tool, such as *Communics*, might be helpful to facilitate this process, although more guidance is probably needed.

5.7.1 LIMITATIONS AND FUTURE WORK

Some limitations should also be considered. First of all, it has to be noted that the participants were only young adult male migrants. Therefore, further studies are needed to include female and younger migrants to fully understand the implication of digital storytelling to reflect on situations involving conflict. Another point to take into consideration is that the stories need to be shared with others and, in particular, with the

local community as a support for mutual understanding in order to gather full benefits. Finally, in next studies, it would be interesting to let migrants take part in the selection of the content to be included in *Communicics* (e.g. taking photos, or browsing the Internet).

5.7.2 ACCESS TO THE FIELD

This study was designed and carried out in a closed collaboration between NGO operators and researchers. The researchers and NGO operators got in contact three months before the study began. In these three months, the study objective, goal and plan were discussed. Then, an agreement was signed to cooperate. The NGO operators informed the migrants in the reception centre that that participation was voluntary and that all data would remain confidential. Migrants were told about the objects and the aim before, during and after the study. Migrants's data were anonymised for the analysis and stored on a secure server.

6. CASE STUDY: CHILDREN AND SCHOOL CONFLICTS WITH PEERS

6. CASE STUDY: CHILDREN AND SCHOOL CONFLICTS WITH PEERS

As a second case study, in order to partially answer the main research question, we focused on a class of primary school children. As already mentioned in the literature review (*Chapter 2*), digital storytelling is employed as a successful means to use and elaborate on different contents in primary schools. We believe that it can be interesting to adopt it also when allowing children to face and reflect on conflicts in their own classroom. As a matter of fact, this means can support children's self-expression, creativity and satisfaction. Therefore, it might lead children to a deeper engagement when composing a story. Finally, digital storytelling can promote reflection both individually and collaboratively. In this case study, we focus the investigation on the collaborative use of digital storytelling while exploring the adoption of this means by teachers and children.

6.1 PROBLEM DEFINITION

Conflicts commonly occur among children, especially at school. Children, for example, may discuss whom to sit with during the lessons, which pen to use to take notes, and when to start or finish a game during the break. Often, these kinds of conflicts are resolved by the use of physical force, verbal attack, cold shoulder, or responding in kind. Consequently, this behaviour can interfere with the construction of a jeopardized and threatened class (Johnson & Johnson, 1996; Stevahn, 2005). Nevertheless, conflicts, if properly managed, can be helpful to build and develop a safe educational environment (Johnson, 1994). Yet, children have few outlets to consciously, safely and attractively reflect on these situations (Stevahn, 2005). In this context, it might be useful to provide support and assist them when facing and reflecting on these situations. In this study, a support, including digital storytelling, is proposed as an approach for the elaboration of situations involving conflicts that might take place in the classroom. Digital storytelling aims to facilitate children when constructing digital narratives, as they can be personalized, diversified in terms of scenarios, compelling, and engaging (Ohler, 2013). Still, from the teachers' point of view, digital storytelling should help to engage the whole class, articulating children' thoughts (Robin, 2008), improving communication and promoting a better understanding of each others' perspectives (Alismail, 2015).

Specifically, comics are employed as a genre for digital storytelling. Children might appreciate the benefits of using comics, which facilitates the possibility of taking different perspectives (Farinella, 2018). Moreover, the combination of both graphical and textual

elements for the comic-based narration can be proposed as a motivating, fun and engaging genre for children to fully express themselves (Norton, 2003). Still, in order to support the composition process, the use of a library of graphical and predefined textual materials as a scaffolding mechanism is suggested (Mencarini, 2015). Finally, in this specific study, technology is used to support the collaborative composition of narratives as well as the individual one. Children, in fact, might benefit when reflecting both on their own and in collaboration with a peer.

The study aims to understand how comic-based digital storytelling can support and facilitate primary school children when reflecting on situations involving classroom's conflict. In particular, we focus the investigation on three specific aspects: (1) the differences between digital story composition conducted collaboratively rather than individually; (2) the children's perception when using digital storytelling to reflect on situations involving conflicts; and (3) the teachers' introduction of comic-based digital storytelling in the classroom context.

In order to explore these aspects, a case study in a primary school, targeting children aged 9 to 10 years, has been conducted. The case study includes three different stages. In the first stage, in two meetings, the intervention was structured with the two teachers involved in the project. Secondly, children elaborate the digital narratives via *Communics*, and write short feedback texts to evaluate specific aspects of the experience. In the third stage, both children and teachers were interviewed to deeply explore specific aspects of the experience itself.

6.2 RESEARCH QUESTION and SUB-RESEARCH QUESTIONS

The research question concerns the investigation on how comic-based digital storytelling, supported by *Communics*, can facilitate children when reflecting on situations involving classroom conflicts. In particular, we focus on exploring three specific sub-research questions of the leading research question.

6.2.1 FIRST SUB-RESEARCH QUESTION

S-RQ1: *How do children elaborate their narratives to reflect on situations involving classroom's conflict collaboratively or individually?*

From the literature review, it emerged that digital storytelling can support different skills such as creativity (Rubegni et al., 2014), motivation (Rubegni et al., 2010), literacy development (Di Blas et al., 2009), and collaboration (Bonsignore et al., 2013; Garzotto et al. 2006; Rubegni et al., 2013; Russell, 2010; Ryokai et al., 1999). In many studies, collaboration on digital storytelling was indicated as beneficial in the aspects of inspiration (Russell, 2010; Ryokay et al., 1999), performance (Bonsignore et al., 2013) and creativity (Bonsignore et al., 2013; Garzotto et al., 2006; Long et al., 2017; Rizzo et al., 2018; Rubegni et al., 2014). However, we believe that it's interesting to compare the use of individual and collaborative digital storytelling to support and reflect on situations involving conflicts. The comparison, in fact, is essential to gain information on the difference when using individual or collaborative comic-based digital storytelling. Finally, our aim consists in exploring how digital storytelling can support children when collaboratively elaborating these situations, and how this might differ from individual elaboration.

6.2.2. SECOND SUB-RESEARCH QUESTION

S-RQ2. *How does comic-based digital storytelling support children when reflecting on situations involving conflicts?*

As reported in the literature, the use of digital storytelling is investigated in terms of engagement and motivation for the narrative production (Ohler, 2013), as support to reflect on real-life situations, and to facilitate active learning in children communities (Van Gils, 2005). However, only few works investigated the use of digital comics as a genre for narrative (Andrews & Baber., 2014; Andrews & Baber., 2012; Maldonado & Yuan, 2011), with even less regard to the use of digital comics at school (Andrews & Baber, 2012; Maldonado & Yuan, 2011). In this study, we aim to explore specific aspects of

comics to compose educational narratives. These aspects, including the use of predefined textual and graphical elements, and the introduction to the comics language and to the digital tool, are therefore explored. In particular, It is assumed that the predefined text can be helpful in inspiring children in the story composition and in overcoming the “*blank page syndrome*” (Glatzer, 2003); while the graphical elements can lead them to focus also on the content of the story. Moreover, children might appreciate the benefits when using comics, which facilitates the possibility to take different perspectives. Finally, combining comics with technology might represent a promising aspect to enable storytelling. This combination, in fact, can enhance the process of reflection and stimulate children during the story composition.

6.2.3. THIRD SUB-RESEARCH QUESTION

***S-RQ3.** How do teachers experience the use of comic-based digital storytelling for conflict reflection?*

The introduction of technology in the school context is a crucial aspect from both research and educational perspectives. Some works (Rubegni et al., 2013; Rubegni et al., 2014; Rubegni et al., 2019) investigated explicitly the teachers’ perception when using technology, in a particular technology to support storytelling, in an educational environment. However, none of them assessed the specific use of comic-based digital storytelling in the school curricula. Therefore, we decided to investigate teachers’ perception when using technology, digital storytelling and comics to support students when reflecting on situations involving conflicts. Teachers, in fact, play a crucial role in the effective and efficient adoption of digital artefacts to improve teaching, and support children. Finally, we focus on exploring how teachers integrate digital storytelling in formal education and how they perceive it when reflecting on stereotypes and discriminations.

6.3 METHODOLOGY

These sub-research questions are explored by developing a case study. The case study purpose, in fact, consists in gaining some insights and findings to address the three

sub-research questions. We mainly used a qualitative research approach integrated with quantitative methods. This integration allows a more complete and synergistic use of data than a separate quantitative and qualitative data collection and analysis: on the one hand, quantitative methods include close-ended data, while qualitative consists of open-ended information (Creswell, 1999). In the research, the combination of these methods fully supported the elicitation of the three specific sub-research questions. It enabled a rich set of data to be discussed later in the thesis. Qualitative data are collected through ethnographic observations (Reeves et al., 2008), children's short feedback texts (Van Peer & Chatman, 2001), children's interviews (Gibson, 2012), narratives composition produced by the children (Duncan & Smith, 2012), and teachers' interviews (Diefenbach, 2009), while we collect quantitative data through specific narratives aspects (Franzosi, 2009).

Ethnographic observations in classes are used to identify behavioural patterns. In particular, we focus on observing collaborative dynamics, teachers' role, and the plot's mode of expression.

In the short feedback texts, children are asked to write about their experience when using the tool. In particular, they are asked about collaborative and individual narrative composition, the motivation of their engagement in the activity, and the use of graphical and textual libraries.

Children's interviews are employed to gather information, at the end of the experience. The following dimensions are, therefore, investigated: (1) *experience when using technology individually*, (2) *experience when using technology collaboratively*, (3) *Use of comics to create the narratives*, (4) *Positive aspects when using technology and comics to reflect on situations involving conflicts*, (5) *Negative aspects when using technology and comics to reflect on situations involving conflicts*, (6) *Predefined textual elements' use*, (7) *Graphical elements' use*, and (8) *Differences when using traditional narration and comics*.

Narratives are composed both individually and collaboratively in groups of two. In this sense, narratives are analyzed to evaluate and compare the story created in the two different conditions. We based the analysis of the narratives following the framework offered by Prince (Price, 1984) and Bremond (Bremond, 1996), already discussed in the literature review (*Chapter 2*). The narrative models, in fact, indicate a structure that is used to evaluate the story composition. These dimensions consist of: a beginning (1); a

middle including a conflict rising (2), a conflict resolution (3); and an end (4). In addition to Prince and Bremond's narrative framework, we also explored other narrative's aspects: the *Valence of the story*, in terms of positive, negative or neutral conflict resolution, and the *Meaningfulness of the story*, considering whether the story makes sense or not. Moreover, the *Narrative elements* such as the number of words balloons and comics' strips, and the time taken for storytelling were considered.

Finally, teachers' interviews were conducted in order to elicit educational benefits when using comic-based digital storytelling. The following dimensions are, therefore, investigated: (1) *Children's experience when using individually the technology*, (2) *Children's experience in the collaborative composition of narratives*, (3) *Technology introduction at school*, and (4) *Comics' use to reflect on situations involving conflicts*.

6.4 PROCEDURE AND PARTICIPANTS

The study was conducted in a primary class of a school named A. De Gasperi, located in Pieve Tesino, near Trento, in the Northern part of Italy. A class of 12 children, a first-language teacher and a special needs teacher were involved in the study conducted during the school year 2018-2019. The special needs teacher was involved in the study as the faculty board provided for this figure. For the entire project, the computer lab was available (*Figure 14*). The overall intervention in school was articulated in three stages.



Figure 14: the picture represents the school computer lab

6.4.1. STAGE ONE: INTERVENTION DESIGN

Participants. The first-language and special needs teachers participated in this first stage.

Procedure. The preparation of the study included two phases: (1) the intervention design and (2) the content creation process, that comprised the process to collect the visual and textual elements to be included in *Communics*, in collaboration with the two teachers.

(1) In order to prepare for the intervention, three meetings with the two teachers were settled. At first, they were interviewed to collect information on how to integrate digital comic-based storytelling in the school curricula. Then, the children's skills were discussed when using the technology and when developing narratives, and the specific context on which to focus the narratives. In general, teachers were very positive about setting an educational activity to involve children when elaborating situations of conflicts in the classroom context. One of the major issues reported by the teachers, in fact, was that children did not know how to deal with situations involving conflicts. Therefore, they believed that this approach could have been a useful tool for children to reflect on. Finally, working both collaboratively and individually would have given an opportunity to the children when dealing with the situation on their own and with their peers.

(2) The content creation process included two meetings with the teachers to build the graphical and textual elements to be included in *Communics's* library. The teachers recalled situations involving conflicts in the classroom in order to define a preliminary list of graphical and textual elements.

Eventually, the following situations involving conflicts were chosen for the study:

- children deciding which games to play
- children choosing what to do during lessons breaks
- children discussing the ethical value of a story
- children determining the team leader for a group-work
- children concluding for a homework
- children choosing a topic for the lesson
- children composing football teams
- children correcting other children's mistakes

Based on these 8 situations defined by the teachers, a set of materials (backgrounds, characters, predefined textual elements and objects) was collected and included in the *Communics's* library. As background images, twenty-two (22) pictures including photos of the school building, the classroom, the computer lab, the school corridor, the school entrance, the recreational spaces, and the school garden were collected. Ten (10) images including objects were collected representing elements such as a football ball, a pencil case, and an exercise book. Twelve (12) characters were included representing children and teachers (*Figure 15*). Finally, forty (40) textual elements were prepared and revised. The texts were designed with the aim to help children avoid the blank page syndrome and to guide them when reflecting on the episodes reported (*Figure 16*). All the elements of the library were discussed in order to provide a balanced set of resources to be used as an inspiration and as a source of reflection.

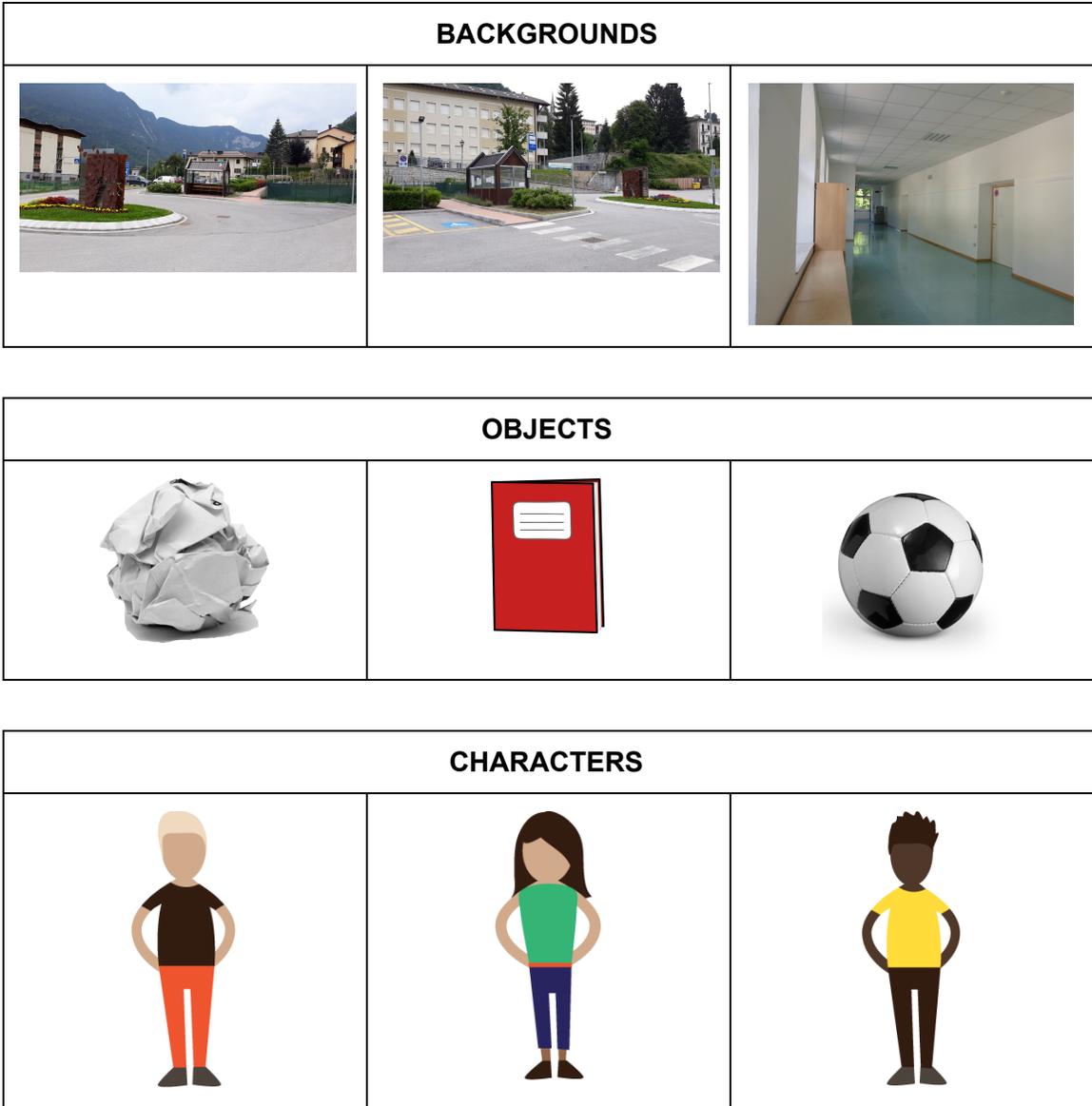


Figure 15: examples of graphical content, including backgrounds, objects and characters used (see *Appendix* for the full list)

PREDEFINED TEXT	
I.	Hi!
II.	Hello!
III.	Bye!
IV.	How are you?
V.	What's your name?
VI.	Welcome in class!
VII.	How did you spend your holidays?
VIII.	What do you expect from this academic year?
IX.	Would you like to do some new experiences with your classmates?
X.	What happened?

Figure 16: examples of predefined texts used (see *Appendix* for the full list)

6.4.2. STAGE TWO: EDUCATIONAL INTERVENTION

Participants. A classroom of 12 children between 9 and 10 years old (5 girls and 7 boys) participated in the intervention.

Procedure. Nine sessions were planned in a period of 9 weeks. In the first session, *Communics* was presented to the children. One of the researchers explained the *Communics'* interface and children were invited to use the tool both collaboratively (in pairs of two) and individually, in order to get them used to practice both conditions (*Figure 17*).

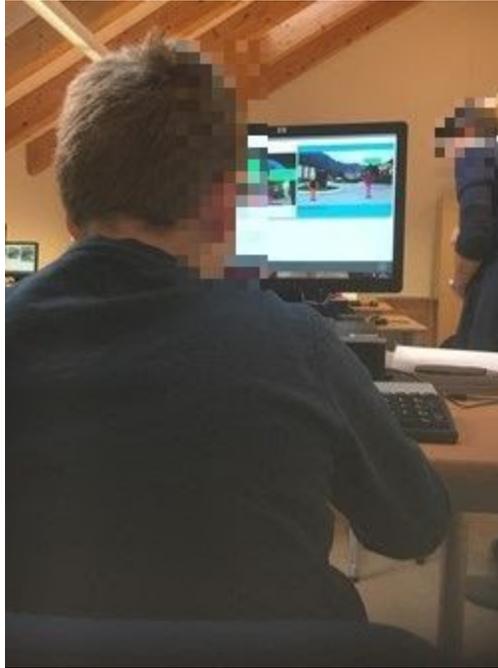


Figure 17: a child using *Communicics*

In the remaining 8 sessions, children were asked to individually, or collaboratively represent and reflect on an episode of situations involving conflicts within the classroom context. For the purpose of this intervention, the children were paired. The pairs were formed by teachers based on shared interests between the two children. The pairs were changed after each session. Every week the theme of the story changed, based on the conflict discussed in class (according to the 8 scenarios defined with the teachers). The sessions consisted of 5 collaboratives, and 3 individual digital storytelling narratives composition (*Table 5*). This was due to the fact that we wanted an equal number of stories composed collaboratively and individually. Moreover, we wanted to focus on evaluating collaborative stories.

Session	Condition	#Children	#Narratives
Pre-session	(Training)	12	-
1st session	Collaborative	12	6

2nd session	Individual	10	10
3rd session	Collaborative	12	6
4th session	Collaborative	12	6
5th session	Individual	12	12
6th session	Collaborative	12	6
7th session	Individual	12	12
8th session	Collaborative	9	5

Table 5: sessions divided per condition, number of children and narratives

During the study sessions, teachers acted as facilitators. Each session lasted around 1 hour and 30 minutes: 10 minutes for the conflict explanation, 1 hour and 20 minutes for the comics composition plus, in the second session and in the sixth session, 30 minutes to write individually a short text, including feedback reporting the experience. During the sessions, a researcher observed and took note on the activity.

6.4.3. STAGE THREE: REFLECTION ON THE STUDY

Participants. The first-language and the special needs teacher, and 9 children (3 of them were absent) participated in this educational stage.

Procedure. Face-to-face semi-structured interviews were conducted with children to gather further information on the storytelling process and to assess its value. Eventually, two face-to-face semi-structured interviews were organized with the two teachers involved in the case study to discuss their experience and evaluate the feasibility of including comic-based digital storytelling in the school curricula.

6.5 RESULTS

The data analysis was performed on (1) *Narratives produced*, (2) *Children's interviews and field observations* and (3) *Teacher's interviews*.

6.5.1. NARRATIVE FORM AND CONTENT

The narrative analysis was performed on both graphical and textual content, following the thematic analysis (Braun & Clarke, 2006) approach. The 63 comics produced - 34 individually and 29 collaboratively - were analysed. Three researchers, independently, revised and, then, identified different dimensions in the narrative production.

Analysis of the narrations' structure. For what concerned the collaborative stories, all the 29 stories had a beginning, 27 had a conflict rising and 24 a conflict overcoming, 26 reported a conclusion. Regarding the individual stories, 15 out of 34 stories presented a beginning, 15 a conflict rising, 17 a conflict overcoming, and 14 a conclusion (*Table 6*). From this analysis, it emerged that children who created the story in a collaborative way composed stories that presented most of the time a complete structure. As a matter of fact, a beginning, a conflict, a conflict overcoming and an end, were included in most narratives. In this sense, it seemed that children collaboratively reflected on the situations involving conflict. Individually, children compose narratives that, for the greater majority, did not present the complete structure; in this sense, often, children created narratives in which they did not present a conflict nor reflect on it.

Conditions	Beginning	Middle - conflict rising	Middle - conflict resolution	End
Collaborative Digital Storytelling	29	37	24	26
Individual Digital Storytelling	15	15	17	14

Table 6: representation of the analysis of the structure of collaborative and individual narration divided per beginning, middle - conflict rising-, middle - conflict resolution - and end

Valence. Since the task was to produce a narrative presenting a conflicting situation within the classroom and a reflection on the solution, we performed a valence analysis to assess whether the participant (i) changed the narrative to a positive situation (positive valence), (ii) emphasized the negative aspects of the story increasing the conflict reported (negative valence) or (iii) maintained the pre-existing narration without any clear positive or negative valence (neutral valence). Regarding the collaborative stories, 24 stories reported a resolution of the conflict; 3 a negative stance, while 2 maintained a neutral stance. Considering the individual condition, 15 stories reported a resolution; 17 a neutral stance; while 2 reported a negative stance (*Table 7*). It has to be noted that the stories that did not present a conflict were identified as neutral. During the collaborative sessions, it seemed that children reflected on the conflict emerged, and presented, most of the time, a positive solution. In this sense, only 2 stories remained neutral. On the contrary, when working individually, most of the stories created did not present a resolution, but narratives without any clear positive or negative valence.

Conditions	Positive Valence	Negative Valence	Neutral Valence
Collaborative Digital Storytelling	24 (e.g. Fig. 20)	3 (e.g. Fig. 18)	2
Individual Digital Storytelling	15 (e.g. Fig. 21)	2 (e.g. Fig. 19)	17

Table 7: representation of the analysis of the structure of collaborative and individual narration divided per positive, negative and neutral valence

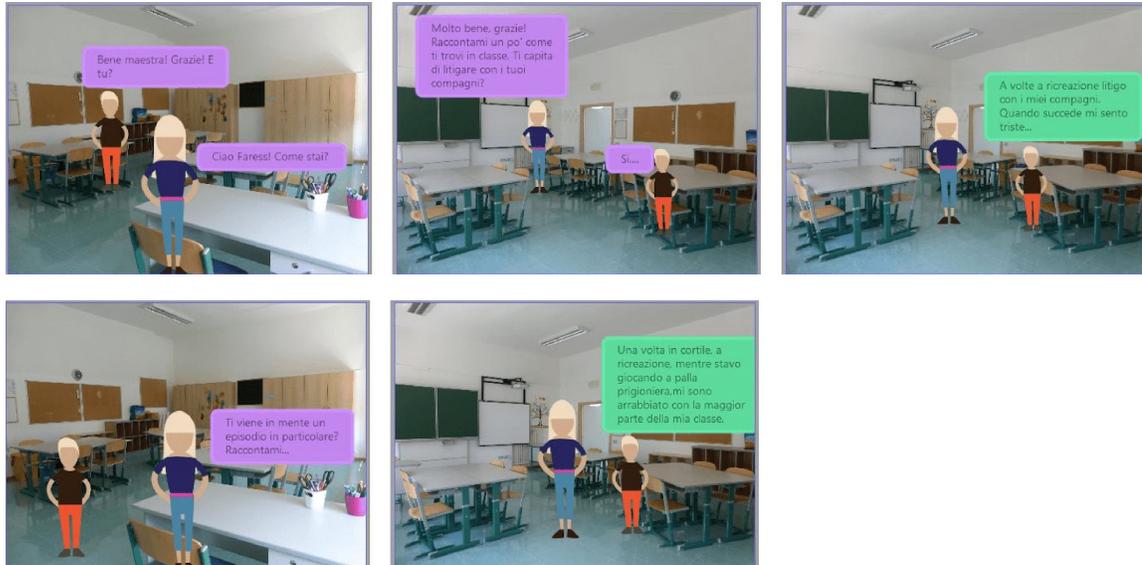


Figure 18: an example of a collaborative digital storytelling with negative valence



Figure 19: an example of individual digital storytelling with negative valence



Figure 20: an example of collaborative digital storytelling with positive valence



Figure 21: an example of individual digital storytelling with positive valence

Meaningfulness. For meaningfulness, we intend whether the story created makes sense and has a precise meaning for the researchers. In particular, we indicate as meaningful a story that incorporates the appropriate amount of images, objects, text, and characters, and it is coherent with the themes represented. Collaboratively, children compose stories that were mainly meaningful (28), while only 1 story was meaningless (Table 8). Individually, children propose 15 stories without meaning, and 19 with meaning. It emerged that while collaborating, children presented stories that for the readers were meaningful, individually they weren't totally understood from the readers' point of view.

Conditions	With Meaning	Without Meaning
Collaborative Digital Storytelling	28	1
Individual Digital Storytelling	19	15

Table 8: representation of the analysis of the structure of collaborative and individual narration divided per stories with meaning, and without meaning

Comic strips analysis. In order to evaluate the formal structure of the comics produced, we consider the number of panels (i.e. the individual frame that composed a comic strip) and the number of word balloons (i.e. the occurrences of speech or thoughts by a given character in the story) included in the comics. Moreover, in the collaborative narratives, we examine also the single contribution, in terms of word balloons, of each child. Finally, also the time taken to complete the story was considered. Regarding the length of the comics, children created collaborative narrations composed on average by 11 panels (max=30, min=6, SD=6); while individual narratives were shorter with an average of 6 panels (max=10, min=5, SD=2). Mann–Whitney test indicated that the difference was significant ($U= 699$, $p <.01$). The average number of word balloons inserted in the collaborative narrations was 20 (max=57, min= 6, SD=10); while in the individual narrative the number decreased with an average of 12 (max=20, min=3, SD=4). Also in this case, the difference was statistically significant ($U= 704$, $p <.01$). Collaboratively, the contribution of each child was well balanced. The average number of word balloons inserted by the first child that contributes to the story was 10 (SD=6), while the peer’s number is 12 (SD=8). Considering the time taken, children spent on average 79 minutes when creating comics collaboratively (max=114, min=39, SD=20); while they took on average 46 minutes (max=65, min=19, SD=14) when working individually, thus taking less time compared to collaborative sessions ($U= 796.5$, $p <.01$). In summary, the analyses show that collaborative stories are composed by more panels and word balloons than individual ones, and that participants took more time to create comics in collaborative sessions rather than in individual sessions (*Table 9*).

Narrative elements	Collaborative Digital Storytelling	Individual Digital Storytelling
Panel	11 (SD=6)	6 (SD=2)
Word Balloon	20 (SD=10)	12 (SD=4)
Word Balloon (Child 1)	10 (SD=6)	\
Word Balloon (Child 2)	12 (SD=8)	\
Time	79 (SD=20)	46 (SD=14)

Table 9: narrative elements divided per collaborative and individual digital storytelling session

6.5.2. CHILDREN'S SHORT FEEDBACK TEXTS, INTERVIEWS AND OBSERVATION

The data collected for the investigation on children's experience consists of a total of 22 short feedback texts (as 2 children were absent in the second session) collected in two sessions, 9 interviews (as 3 children were absent in the last session) and the field notes from observations. The data analysis includes the transcription, and then the coding, using the thematic analysis with a deductive approach (Braun & Clarke, 2006), among three researchers. At the end of the coding, the three researchers met up to revise the results collected, and disagreements were revised till researchers came to an agreement.

Comics as a meaningful genre. From the observation, it was noted that children were positively surprised to use this type of narration at school. During the first session, in fact, they were excited to use comics when creating stories during class activities. However, it was noted that the enthusiasm persisted in the subsequent sessions. In the interviews, eight children expressed their enthusiasm when using it as a genre for narratives. A child, for example, said: *"I like to use comics because you can express yourself as you like. It is not a traditional school text in which you have to use only words; via comics you can write your story using fewer words. You can also use*

backgrounds and characters. It's nicer than the traditional approach because it's really interesting. It is not like a traditional paper-based text which I have to give to the teacher and it is full of grammatical mistakes; here, I can express myself as I want." (P5) One child mentioned that he preferred to use the common narration. He said: *"(..) with comics you have to think with your brain because you can lose track of the story, and then you may not understand it anymore. In traditional books, I used to skip a lot of pages, and I can't do that with comics."* (P3)

Predefined textual elements. When asked about the use of predefined textual elements in the interviews, five children reported having considered them in their stories. They motivated the use of the predefined text for different reasons: to satisfy curiosity, to avoid writing the text, to prevent grammar mistakes, and to inspire the story composition. One child, for example, said: *"I look at the text because it is already written. I do not like to write and I used the predefined text."* (P3) The remaining four children reported that they did not use the predefined text at all. They were all aware of this feature but they actually preferred to write the text on their own, instead of going through the provided list of sentences.

Engagement. From the short feedback texts written by the children, it emerged that, on one hand, they liked working with *Communics* as it was perceived as fun, engaging, and motivating. In particular, they enjoyed using technology and practicing a new way of narration in the context of school. A child reported that he would have liked to train with *Communics* also at home: *"I would like to have Communics also at home; I like it."* (P2) Another child wrote: *"Thanks to this software, I discovered a new way of working."* (P1) In the interviews, it emerged that every children enjoyed the use of the tool, and appreciated this type of activities wishing to extend it to other topics as well a child, for example, suggested: *"I think that Communics can be also used during geography or history lessons, but maybe not during maths."* (P6)

Narrative for reflection. Most children (8) evaluated *Communics* positively. Four children (4) mentioned that through *Communics* they could discuss with a classmate in regards to a specific argument, and come to an agreement. A child wrote: *"The teacher gave us the tool to reflect on specific conflicts that we have during playtime; the teachers let us*

understand the reasons that lead to the rising of the conflict, and to solve it, and, finally, the methods that can help us in avoiding it; eventually, via comics we can understand our mistakes and we try not to do it again.” (P5)

Content library. It was noted, in the observation, that several times teachers were asked to upload new graphical material in *Communics* to have more content to choose from, for the story composition. Again, in the short feedback texts, they reported that they would have liked to upload their own drawings and different graphical material, in particular new backgrounds and characters. A child wrote: *“I would want to have characters that look like me, and other backgrounds.”* (P6) Once again, in the interviews, it emerged that children feel the need to have a greater set of graphical content. Three (3) of them would have liked to have other content uploaded in *Communics*, mostly characters and backgrounds. A child said: *“I wanted more characters as I can represent more people around me, and the story can be more inclusive.”* (P9)

Teachers as facilitators. During *Communics* use, the teachers acted as facilitators and children reported, in the interviews, that they were always available when they asked for help. Teachers assisted children in advancing the story plot, or checking for grammar mistakes. In this sense, teachers did not instruct the students on how to use the digital tool, but they mainly supported them in structuring the story.

Collaborative and individual narratives. During the collaborative sessions, children did not find difficulties in structuring the plots, while individually teachers had to assist five out of ten children in producing their narrative. In the interviews, 7 children discussed preferring to work collaboratively while 2 individually. On the one hand, children (7) like better to work in pairs as they can create a story with a classmate, alternate in composing the narrative, compare different visions of the story, avoiding the possibility of running out of ideas while being less demanding in terms of effort needed to create a story. On the other hand, they reported that while creating narrative individually, they were more likely to run out of ideas which makes the narrative composition not challenging and boring. Those children (2) that preferred to create the narrative individually did not like to compromise with the classmate for the story structure, and

kept to have arguments with them. For these children, working individually meant being faster, while avoiding compromises.

6.5.3. TEACHERS' INTERVIEWS

The interviews lasted around 30 minutes for each teacher. The interviews' transcriptions were analysed using thematic analysis with a deductive approach (Braun & Clarke, 2006). Researchers individually examined the interviews. Then, researchers meet up, review the analysis, and come to an agreement while disagreement emerges. The results are reported below.

Children engagement. In the interviews, teachers stressed the fact that the children are digital natives. For example, a teacher said: *"Nowadays students are fed up with pen and paper and traditional learning methods. We always have to look for something new, which is even more similar to their world, and their world includes technology."* (T2) In this view, the technology introduction in the school curricula is essential to get children motivated, engaged and focused during class activities. A teacher said: *"If you create a paper-based poster, nobody cares and it remains unused. Using digital tools and new techniques that are different from the traditional ones, instead, means that children are more interested and engaged. They feel as if they are actively participating in what they are doing."* (T1)

Teachers and technology. Teachers were positive about introducing technology in their lessons, also because children, through this project, could understand that technology does not imply only fun. Still, it can also have an educational purpose. A teacher said: *"We have to teach them that these technologies have to be used in a conscious and useful way."* (T2) Moreover, teachers reported that children are used to working on computers, considering traditional digital-based tool for writing (i.e. *Word*²), or social media (i.e. *Facebook*³ or *Instagram*⁴), while in this project they learn to examine other tools tailored specifically for the children's education.

² www.office.com

³ www.facebook.com

⁴ www.instagram.com

Storytelling with comics. Comics were positively perceived by the teachers who regarded them as a genre that can afford the opportunity to identify with a specific character, while personally experiencing the situations reported in the narrative. A teacher said: *"In this way, they can live the experience first-hand."* (T1) In this context, children could benefit from discussing the conflict by focusing on the characters' thoughts instead of spending time describing the situations reported. Through comics, in fact, children can use backgrounds, characters and objects to represent the physical place of the situation.

Easiness in using Communicics. Teachers appreciated the easiness of *Communicics* and the fact that the children did not need long training to understand how to use it. After the first brief training, in the first session, participants did not need any further guidance. Teachers also appreciate the innovative tool that can be used for an educational activity while being engaging and motivating. In this context, *Communicics* represented a way for children to express themselves, interact with each other, create a story, use logical thinking, while reflecting on the conflict episodes. A teacher said: *"They can elaborate, and re-elaborate the conflict, and then find the solution that allows them to cooperate."* (T1)

Regulatory effect of the tool. Teachers reported that children usually work individually during class hours and that they are not used to collaborating with each other. In the rare case when collaboration activities are settled, teachers reported that the class becomes ungovernable due to the turmoil that children generated as they are not able to wait for their turn. At the beginning of the study, teachers reported that they were attracted by this feature of the tool, as not many didactic digital tools support this practice. In this sense, the turn-based comics creation supported by *Communicics* can facilitate the children in managing the turn-taking, keeping the control when they have to wait their turn to continue the comics. Regarding this feature, a teacher reported that: *"In such a hectic world where they also struggle to raise their hands to express themselves, this becomes a moment in which they know that they have to wait for the other's proposal, possibly re-evaluate it, accept it, or propose something else, so in my opinion it becomes a re-elaboration tool."* (T1) And again: *"If I have to build my story on an individual level I*

organize my ideas and I write them down. With someone to get along, I have to reorganize and do an extra step; that's a skill that is right that emerges at school.

Collaboration. Furthermore, collaboration through *Communics* could not only lead children to understand turn-taking concept, but also to " (...) *learn to coordinate, to respect, and to tell a story.*"; and again "*Communics help them in the process to build capacity for dialogue and confrontation.*" (T1) Collaboration allows children to work and create a narrative together. In this way, they learn and grow up from each other. During the interview, it also emerged the easiness in learning together with a classmate. A teacher said: "*In this case, it is not the teacher who intervenes to help the student but it is the other student, and this is doubly advantageous because communication between same-age peers is much simpler and effective than between persons with generational differences.*" (T2)

Individual sessions. From the teachers perspective, children enjoyed much more working individually rather than collaboratively. According to the teachers, while working individually, children can organize their ideas, and write them down with the help of the teacher; on the contrary, collaborative storytelling needs compromises, discussion, dialogue and re-elaboration. A teacher said: "*Surely in individual work everyone can express herself freely. Students are used to working individually, while they have not many occasions to work collaboratively.*" (T1)

6.6 DISCUSSION

In this section, the results are discussed considering the three sub-research questions. We describe the significance of our findings in light of what was already known based on the literature review, and to explain any new understanding.

6.6.1 COLLABORATIVE AND INDIVIDUAL DIGITAL STORYTELLING

The first sub-research question investigates the differences in the use of comic-based digital storytelling while working collaboratively (i.e. in pairs) or individually. From the teachers' point of view, children successfully compose a narrative together with a classmate. While collaborating, children can face, and elaborate the situation

represented, and consequently learn from each other. Moreover, teachers appreciated the turn-based aspect of *Communics*. This aspect gave children the opportunity to practice collaboration while working on the same narrative, waiting for the turn while being engaged and motivated by the peer. As it was noted in Rubegni et al. (Rubegni et al., 2019), children often face problems while collaborating, as it is difficult to establish a turn-taking mechanism in traditional school activities; with a tool like *Communics* this problem can be overcome. Teachers also appreciated the individual story composition, as children can still practice with the narrative elaboration, including the development of story path and the dialogue presented. For the teachers, and in general at school, it is essential to practice these aspects as they can also determine the children's abilities needed for their personal and professional future. Finally, during the collaborative activity, children seem to require less guidance from the teachers. Working collaboratively in pairs, in fact, helped children in generating ideas on the comic plot easier compared to the individual sessions. In the individual condition, children required further support from the teachers for helping them in structuring the narratives. Considering the children's opinions, most of them (7) preferred to work in pairs as they could compose a story together with a classmate thus allowing them to alternate the narrative composition, compare different perspectives about the story's plot, avoid the problem of running out of ideas and being less demanding in terms of effort. Only two (2) children enjoyed creating the narrative individually as they did not like to compromise with the classmate for the story plot. For these children, working individually meant to work faster, as they do not spend time to face discussions for the story's creation. Regarding the collaborative narratives created, it has to be noted that children, in general, composed narratives that for the greater majority present a complete structure, including a beginning, a middle - considering both the conflict rising and the conflict resolution - and an end. Individually, children create narratives that, mainly, do not report this structure. Moreover, narratives composed collaboratively were more meaningful and report a complete structure (in terms of beginning, middle and end), that the ones created individually. Still, collaborative narratives report, most of the time, a positive valence in which the conflict was positively resolved; while individually the conflict did not represent any clear positive or negative valence, remaining neutral. Finally, collaboratively, children construct narratives that were longer in terms of panels, including a greater amount of word balloon; while individually they were shorter.

6.6.2. CHILDREN'S PERCEPTION

The second sub-research question concerns the exploration of the children's perception in using digital storytelling and comics for educational purposes for the reflection on situations involving conflicts. From the observations, it emerged that children were positively surprised to use this type of narration at school; even the enthusiasm in using comic-based digital storytelling at school persisted in the subsequent sessions. In the interviews, it emerged that children would have liked to continue the project as they appreciated the use of *Communics* for both composing the stories and discussing conflict situations during the class-hours. Every student was familiar with the comics' structure, and found really motivating and engaging working with this genre also at school. In particular, they appreciated having the possibility to express themselves instead of spending a lot of time on other aspects, such as correcting grammar, or avoiding lexical mistakes. Still, they did not feel delighted in expressing themselves through *Communics'* library. They reported, in fact, that they would have liked to upload their own drawings and different graphical material, in particular new backgrounds and characters. Moreover, *Communics* was indicated by children as an educational tool for understanding the structure of a narrative, including a beginning, a middle and an end. Finally, the predefined text was used only by half of the children for mainly inspiration. It was not used as much as expected.

6.6.3. TEACHERS' EXPERIENCE

Finally, the third sub-research question includes teachers' consideration in introducing digital storytelling, comics and *Communics* in the school curricula. In general, teachers identified many benefits in the introduction of technology in the educational context. First of all, teachers stressed the fact that the children are digital natives, and that the school has to meet the new needs of the children. Introducing technology at school, in fact, can lead to a more in-depth focus and engagement in the lessons. They reported that technology needs to be also used at school to get children aware that technology does not only imply games. Thirdly, teachers appreciated the easiness in using *Communics*, as children did not need a long training to learn how to use the tool and they could easily focus on the narrative composition. Finally, in line with Piaget theory of the operational stage in which children at this age can struggle with conceptual and abstract aspects

(Ginsburg & Opper, 1988; Piaget, 2002, 2013) teachers reported that, individually, children had some issue, to create a complete and meaningful plot without their help. However, the genre of comics results to be highly motivating for children in creating meaningful and significant plot as they can combine both graphical and textual content.

6.7 CONCLUSION

This chapter presents an empirical study investigating how comic-based storytelling can support primary school children in reflecting on conflict situations that might arise in the class.

In particular, the study investigates three sub-research questions concerning: (1) the potential of collaborative and individual digital story composition, (2) children' experience in using digital storytelling, and comics for educational purposes for reflecting on situations involving conflicts, and (3) teachers' perception in including the storytelling technology and digital comics for school activities. In order to address the research questions, a case study in a primary class located in Pieve Tesino, near Trento, in Italy, was conducted.

In general, the introduction of comic-based digital storytelling in an educational context seems a promising way for involving children in reflecting on situations involving conflicts in the classroom context. A digital tool, such as *Communics*, can help to facilitate this practice, being engaging and easy to use while entirely educational. The technology adoption at school is essential to get children engaged and motivating while getting their full attention. In particular, the *Communics* technology was appreciated as neither children nor teachers required a long period of training. *Communics*, adopting, comic-based digital storytelling, was considered as fully educational. This was due to the presence of an entire on-topic library of graphical and textual elements, the possibility for children to express themselves while interacting with a peer, and the opportunity to create a story, using logical thinking and reflecting on the episode reported.

The specific use of comic-based digital storytelling, in this context, has both negative and positive aspects. The use of comics as a narrative genre was appreciated by the children, since they had the possibility to take different perspectives while experiencing

"first-hand" situations. In particular, the combination of textual and graphical elements facilitated the reflective process. The content library, in fact, worked as a place for satisfying curiosity, for inspiring story composition, and recall to the mind situations involving conflict. However, the predefined elements were not appreciated by all participants, as it was used only by half of the class. Moreover, children asked more than once to upload new graphical elements to have more content to choose from. Some children suggest also to upload some drawings created by them.

Finally, the study regarding the investigation of individual and collaborative storytelling composition reports many findings. On the one hand, the collaborative creation of stories was perceived by children as difficult in compromising with the peer. Still, it also had many benefits such as being more fun and engaging while being more purpose-oriented. On the other hand, during individual storytelling, children were faster in composing the story, but they ran out of ideas more frequently and the teacher's guidance was more requested. Finally, it seems that children did not reflect on the conflict during the individual activity as much as when working in collaboration. In the individual activity the stories, in fact, were less structured, and meaningful. At the same time, the conflict, most of the time, was not resolved (as shown in the Narrative analysis and Valence subsections).

In conclusion, the study provides a first contribution in investigating the collaborative use of comic-based digital storytelling in classroom activities, pointing out the added values that confrontation and co-narration between children can bring in the class activity. At the same time, the results indicate the initial barriers that collaborative storytelling can bring and highlight its differences considering individual storytelling activities.

6.7.1 LIMITATIONS AND FUTURE WORK

Some limitations should also be considered. A limitation of this work is that it focused on a relatively small group of participants and the extension to a broader sample would improve and reinforce our results. Therefore, we plan in further studies to include other primary school classes and more teachers to fully understand the implications of comic-based digital storytelling for reflecting on situations involving conflicts. Future investigations should also consider the novelty effect since it was the first time teachers

and students were engaged in comic-based storytelling for reflecting on situations involving conflicts. In future studies, we can benefit from the involvement of a developmental psychologist who can provide insights or additional scenarios on conflicts in the school environment. Relatively to the design of the tool, it will be interesting to involve children in the design of the system. Moreover, giving them the possibility of drawing and inserting their own pictures can be essential to investigate the backgrounds' function as places for conflicts' resolution. Finally, we plan to examine the use of comic-based digital storytelling for other purposes, such as teaching geography or history, as children suggested.

6.7.2 ACCESS TO THE FIELD

This study was designed and carried out in a closed collaboration between the teachers and the researchers. Teachers and researchers got in contact after participating in an educational festival, named Educa. Before collecting any data, the school and the research centre involved in the project signed an agreement to cooperate in the study. The school informed parents about the project, making it clear that participation was voluntary and that all data would remain confidential. Children were told about the aims of the study by the teachers and the researchers. Children's data were anonymised for the analysis and stored on a secure server. The activity described in this thesis took place in the computer lab of the school. Teachers acted as facilitators, ensuring that children did not feel under any pressure during the study.

7. CASE STUDY: YOUNG STUDENTS AND ETHICS, GENDER AND RELIGION CONFLICT

7. CASE STUDY: YOUNG STUDENTS AND ETHICS, GENDER AND RELIGION CONFLICT

Digital storytelling has been used in different educational contexts for supporting students' engagement, creativeness, and digital literacy among others, as shown in the literature review (*Chapter 2*). In this case study, we believe that digital storytelling can represent a unique way for young students to reflect on ethics, gender and religions conflicts while promoting a possible positive attitude. In this context, young students from a middle school represent the sample community to explore whether this means can successfully support the reflection on situations involving conflictual episodes. Young students at this age, in fact, need to learn how to deal with different discriminated situations, consider how stereotypes are used, and identify different dynamics in order to consider positive and negative attitudes.

7.1 PROBLEM DEFINITION

Young teenagers experience or witness situations related to cultural, sociological and historical dissimilarities among different communities. They are inclined to perceive current phenomena through other sources (such as media, parents, friends or teachers), and they do not have outlets to build their personal perspective (York, 2015). In this context, it might be useful to provide a support that can assist them in facing these situations. In this study, digital storytelling is proposed as an approach for the elaboration of conflictual situations involving gender, religious and ethnic stereotypes.

This support, in fact, can facilitate the construction of digital narratives, being potentially personalized, diversified in terms of scenarios, compelling, engaging while providing real-life examples of different situations (Robin, 2018). Still, digital storytelling might support meaningfully the discussion about specific topics, the comprehension of difficult subjects and the articulation of students' thoughts, among many other benefits (Robin, 2018) (Alismail, 2015).

Specifically, comics is employed as a genre of digital storytelling. The combination of both graphical and textual elements for the comic-based narration can be proposed as a motivating, fun and engaging genre to meaningfully express themselves (Norton, 2003). Moreover, in order to support the composition process, the use of a library of graphical and predefined textual materials as a scaffolding mechanism is suggested (Mencarini, 2015). Again, young teenagers might appreciate the benefits of using comics, which

facilitates the possibility to take different perspectives while remaining engaged by technology (Farinella, 2018).

In this case study, we discuss a 10-months work in which *Communicics* is adopted in a secondary class of 23 students for supporting the reflection on daily situations involving religious, ethnic and gender discrimination. In particular, we focus the investigation on three specific aspects: (1) the use of comic-based digital storytelling for the reflective practice, (2) the experience of the young students in adopting comic-based digital storytelling, and (3) the teacher's perception in including this tool in the school curricula. The procedure of the study is divided in four steps. As a first step, we assess the intervention in this specific educational context together with the teacher involved in the project. Secondly, we collect both graphical and textual content to be included in *Communicics*, needed for the digital narratives production. Thirdly, students elaborate the digital narratives via *Communicics* and respond to a questionnaire. Finally, in the fourth step, a focus group with students was held to investigate particular in-depth aspects of the narrative production and a semi-structured interview with the teacher was conducted to collect information on the experience.

7.2 RESEARCH QUESTION and SUB-RESEARCH QUESTIONS

The research question concerns the investigation on how comic-based digital storytelling, supported by *Communicics*, can facilitate young teenagers in reflecting on situations involving gender, religion and ethnic stereotypes. In particular, we focus on exploring three specific sub-research questions of the leading research question.

7.2.1. FIRST SUB-RESEARCH QUESTION

S-RQ1: *How can comic-based digital storytelling facilitate reflective practice within a class of secondary school students?*

From the literature review (*Chapter 2*), it emerged a gap in the investigation of comic-based digital storytelling's use for facilitating reflective practice within the

community of young students. Again, in the literature review it emerged that young students do not have many outlets to reflect on situations involving discrimination (York, 2015). In this context, in many studies (Bolton, 2010; Loughran, 2002), narration is strongly indicated as a means to support the reflection practice. Within this framework, digital storytelling is used as a means for elaborating narration. It can embrace many benefits such as making the reflection concrete and visible, enhancing teaching and learning practice, and being considered highly motivating (Dreyer, 2017; Sanders et al., 2018). Through this sub-research question, we aim to investigate how digital storytelling can support reflective practice among young students.

7.2.2 SECOND SUB-RESEARCH QUESTION

S-RQ2: *How do young students experience the use of comic-based digital storytelling for reflecting on situations involving discrimination?*

As shown in the literature, digital storytelling can represent an engaging and motivating tool for the narrative production (Di Blas & Boretti, 2009; Werner et al., 2009), while providing real-life examples of situations, different scenarios and active learning in the young students' community. Moreover, it was indicated as beneficial also for the following reasons: increasing creativity (Di Blas & Boretti, 2009), supporting literacy (Rubegni & Landoni, 2015), and enhancing engagement (Rubegni & Landoni, 2015). In this context, we investigate young students' perception of using comic-based digital storytelling for reflecting on situations involving stereotypes. In particular, we focus on investigating the use of both graphical and textual elements for supporting creativity, expressiveness and satisfaction. Still, we explore the aspect of collaboration, supported by *Communica*, that can represent a promising aspect for enhancing the process of reflection, stimulating students in discussing and further considering the narrative's production.

7.2.3 THIRD SUB-RESEARCH QUESTION

S-RQ3: *How do teachers experience the use of comic-based digital storytelling for conflict reflection?*

The introduction of technology in the educational context, and in particular of digital storytelling was proposed in different works such as the one presented by Rubegni and Paolini (Rubegni & Paolini, 2010). The model introduced by these authors concerns both the investigation on different roles that teachers can embody in introducing technology in an educational context and their perception in including digital storytelling in the school curricula. Following these lines, we focus on investigating teachers' experience in including technology, digital storytelling and comics for reflecting on situations involving discrimination on gender, religion and ethnicity.

7.3 METHODOLOGY

These sub-research questions are explored by developing a case study. In particular, we used a qualitative research approach, integrated with quantitative methods. This integration allows a more complete and synergistic use of data than do separate quantitative and qualitative data collection and analysis: on the one hand, quantitative method includes close-ended data, while qualitative consists of open-ended information (Creswell, 1999). In the research, the combination of these methods fully support the elicitation of the three specific sub-research questions and enable to gather a rich set of data to be discussed later in the thesis. Qualitative data are collected through ethnographic observations (Reeves et al., 2008), young students' written interviews (Weiss, 1994; Berg, 2004), narratives composition produced by the children (Duncan & Smith, 2012; Gibbs, 1988), and teachers' interviews (Diefenbach, 2009), while we collect quantitative data through specific narratives aspects (Franzosi, 2009).

Ethnographic observations in classes are used for identifying behavioural patterns. In particular, we focus on observing collaborative dynamics, teachers' role, and plot's mode of expression.

Written interviews with the young students are employed to gather information at the end of the experience. The following dimensions are, therefore, explored: (1) *Degree of creativeness*, (2) *Degree of satisfaction*, (3) *Degree of expressiveness*, (4) *Positive and negative aspects of using comics-based digital storytelling*, (5) *Experience of creating collaborative narratives*, and (6) *Meaning of the activity*

Moreover, we organized a focus group among young students to investigate in-depth specific aspects of the experience. In the focus group, therefore, we focused on the following aspects: (1) *Meaning and perception of collaboration in the comic production*, (2) *Comics as a genre for reflection practice*, (3) *Library content, including both graphical and textual elements, utilization*, (4) *Creativeness, satisfaction and expressiveness in comics production*, and (5) *differences in using paper and digital-based storytelling*.

Digital narratives are analyzed using the reflective practice model, introduced by Gibbs (Gibbs, 1988). Gibbs points out six phases that structure the narratives composed following the reflective practice model. The author develops a reflective model cycle to elaborate, reflect and learn about a specific experience in six phases, as follows: (1) *description*, (2) *feeling*, (3) *evaluation*, (4) *analysis*, (5) *conclusion*, and (6) *action plan* (Figure 22). This model is used as a basis for assessing the narrative production by the students.



Figure 22: Gibbs' reflective practice model

Still, some aspects, such as the graphical and textual elements use, of the narratives produced are investigated.

Finally, teachers' interviews are conducted in order to elicit educational benefits in using comic-based digital storytelling in the school curricula. The following questions are, therefore, addressed to the teachers: (1) *overall intervention's experience* (2) *technology introduction* and (3) *comics and technology use*

7.4 PROCEDURE and PARTICIPANTS

The study was conducted in a middle school named Winkler located in Trento, in the northern area of Italy. We involved a class of 23 secondary school students. They were between 12 and 14 years ($M=13$, $SD=0,34$), balanced for gender (13F and 10M). Moreover, a teacher of history and Italian, three researchers and two technicians participated in the study. The study lasted 10 months, from April 2018 to January 2019. The overall intervention in school was articulated in four stages. The first stage, the intervention design, took 3 months (from the end of April, till the end of June). The second stage, the content creation process, took 3 months (from September till October). The third stage, the educational intervention, took almost a month (December). Finally, the last stage, the reflection on the experience, was organized in January.

7.4.1 STAGE ONE: INTERVENTION DESIGN

Participants. The teacher of history and Italian participated in the first stage.

Procedure. We settled two meetings with the teacher in order to collect information for integrating digital comics activities in the school curriculum. In the first phase, we briefly trained the teacher on the system. Secondly, the teacher tried out individually the digital tool in order to create a digital comic. Thirdly, we interviewed the teacher to:

- examine the motivations for this type of intervention.
- Investigate the students' literacy and technology ability.
- Establish in which context the comic-based digital storytelling for the students' reflection could have been involved.
- Discuss the specific situations on which to focus the narrative.

It emerged that the teacher was keen to include in the school curricula an engaging and highly motivating means for students to reflect on daily situations involving stereotype

and discrimination. These situations were identified together with the teacher in three topics: religion, ethnicity and gender.

7.4.2 STAGE TWO: CONTENT CREATION PROCESS

Participants. The teacher of Italian and History, and a classroom of 23 children participate in the second stage.

Procedure. The second stage was aimed at preparing the content, both graphical and textual, for *Communics*. The content creation process included one interview with the teacher and two focus groups involving the students. In the interview and focus groups, participants were asked to discuss situations involving discrimination or prejudice targeting daily conflictual aspects of gender, religion, and ethnicity. Based on the situations discussed, we built together with the teachers an initial set of materials (images for backgrounds, objects, and characters as well as predefined textual expressions) and uploaded it in *Communics*. As background images, twenty-one (21) pictures including different scenarios, and two shops were gathered. Eight (8) characters were included representing young students and children. Eight (8) images including objects were collected representing elements such as a football ball, and a barbie (*Figure 23*). Finally, seventy-three (73) textual elements were designed with the aim to help children in avoiding the blank page syndrome and in reflecting on the situations (*Figure 24*). All the elements of the library were discussed in order to provide a balanced set of resources to be used as an inspiration source of reflection.

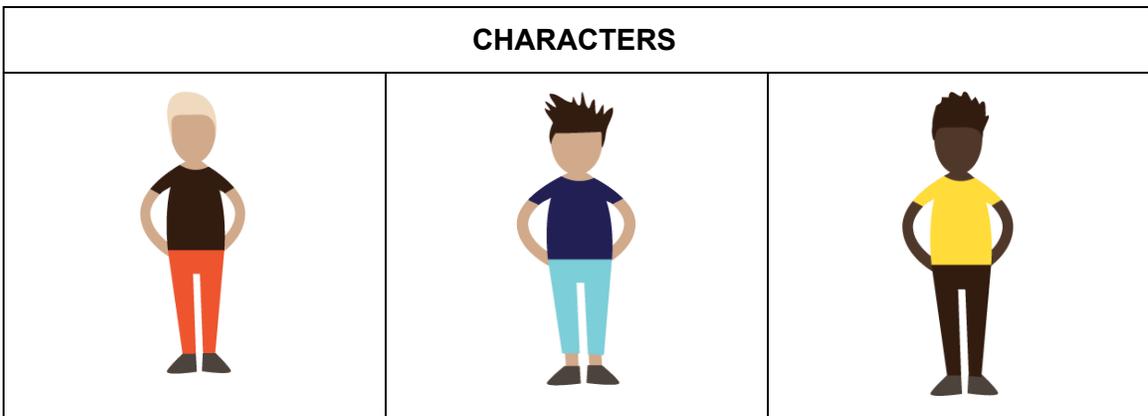


Figure 23: examples of graphical content, including backgrounds, characters and objects used (see *Appendix* for the full list)

PREDEFINED TEXT
Hi Thanks How are you? Where are you from? You? Where? Why? What are you saying? What are you doing? All right!

Figure 24: examples of predefined texts used (see *Appendix* for the full list)

7.4.3 STAGE THREE: EDUCATIONAL INTERVENTION

Participants. A classroom of 23 young students participated in this stage.

Procedure. Three sessions were planned in a period of 3 weeks. In each session, young students were asked to collaboratively represent and reflect on an episode of situations involving discriminations. A specific theme was represented, week after week, as follows: religion, ethnicity, and gender. During this study, participants were paired up, except for a group composed by 3 students. Pairs were formed by students, and remained the same for the three sessions. Each session lasted 1 hour and 30 minutes: 10 minutes for the daily task explanation, 1 hour and 20 minutes for the comics composition plus, in the first session, 10 minutes for a brief train of *Communics* and, in the last session, 30 minutes for responding to a written interview.

7.4.4 STAGE FOUR: REFLECTION ON THE EXPERIENCE

Participants. The teacher of History and Italian and the 23 young students participated in this stage.

Procedure. In the final stage, a focus group (*Figure 25*) was planned with the selected class to deeply investigate the process of producing a digital story and to assess its

value. Finally, a last semi-structured interview was settled with the teacher to gather the perspective of the experience.



Figure 25: the focus group among young students

7.5 RESULTS

The empirical findings emerged from this case study are divided into three paragraphs: the (1) *Narratives*, (2) *Students' observation, questionnaires, focus group, and narrative logs* and (3) *Teacher's interview analysis*.

7.5.1 NARRATIVE FORM AND CONTENT

The narrative analysis was performed on both graphical and textual content, following the thematic analysis (Braun & Clarke, 2006) approach. The 31 comics produced were analysed. Two researchers independently revised and identified the six phases of the Gibbs' reflective practice model (Gibbs, 1988) in each of the stories produced by the young students. Then, in three meetings, they discussed agreements and disagreements. Disagreements were revised till researchers came to an agreement.

Description

First phase definition: in this first phase, the author is invited to describe the initial situation of the represented experience, including, for example, location and people involved.

Narratives analysis: students included a specific beginning of an experience in every comic. At least a background, two characters, and a word balloon including a textual expression were positioned in the first panel of the comic produced by young students. Nine (9) stories did not represent an initial description of a possible conflict escalation, but a strong conflictual situation from the very beginning. For example, P3 started the story with an expression angrily offensive against a black person, without any further explanations. From the second frame, although, it was intended the cause of this discrimination; the black character unwanted participation in a football game. In another story, related to the ethnic aspect, an expression of insult towards a black woman represented the beginning of a story. In the second panel, still, the conflict escalation reason was explained.

Feeling

Second phase definition: in the second phase, authors report dialogues in which they express feelings and thoughts about the experience.

Narrative analysis: nine (9) comics present this phase in which a feeling was expressed. P1, for example, wrote: “*I can not handle this anymore! (. . .) it’s not worthy; I don’t understand why they are doing this to me, maybe because of my skin color*”. P2 wrote: “*Do not cry. . . you do not have to cry. . . show them that you are stronger!*”.

Evaluation

Third phase definition: in the evaluation phase, authors discuss how they would act in a conflictual situation, highlighting both the negative and positive aspects of the experience.

Narrative analysis: most of the comics (15) showed an attempt to represent two perspectives (*Figure 26*); one symbolized by the character that discriminates the victim and the other by the victim. P4, for example, described a conflictual situation in which a Muslim and a Christian discuss the laicization of the school as institution, by referring to the crucifix adoption. In this situation, both of the characters’ perspectives are reported; on the one hand, Muslim explain that every human beings are equal, despite the religion, and that a crucifix does not imply any predominance; on the other, Christians reported that as Italy has a Christian historical past, Christianity has to be also professed at school.



Figure 26: An example of digital storytelling including the *Evaluation phase*

Analysis

Fourth phase definition: the author represents a change of scenario in which another perspective of the situations is reported.

Narrative analysis: ten (10) stories included at least another event in which other people express their critical thoughts on the specific situation represented in the comic. For example, P6 reported the following scenario change: in the first panel, a conflict between a Muslim and an Italian was represented, while in the last panel, a mayor and citizen commented on the episode previously described.

Conclusion

Fifth phase definition: the author expresses how the story could have had a more positive experience for everyone involved. In this sense, the conclusion is identified in

the valence of the comics produced. Since all the stories reported episodes representing a conflictual and discriminant situation, the valence analysis assessed whether the participant (i) changed the narrative to a positive situation, (ii) emphasized the negative aspects of the story increasing the conflict or (iii) maintained the narration valence from the beginning without any clear positive or negative emphasis.

Narrative analysis: three (3) stories emphasized the negative situation, escalating the conflict among the characters (*Figure 27*). Seven (7) did not escalate but did not even challenge the stereotype. Finally, most of the stories (21) elaborated a positive narration in which conflict is resolved or at least overcome. The positive elaboration of stories focuses on a critical reflection of the experience that was overcome by an awareness of diversity through the practice of reflection, and discussion. In the negative elaboration, authors discussed a specific episode involving discrimination, in which, although the potential stereotype comprehension, the characters who discriminate still act negatively. In the comics that do not report a positive or negative elaboration, participants did not escalate or deescalate in any way the discussion on the situation reporting a conflict.

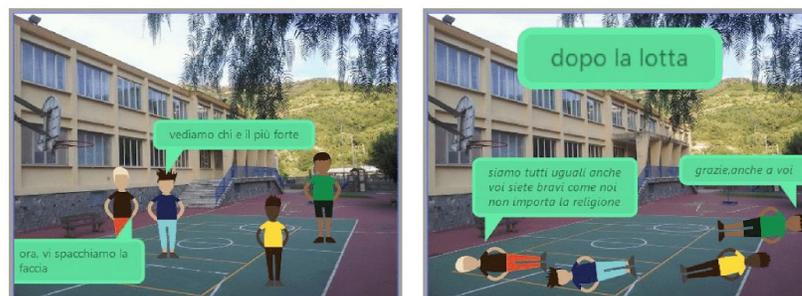


Figure 27: An example of a digital storytelling including the *Conclusion phase*

Action plan

Sixth phase definition: action plan sums up anything the author expresses on how to deal and behave if the episode would occur again in the future.

Narrative analysis: some stories (6) reported expressions or entire panels related to future scenarios (*Figure 28*). Participants elaborated a narration in which in the last panel, a future closer or far away is presented as a demonstration of the conflict's overcoming. For example, in a story concerning an ethnic conflict, in the last panel, P3

represented a situation in which the victim and the persecutor are together with other people emphasizing the concept of equality in which the caption “in the future” appears.

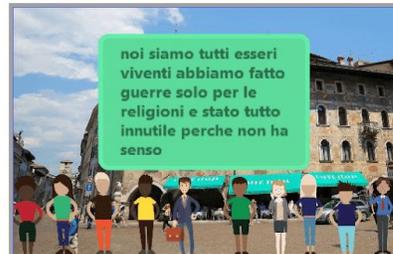


Figure 28: An example of digital storytelling including the *Action Plan phase*

7.5.2. STUDENTS’ OBSERVATION, QUESTIONNAIRES, FOCUS GROUP AND NARRATIVE LOGS ANALYSIS

The data collected for the investigation on students' experience in introducing comic-based digital storytelling for reflective practice consists of observation, questionnaires, focus group and narrative logs analysis. The data analysis includes the transcription, and then the coding, using the thematic analysis with a deductive approach (Braun & Clarke, 2006), between two researchers, of the 19 questionnaires - 4 young students were absent - and the focus group. At the end of the coding, the two researchers met up to revise the results collected, and disagreements were revised till they came to an agreement.

Self-representation

One of the issues that emerged is that several students were not very satisfied with the number of characters included in *Communics*. Although different kinds of characters were added in the library as the main discussed during the initial focus groups with the students, many of them expressed their discontent in not finding the one that they were looking for. P1 wrote: “*I did not find too many characters in the library. I would want more options*”. P2 wrote: “*I thought that I could find the character that I was looking for but there wasn't in the library*”. This discontent leads the students to adopt a character that was not the one that they would have chosen from the beginning, and consequently they may feel forced to identify themselves in others. In the focus group, it emerged that they

empathized with the situations through the characters represented, and that through comics they could identify in different perspectives of the situations described.

Objects

Object elements are not discussed in many questionnaires. In general, students like them as they can add more details to their panels, but they are not perceived as sufficient in terms of variety. P3: *“Some objects can be added. For example, I was looking for a gun, but I did not find it”*. P4: *“There weren’t too many objects to be added in the comic strips.”*

Backgrounds

Most of the participants appreciated the background variety. P3: *“I really like comics, and to combine characters and backgrounds.”*. P5: *“Backgrounds inspired me in producing the narratives.”*. Still, two (2) participants did not find the backgrounds that they wanted to use in their narratives. In the focus group, most of the participants reported that they did not want to have other backgrounds as otherwise there would be too many choices and they would have to spend a lot of time, looking for the right one. Students, moreover, reported that some scenarios, challenging to represent, were easily reported through visuals; still, graphical elements were identified as easier, in terms of expression, and even more engaging to drag in the panels than traditional text.

Panels and Time.

It emerged that, on average, students produced comics composed by 8 (SD= 3) panels. The minimum number of panels were 4, while the maximum 18. On average, it took 61 minutes (SD=8), with a minimum time of 33, and a maximum of 73 minutes, to create the comic strip.

In the first session the average of panels was 8 (SD=3), the minimum was 4 and maximum 18. It took 61 minutes (SD=9), the minimum time was 33 and the maximum 73 to create the comics. In the second session, the average of panels was 8 (SD=3), the minimum was 5 and the maximum 13. The time spent to create a comic was 55 minutes (SD=7), with a minimum of 46 and a maximum time of 68 minutes. In the last session, on average, students produced comics composed by 7 panels (SD=2). The minimum number of panels was 5, while the maximum was 11. The average time to produce a

narrative was 65 (SD=2), with a minimum of 61 and a maximum of 67 (*Table 10*). From this analysis, it emerged that gradually the distribution is more concentrated around the mean in terms of both time and panels. It seems that in training with *Communics*, students reflect also on comics structure, composing narratives structurally more similar, session after session.

Sessions	Panel	Time
First session	8 (SD=3) min=4, max=18	61 (SD=9) min=33, max=73
Second session	8 (SD=3) min=5, max=13	55 (SD=7) min=46 max=68
Third session	7 (SD=2) min=5, max=7	65 (SD=2) min=61, max=67

Table 10: the session divided for panels and time

Predefined textual material

In general, most of the comics (20) used a combination of free text and predefined textual elements (from the logs). It is necessary to highlight, however, the substantial similarity between some texts added freely and the predefined text, which can change by form (eg. the same sentence but with lowercase, rather than the initial capital letter) or simply vary in minimum content (e.g. added words after the predefined sentence). However, it has to be noticed that gradually the predefined textual elements were no longer used.

In the first session, the number of speech balloons was 329; in 24 of them, predefined textual elements were used. In the second session, the number of balloons inserted were 132; 10 of them reported a predefined textual element. In the last session, there were 148 speech balloons; none of them reported a predefined textual element. In the questionnaire analysis, 14 out of 19 participants reported that the predefined text helped them in thinking about the beginning of the story but also reflecting on other possible paths to take into account for the story production. P5: *“It helped me when I did not know*

what to write.” Again, P6: *“It helped me in being inspired”*. P7 wrote: *“It helped me in reflecting with myself. (...) I read the predefined text, and it stimulated me.”*

Collaborative work

Although from the observation it seems that some of the students argued with the classmate, no one of them reported in the questionnaire that the discussion in pairs was not appreciated. Participants wrote that they enjoy sharing their opinion, while considering the one of the classmate. P8: *“My friend and I worked very well.”*; P9: *“I like to discuss situations involving discrimination with my classmate”*; P10: *“I like it because I can gather other opinions, and reflect on them”*; P11: *“I like to discuss with a friend of mine and to find compromises”*. P12: *“I like to know what my classmates think about this topic.”* P13: *“I like to talk with my classmate as I collect his opinions”*. P14: *“It helped me in reflecting also with the others”*. P18: *“I really like to combine ideas.”*

Insights on reflection

In the questionnaires, participants were asked about the meaning of the activities proposed. Some of them (3) wrote that, through the activity, they reflect on how they would act in the situations presented. P10: *“This story helped me in reflecting on how I can react in this kind of situation.”* P1: *“(. . .) once grown, you have to reflect on how you want to act.”* Others (3) reflect through the different characters point of view. P3: *“I can reflect because it gets me to take different parts”*. P5: *“It helped me in reflecting because I get into different parts”*. A participant (1) likes most of this experience as he could reflect on situations that usually are not discussed during the traditional school lessons. P6: *“Usually, it is not possible to talk about these topics but in this lesson, I can express myself.”* Four (4) participants reflected on episodes that happened to them, becoming aware of the whole experience through the comics’ production. P5: *“It was a possibility to reflect in order to not make the same mistake”*. P7: *“(.) it helped me in reflect that words can hurt”*; P15: *“(. . .) it makes me reflect on how stupid can be to discriminate against someone”*. P17: *“You can understand what happened”*. P29 *“Yes, it helped me in thinking”*. In the focus group, participants reported that they reflect on the episodes reproduced for different reasons; it gave them the opportunity to think, identify themselves with other characters, understand other feelings, be expressive using not only the text but also visuals, freely express and reflect on situations involving

discrimination, be stimulated by graphical elements, become aware of other opinions and talk about topics that usually are not discussed during the traditional school lessons.

Comics production

Participants enjoyed working on digital comics production for reflecting on daily episodes involving discrimination. First of all, they appreciated the fact that the comics' production was supported by technology. P3: *"I like to create comics, much more via computer"*. Digital storytelling was evaluated positively because, differently from the traditional paper-based activity, it did not bore them. P10 wrote: *"Because it is interactive, it did not bore me as much as usually lessons do"*. Others wrote about the comic's structure. For example P7: *"I like to use an informal way of writing"*. Still, P12: *"I like to use different characters and insert them in different scenarios"*. In the focus group, students expressed their enjoyment in using this means. They agreed that expressing themselves through digital comics, combining both graphical and textual elements, is easier than using only text-based narrative. Moreover, from the reader's point of view, they appreciated more reading comic strips than the text-based narratives.

Creativity

Participants were asked if and to what extent they felt creative using *Communics*. Two (2) participants did not feel as if they were creative because they did not find enough characters for expressing what they wanted to represent. The others felt that they were creative in using *Communics* because they can produce a narrative combining freely both graphical and textual content. Two (2) of them reported that they were creative not using the predefined text but typing in their own text. P18 wrote that *Communics* allowed him to freely express. In the end, two (2) participants felt creative as they represented themselves as the main character in the comic.

Satisfaction

Fifteen (15) participants perceived the story as satisfactory; two (2) as decent and two (2) as disappointing. The story was identified as satisfactory because participants express themselves about topics that are not frequently discussed, they produce beautiful stories in terms of aesthetic and they combine both graphical and textual

elements to support their point of view. P12, for example, wrote: *“I am satisfied because the result is really nice, I had the opportunity to discuss it and I worked so hard.”*

Expressiveness

Participants were asked if and how they felt expressive in producing the narrative. Most of them (15) reported that they enjoy having a digital tool that allows them to express their own opinion. P9: *“I like to challenge myself and express my opinion”*. P12: *“I like it because I felt the need to express my own opinion”*. P14: *“I like to express my opinion”*. P16: *“I like to express myself through such an interesting digital tool”*. P19: *“[I feel expressive because] I wrote about my idea and thoughts”*. P5: *“It helped me to confront myself.”* Still, in the focus group, participants reported that they could be expressive mainly through visuals, namely backgrounds, and characters. They assessed that expressing themselves through text-based narratives involved much more difficulties and they focused their efforts on writing grammatically correct.

Paper versus digital comic production considerations

In the questionnaires, although a straight question was not asked, two (2) of the participants reported that they prefer to produce comics digitally, rather than on paper. P10 wrote: *“(. . .) I am not very good at drawing.”*; P2: *“I liked the digital comic, more than the paper and pen one.”* As this comparison emerged in the questionnaires, we further investigated this aspect in the focus group. Students reported that they liked the digital version as the story seems more realistic; in particular, the backgrounds and characters helped them to recall to the mind past episodes and to reproduce the specific experience in mind. Everyone agreed that the digital comics' production took less time, was more satisfying and creative than the non-digital one.

7.5.3 TEACHER'S INTERVIEW

The interview lasted around 1 hour. As a first step, the interview was transcribed. Then, thematic analysis with a deductive approach (Braun & Clarke, 2006) was utilized. Finally, researchers meet up, review the analysis, and come to an agreement while disagreement emerges.

Digital Comics production

Teacher reports that the combination of technology and narration helped students in structuring their thoughts in a narrative. The teachers said: *“They worked really well ... when they digitally edited their comics, they worked ... they were never tired and that was really positive comparing their usual level of attention and concentration.”*. It can be argued that on one hand narrative had the function to facilitate reflection (*“The narration should have helped them find a response to the conflict that has emerged, dissolving the initial one”*), while technology helped students in expressing themselves, being motivated and engaged in the activity (*“Combining interactively graphics and texts can support their expressiveness.”*). Finally, regarding comics as a narrative genre, the teacher repeated two times that the students *“...take this opportunity that offered the possibility to put themselves in others' shoes.”* Still when asked about the advantages in using digital comics, the teacher answers: *“ (...) the possibility of identifying oneself in different characters”*.

Collaboration

Collaboration stimulated the aloud critical thinking also among the students that generally do not actively participate in the class activities. The teacher reports: *“Ideas born from the dialogue; they born better while discussing with a classmate than working alone. In this project, they can debate. (...) even those who do not usually speak, express themselves. Even the most shy ones can have their own space.”* At the end of the interview, the teacher says that through the collaborative comics composition, students had the possibility to know each other deeply: *“This lesson framework helped them to get to know each other. Students, for example, found out that their schoolmates were from other religions, including some atheists whom they were not aware of.”*

Communics library

Teacher enjoys both graphical and textual elements included in *Communics*, as their function was to stimulate the reflection. Moreover, students, including those that are not good at writing, expressed themselves effectively and efficiency through the graphical elements. *“(...) communicating through images is a direct way of expressing; students, even those who do not have the linguistic ability and skills for story composition can express themselves. Comics give everyone the opportunity to efficiently communicate.”*

Still: *“Working with words, which is always a bit conceptual and requires to follow precise linguistic rules, is always an obstacle.”* Regarding the amount of content included in *Communics*, the teacher says: *“Choosing an image among a limited number is not a limit, because students have to learn to make decisions and being creative. For example, when they were looking for a gun, but there wasn’t one among the set of objects, they were forced to be creative.”*

Students’ engagement

Differently from other school activities, students participated actively in this lesson. The teacher said: *“I’ve seen everyone work, but really everyone. In other activities there are always those three / four that remain passive, and instead, in this activity, everyone has worked.”* Furthermore, she reports that the tool can represent a meaningful means to discuss sensitive topics while having high student participation: *“The students were in love with the project, especially, they were very involved in the ethnic debate”.*

7.6 DISCUSSION

In this section, the results are discussed considering the three research questions.

7.6.1 COMIC-BASED DIGITAL STORYTELLING FOR REFLECTIVE PRACTICE

In the first sub-research question, we explore how digital storytelling in the form of comics supports the reflection practice on situations involving conflicts on gender, religion and ethnicity. In this framework, the narration was already indicated as a means to support the reflective practice (Bolton, 2010; Loughran, 2002); however the investigation on digital storytelling is not widely explored. In these few studies (Dreyer, 2017; Sanders et al., 2018), digital storytelling seems to embrace many benefits for practicing the reflection. From this case study, it emerged that many narratives (12) include every phase of the Gibbs reflective model, indicating a profound engagement in the story production. Young students attempt to explain and interpret the narratives, although difficulties were encountered in the expression of feelings, in the second phase. A playful dimension, such as the one represented by the comics genre, might have helped students in overcoming this difficulty, even if it would be necessary to further investigate this aspect comparing the use of traditional narration and comics. In the

description, consisting in the first phase, it seems that through the familiar backgrounds, objects, characters and predefined text, participants could have been facilitated in recalling to the mind episodes that happened, heard or witnessed. In this sense, some young students instinctively report what was in their mind, without a previous explanation of the context and the reasons of the conflict escalation. Regarding the third phase, comics as a genre can have facilitated the evaluation, as through the fictional characters representation, the author can identify with different dialogue, thoughts and temper. Still, comics might have support to reflect through the fourth and sixth phases as only brief captions were needed to change the scenario to show another perspective of the story or a possible future.

7.6.2 ADOPTING COMIC-BASED DIGITAL STORYTELLING EXPERIENCE IN A SECONDARY CLASSROOM

In the second sub-research question, we focus on the use of comics including *Communic's* library (characters, objects, backgrounds, and predefined textual elements) for supporting students' creativity, satisfaction and expressiveness. From the analysis of the questionnaires, it emerged that in general students enjoyed the possibility to reflect using comics. In particular, they empathised with different characters in the narrative represented. This process leads to a deeper engagement in the story reported, taking different perspectives in the situations. In this sense, including a predefined set of characters in the library, might have forced participants to identify specific characters and perspectives while providing different possibilities for character introduction. The combination of graphics and text allowed every participant to produce narratives with relative easiness. As the teacher reports, even those students that usually do not express themselves very well, were able to communicate efficiently. Visuals, in fact, also helped those ones that are not good at writing, in producing meaningful comic strips. However, some of the students perceived the visuals as a limitation for producing their narratives. The teacher's point of view was different from the students one, as the limited number of backgrounds was appreciated. It might have fostered students' capacity for taking decisions. Regarding the textual elements, most of the participants combined it with free text. The utilization was perceived as mainly useful, as it stimulated and inspired critical thinking. However, it emerged that the need for using predefined textual elements gradually decreased. It might be due to the fact that knowing the theme in

advance could have led students in discussing, in different sites, the topic. Secondly, knowing in advance the topic of the next session might have given students enough time to think about situations to represent. Lastly, the decreasing of using the predefined textual elements can be caused by the novelty of this feature.

Still, we focus on investigating the engagement, motivation and collaboration in the digital comics' production for reflective practice. *Communics* provides a successful means in terms of collaboration for the production of comics. Although from the observation, it emerged that participants argued during the narratives creation, from the questionnaires, it was found that they appreciated having the opportunity to discuss one with the other on the conflictual situation while producing the comics. In this context, still the teacher, involved in the project, noticed that students were absorbed in the activity and while having fun, they were collaborating in the production of the story. This collaboration leads to the discussion of personal opinion on topics that usually are not taken into account. Therefore, students get to know each other, reflecting on personal, but still different opinions while producing the narrative.

7.6.3 TEACHER'S PERCEPTION IN USING COMIC-BASED DIGITAL STORYTELLING

The last sub-research question regards the utilization of comic-based digital storytelling for facilitating the reflective practice in the educational context.

In general, the teacher enjoys including comic-based digital storytelling, and, in particular, *Communics* in the school curriculum. Students were totally engaged in the production of comics through the combination of digital storytelling and technology. It might have led to deeply focus on the situations represented in the comics. Collaboration helped them in discussing, elaborate and re-elaborate their perspective, while compromise with the peer. In this way, the teacher reports that students get to know each other better. Moreover, *Communics* support students in creating their narratives. The graphical and textual library stimulate and inspire students in representing the episodes, while offsetting the issue related to the conceptual traditional narrative in which the linguistic rules have to be strictly followed.

7.7 CONCLUSION

This chapter reports a case study in which we investigate how digital storytelling in the form of comics might support the reflective practice among young students, aged between 12 and 14 years, in a secondary class.

In particular, the study explores three sub-research questions concerning: (1) the use of comic-based digital storytelling for reflective practice, (2) the experience of digital storytelling introduction in a secondary school for reflective practice, and (3) the teacher's perception in including comic-based digital storytelling in the curricula.

In general, in this study, it emerged that comic-based digital storytelling can be used as a meaningful means for students to reflect on situations involving conflicts on ethnicity, religion and gender. However, the experience reports both negative and positive implications. From the students' point of view, *Communics* helped them in being creative, satisfied and expressive. The content library facilitates them in representing the situation reported in the comic. However, even if the number of graphical and textual elements were perceived as a limitation, they were engaged in creating the narratives and motivated. Analysing the narratives through the lenses of the Gibbs' model, it emerged that students encountered some difficulties in expressing the feelings while representing the situations. From the teacher perspective, collaboration supports students to reflect and discuss deeply on the conflictual situation. Regarding the narrative genre, comics afford the opportunity to take different points of view, identifying with different characters, thoughts and tempers. In this context, the teacher reports that students might have benefit in embracing the conflict from different perspectives.

In conclusion, producing comic strips seems a promising means for involving young students in reflective practice. A digital tool, such as *Communics*, can be helpful and meaningful in facilitating this practice.

7.7.1 LIMITATIONS AND FUTURE WORK

Some limitations can be reported too. In order to gather the full benefits from this means, it might be necessary to include it in a bigger project. To understand the impact on young

students' perception, it will be necessary to conduct a long term research. Still, including other classes will be essential to collect data based on different contexts.

7.7.2 ACCESS TO THE FIELD

Prior to the study, an agreement between the research centre and the secondary school was signed. Then, young students and parents were told about the aims and objectives of the research and why we intended to analyze the stories they had produced. Teachers acted as facilitators and made sure young students did not feel any pressure but were comfortable and felt free to not participate in the project. Young students' data were anonymised for the analysis and stored on a secure server.

8. CONCLUSION

8. CONCLUSION

This chapter presents a summary of the work done in this thesis, some reflections by the author, and some suggestions for future possible direction on the topic of this research.

8.1 SUMMARY

Digital storytelling, as already mentioned in *Chapter 2*, can represent a meaningful tool for supporting different activities in terms of engagement (Di Blas & Boretti, 2009; Farurk et al., 2018; Werner et al., 2009; Liu et al., 2019), creativity (Di Blas & Boretti, 2009; Bonsignore et al., 2013; Rubegni & Landoni, 2014; Rubegni & Sabiescu, 2014), and digital literacy (Werner et al., 2009; Rubegni & Landoni., 2014, Rubegni & Sabiescu, 2014) among many other benefits. This tool can be adopted in many contexts, such as hospitals (Bers et al., 1998; Bers et al., 2001 Mamykina et al., 2010), schools (Di Blas & Boretti, 2009; Rubegni & Landoni, 2015; Di Blas & Boretti, 2009; Rubegni & Paolini, 2010; Russell, 2010), and even at homes (Ahmed et al., 2019; Axelrod & Kahan, 2019; Jones & Ackerman, 2021), and for different purposes, as, for example, facilitating teaching subjects (Mystakidis et al., 2014; Rammos & Bratitsis, 2018; Burke & Kafai, 2012; Keller, 2009; Normann, 2011; Nassim, 2018; Muller et al., 2010), coping with illness (Bers et al., 1998; Bers et al., 2001 Mamykina et al., 2010), and exploring the self (Bers et al, 1998; Ahmed et al., 2019; Umaschi, 1996). Still, it can be employed as a collaborative tool (Rubegni & Landoni., 2014, Rubegni & Sabiescu, 2014; Liu et al., 2019; Rizzo et al., 2018; Long et al., 2018; Hourcade et al., 2004; Russell, 2010) for sharing experiences or as a personal means (Di Blas & Boretti, 2009; Farurk et al., 2018; Werner et al., 2009) for self-expression. In this frame, it is evident the potentials offered by digital storytelling and the opportunities to explore other contexts and purposes of use.

This forms the foundation of our research, described in *Chapter 1*, consisting in the investigation on the use of digital storytelling for reflecting on situations involving conflict. In particular, the research's focus is on the use of comics as a form of digital storytelling that combines graphical and textual elements to facilitate the expression of particular situations. Then, still in *Chapter 1*, we described the three different case studies that were conducted to deeply explore the use of digital storytelling in other contexts, communities, and modalities.

In order to address the research question, the digital tool, named *Communics*, is described in *Chapter 4*. *Communics* was employed in three case studies to support the production of comics in the form of digital storytelling.

The research is based on a mixed-method approach in order to collect both qualitative and quantitative information needed for a profound reflection on the use of digital storytelling. In particular, we benefited from the qualitative use of ethnographic observations, semi-structured interviews, questionnaires, written feedback and narratives compositions; on the other hand, we employed quantitative methodology as narratives logs and questionnaires. The combination of these two methods supported us in deepening our understanding of the research question.

In the first case study, reported in *Chapter 5*, we explored how digital storytelling can support young male migrants in reflecting individually on their experience as a vulnerable community exposed to discrimination and stereotype in a host country. As already shown in different works (Prins et al., 2015; Weibert, 2017; Mutafidou & Bratitsis, 2018), the use of digital storytelling, in the migrants' community, could be beneficial to promote the opportunity of expression, and reflection on particular troubling situations. In this case study, it emerged that digital storytelling was adopted with good results in terms of self-expression, as backgrounds, and predefined textual elements facilitate the narrative production, recall to the mind past experiences and help this community to communicate. These elements, however, did not support the elaboration of counterstories as it emerged that migrants did not always resolve positively the potential conflictual situation reported. Finally, comics did not represent a familiar genre to this community, as, often, the narratives did not follow the traditional structure of the comics.

Chapter 6 reports the second case study in which the investigation focused on the use of individual and collaborative digital storytelling for reflecting on situations of conflict within the classroom context among primary school children. In many works, this means had been adopted in different educational contexts, considering the potential benefits, such as supporting students in being engaged (Faruk et al., 2018), collaborative (Rubegni & Paolini, 2010), and creative (Rubegni & Landoni, 2015; Di Blas & Boretti, 2009). In

particular, collaborative digital storytelling was indicated as beneficial in the aspects of inspiration (Russell, 2010; Ryokay et al., 1999), performance (Bonsignore et al., 2013) and creativity (Bonsignore et al., 2013; Garzotto et al., 2006; Long et al., 2017; Rizzo et al., 2018; Rubegni et al., 2014). In the context of primary school children, it emerged that, in general, digital storytelling was successfully employed collaboratively for reflecting on situations involving conflict within the classroom context. At the same time, individually, the activity resulted less engaging and interesting for the children. However, the results show that teachers highlighted both negative and positive aspects of the two approaches: collaboration lead children to practice with the turn-taking aspects while compromise with the peers; on the other hand, individually children had to self-reflect on their own, elaborating the plot and selecting the graphical and textual elements from the library.

In the last case study, described in *Chapter 7*, digital storytelling was introduced in a secondary class to collaborative understand the value of reflection on episodes involving religion, ethnic and gender conflicts. As a matter of fact, digital storytelling was used in different works to embrace many benefits such as making the reflection concrete and visible, enhancing teaching and learning practice, and being considered highly motivating (Dreyer, 2017; Sanders et al., 2018). From the study, it emerged that digital storytelling was adopted to discuss and reflect on episodes involving troubling experience. Young students were profoundly engaged in the process of reflection through the joint action of elaborating the narratives, while considering the other opinion on the topic. Many narratives included the entire set of the Gibbs' narrative model for reflection; however, young students encountered difficulties in expressing their feelings on the episode reported.

In addition to outlining the development of a digital storytelling intervention, the research has resulted in several findings on the benefits and drawbacks when adopting digital storytelling in the form of comics in three specific different contexts to reflect on situations involving conflicts.

8.2 REFLECTIONS ON THE STUDIES

Based on the three case studies of this thesis, some reflections are reported regarding the main investigated aspects of the process of adopting individual or collaborative digital storytelling for reflecting on situations involving conflicts.

Engagement: the use of digital technologies was motivating, engaging and interesting for the majority of users involved in the case studies. The novelty of a different type of assignment and the inclusion of digital media may have engaged them to deeply reflect on the troubled situations presented. Engagement, therefore, can be suggested as one of the aspects that lead migrants, children and young students in being profoundly involved in the reflection process. However, it has to be noted that the users did not use *Communica*s longer than 9 times. Therefore, it is possible that engagement can be a factor of the novelty effects of the activity.

Stakeholder involvement: in the case study with the migrants, NGO operators were involved in the process of designing the intervention as well as teachers in the other two case studies. Having them support the digital storytelling introduction was essential. As a matter of fact, the stakeholders ensured the integration of digital storytelling in a relevant, meaningful and stimulating way within each specific context. They identified the frame on which we based the intervention, collaborated in selecting the graphical and textual elements, and acted as facilitators. However, within the migrants' community, sometimes, the communication resulted in being a bit complex as we did not interact directly with them while recruiting participants for the study.

Collaboration: children and young students had the possibility to collaboratively compose their narratives. During the intervention, most of them deeply reflected with the peer on the digital story. It emerged that they benefited greatly from the discussion on the topic and on comic's structure, exchanging opinions, ideas and feedback. They were totally engaged in reflective practice, as they have the opportunity to learn from each other. Even if arguments emerged, they were able to compromise and construct their narratives. Yet, some of them report that the process of collaborative composing the narrative resulted to be less smooth than the individual one.

Technology: migrants, children and young students used a digital tool named *Communics* as a means to individually or collaboratively create their stories. On the one hand, children and young students of this last decade are identified as digital native and, therefore, as reported in the literature review (*Chapter 2*), the introduction of technology in the educational context is essential to get them engaged in the activity. Moreover, technology gave them the opportunity to collaborate with a peer, including also the turn-taking aspect provided in *Communics*. On the other, migrants had the opportunity to use the technology individually. They enjoyed the possibility to expand the experience of comics composition combining a great variety of predefined graphical and textual elements. However, some of them find difficulties in finding the right elements to include in the comics' frames. It could be argued that it would be interesting for the users to have the possibility of drawing and inserting their own pictures.

Comics: the use of comics as a form of digital storytelling has, mostly, a positive impact on the narrative composition. Migrants, children and young students enjoyed the possibility to combine both graphical and textual elements. In particular, backgrounds helped them to recall past episodes; characters gave them the possibility to experience the situations as the main character of the stories; objects were mainly added in the story to give more details to the story. They used the predefined textual elements for inspiring their story while avoiding the blank page. Migrants, moreover, found it useful to express themselves, while learning the language. However, regarding the comics' genre, it has not to be taken for granted that everyone knows the canonical structure of the strips. As a matter of fact, migrants did not entirely place the frames and the word balloons from left to right.

Reflection: migrants, children, and young students were supposed to use technology as a means to facilitate reflective practice. It emerged that, mainly, technology supported them to face the conflict, display the experience and make visible the reflection process. Without the features included in *Communics*, they may have faced some difficulties in engaging in some troubling situations. However, it has to be noted that some stories do not report any frames including reflection on the conflict; therefore these stories were marked as neutral.

8.3 FUTURE WORKS

This thesis explored how comic-based digital storytelling can support different communities in reflecting on situations involving conflicts. The work has demonstrated how digital storytelling can be adopted in these contexts while exploring the use for facilitating reflection.

The research reported in this thesis focuses on a particular genre of digital storytelling, the ones including comics. Considering the various and multiple features of digital storytelling, such as audio, video, animation, future research could explore other forms of narratives genre. In this sense, it might investigate and explore the benefits and drawbacks of novel ways to support reflection.

Communics was employed as a means to support migrants, children and young students in composing their narratives. The adoption was due to the availability of the software, its ease of use, and no cost for the communities. In the future, it can be investigated the differences in using *Communics* and other digital tools for comics composition such as *Comics Life*⁵, or *Pixton*⁶. Still, other tools, excluding the comics programme, can be adopted in educational contexts too.

In this thesis, the research aim was to explore the use of digital storytelling for reflection. In particular, the focus was on investigating if and how this means can support different communities individually or collaboratively reflecting on episodes including conflict. Future research can investigate the use of digital storytelling for other teaching/learning purposes. In this sense, adopting digital storytelling for different purposes might deepen the knowledge of the impact while composing narratives.

⁵ <http://comiclifecom/>

⁶ <https://www.pixton.com/>

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APPENDIX

LIST OF FIGURE

- Figure 1.** A photo of the *NNR table*, including the position of the two participants and the moderator (p.46)
- Figure 2.** The interface of *Communics* (p.47)
- Figure 3.** The interface of the *Communics Session Manager* (p.48)
- Figure 4.** The reception center, named Residenza Fersina, which the study took place (p.56)
- Figure 5.** Examples of the graphical elements, including backgrounds, objects, characters and emoticons (p.59)
- Figure 6.** Examples of predefined texts (p.60)
- Figure 7.** The scene represents two Italians blaming a migrant for the dirt in a city (p.61)
- Figure 8.** The scene represents a migrant asking for directions, while an Italian answers that he has to stop beginning (p.62)
- Figure 9.** The scene represents a policeman blaming a migrant for stealing a bike (p.62)
- Figure 10.** A researcher tutoring one of the participants on the *Communics*' interface (p.63)
- Figure 11.** One of the participants using *Communics* (p.63)
- Figure 12.** An example of a master narratives (p.66)
- Figure 13.** An example of a counterstory (p.67)
- Figure 14.** The picture represents the school computer lab (p. 81)
- Figure 15.** An example of graphical content, including backgrounds, objects and characters used (p. 84)
- Figure 16.** Examples of predefined texts used (p.85)
- Figure 17.** A child using *Communics* (p.86)
- Figure 18.** An example of a collaborative digital storytelling with negative valance (p. 90)
- Figure 19.** An example of individual digital storytelling with negative valance (p. 90)
- Figure 20.** An example of collaborative digital storytelling with positive valance (p. 91)
- Figure 21.** An example of individual digital storytelling with positive valance (p. 92)
- Figure 22.** Gibbs' reflective practice model (p.111)
- Figure 23.** Examples of graphical content, including backgrounds, characters and objects used (p. 114)
- Figure 24.** Examples of predefined texts used (p.115)
- Figure 25.** The focus group among young students (p.116)
- Figure 26.** An example of digital storytelling including the *Evaluation phase* (p.118)
- Figure 27.** An example of digital storytelling including *the Conclusion phase* (p. 119)
- Figure 28.** An example of digital storytelling including *the Action Plan phase* (p. 120)

LIST OF TABLES

Table 1. Study's participants identified with an ID, age, birth country, languages spoken, and months spent in Italy (pp.60-61)

Table 2. The table represents the graphical and textual material used to create the comics (p.65)

Table 3. The table represents the stories' valence (p.66)

Table 4. The table represents the counterstory's presence (p.67)

Table 5. Sessions divided per condition, number of children and narratives (pp. 86-87)

Table 6. Representation of the analysis of the structure of collaborative and individual narration divided per beginning, middle - conflict rising -, middle -conflict resolution - and end (p. 88)

Table 7. Representation of the analysis of the structure of collaborative and individual narration divided per positive, negative and neutral valance (p. 89)

Table 8. Representation of the analysis of the structure of collaborative and individual narration divided per stories with meaning, or without meaning (p.93)

Table 9. Narrative elements divided per collaborative and individual digital storytelling session (p. 94)

Table 10. The session divided per panels and time (p.122)

CASE STUDY: MIGRANTS AND STEREOTYPES
GRAPHICAL AND TEXTUAL CONTENT ELEMENTS

BACKGROUNDS		
		
		
		
		
		

OBJECTS



EMOTICONS					
					
					
					
					
					
					

CHARACTERS



PREDEFINED TEXT

- XI. Hello
- XII. Hi
- XIII. See you tomorrow
- XIV. See you soon
- XV. Talking with you was a waste of time
- XVI. I hope we will never meet again
- XVII. I would like to have more opportunities to share the cultures
- XVIII. Thank you
- XIX. I hope we will meet again
- XX. It was interesting talking to you
- XXI. It wasn't nice to talk to you
- XXII. Where are you from?
- XXIII. How are you?
- XXIV. You?
- XXV. Where?
- XXVI. What?
- XXVII. Why?
- XXVIII. What are you doing!?
- XXIX. What are you saying!?
- XXX. Where is the problem?
- XXXI. What are you looking for here? Come back to your country
- XXXII. Do you really think that I will do it?
- XXXIII. Yes
- XXXIV. Fine
- XXXV. Ok
- XXXVI. Doesn't matter
- XXXVII. Absolutely no!
- XXXVIII. You are right
- XXXIX. I don't feel well
- XL. No
- XLI. I don't know
- XLII. I couldn't care less
- XLIII. I don't care
- XLIV. Me too
- XLV. I am sorry
- XLVI. Go back to your country!
- XLVII. I don't like your behaviour
- XLVIII. I am from Italy
- XLIX. I am from Asia
- L. I am from Africa
- LI. You disgust me
- LII. I made a mistake
- LIII. I don't want to mix the cultures
- LIV. I don't want to continue this conversation
- LV. Do you have any problems approaching girls from this country?

- LVI. Why do we have to stay with them?
- LVII. I don't want to stay with them
- LVIII. A girl will never find a husband wearing one like that!
- LIX. I want to be only with people from my region
- LX. I prefer to spend time with Italians
- LXI. I like that everyone can express their opinion
- LXII. Can you give me your mobile phone?
- LXIII. Would you like to drink coffee with me?
- LXIV. Despite the veil, your women are more depraved
- LXV. I always have problems communicating with European women!
- LXVI. We usually meet our wife for the first time during the wedding
- LXVII. I don't tolerate that the women have to wear the veil
- LXVIII. My friends' experiences with women ended very badly
- LXIX. I have never had any interactions with Italian girl
- LXX. I really appreciate that you're trying to integrate our communities
- LXXI. European women have more freedom
- LXXII. For me, there aren't any differences between Christian and Muslim girls
- LXXIII. We use to marry our cousin
- LXXIV. Marriages are usually forced by our parents
- LXXV. I don't think that our culture would ever find a compromise
- LXXVI. I don't understand why women should work
- LXXVII. The girls in this country don't demonstrate respect for the men
- LXXVIII. I just want to be accepted
- LXXIX. The girls should at least cover the hair
- LXXX. I don't want a girlfriend from this country
- LXXXI. I wish there was no more prejudice
- LXXXII. Would you like to have a coffee with me?
- LXXXIII. I prefer some tea
- LXXXIV. I would like to have a coffee with you
- LXXXV. You were late! You don't have any respect for me
- LXXXVI. What do you think about this situation?
- LXXXVII. How could it be possible that they have this behaviour!?
- LXXXVIII. What do you think about politicians?
- LXXXIX. Do you think that this is correct?
- XC. Do you think that this is normal?
- XCI. Would you like to have more mosques?
- XCII. They cause only crime!
- XCIII. I wish they could find a job easily!
- XCIV. Italians receive their houses for free!
- XCV. The immigrants can only ruin my country!
- XCVI. The Italians don't understand our situation
- XCVII. I would like to increase the video surveillance
- XCVIII. The police has to send them back to their country
- XCIX. Building more mosques means more terrorism
- C. This is the only way to avoid immigrants stealing our work!
- CI. The immigrants are invading my country
- CII. I would like to find a way to integrate immigrants in our country

- CIII. Shut up! You get money from my country but I don't have any money for myself!
- CIV. This idea is awesome
- CV. Politicians are behaving very badly!
- CVI. Police forces are doing their work at least
- CVII. All immigrants should be thrown out of the country
- CVIII. They should do this more frequently
- CIX. My country is paying enough money to support the immigrants
- CX. I think some people are very ignorant
- CXI. The police forces are careless
- CXII. I would like to see more mosques built here
- CXIII. It is necessary to build more reception centres to help those people
- CXIV. Respect the rules
- CXV. These rules do not make any sense
- CXVI. Of you mess it, clean it
- CXVII. Nobody respect the rules here
- CXVIII. You are not my boss
- CXIX. This is not my home
- CXX. I do not understand how to do it
- CXXI. You do not respect me
- CXXII. Clean up here
- CXXIII. It is not my duty
- CXXIV. If everyone respect the rules there wouldn't be any problems
- CXXV. In my country, you can't do that
- CXXVI. You must wait in the queue
- CXXVII. I will never become an Italian citizen
- CXXVIII. You will never have the right to become an Italian citizen
- CXXIX. You stole!
- CXXX. You behave in this way only because I am a migrants
- CXXXI. I skip the queue
- CXXXII. I call the police
- CXXXIII. That is useless
- CXXXIV. The bureaucracy is a problem

SET OF QUESTIONS FOR THE INTERVIEW

SEMI-STRUCTURED INTERVIEW PRE-TASK

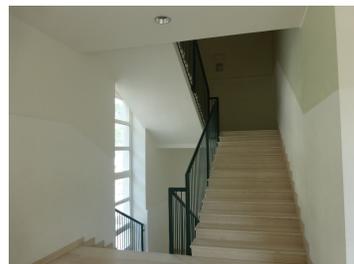
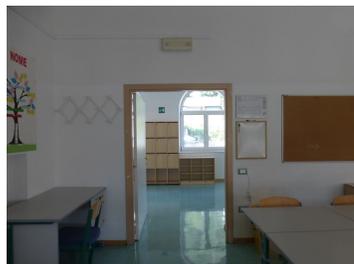
- (a) *Where are you from?*
- (b) *When did you arrive in Italy?*
- (c) *In your opinion, what do you Italians think about migrants?*
- (d) *Do you talk about being migrants in Italy with your family or with other migrants? What do you discuss about?*
- (e) *Did it happen to you or to a friend of yours to be in a situation of injustice or exclusion as migrants in Italy? Could you tell me more about it?*
- (f) *Do you have any experience with local authorities? What kind of experience?*

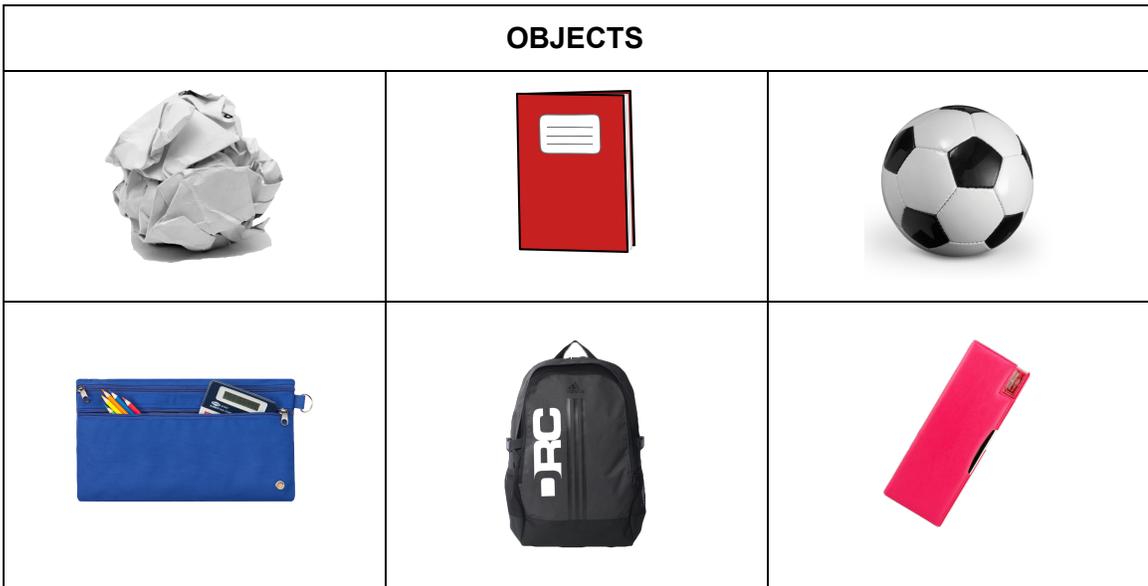
SEMI-STRUCTURED INTERVIEW POST-TASK

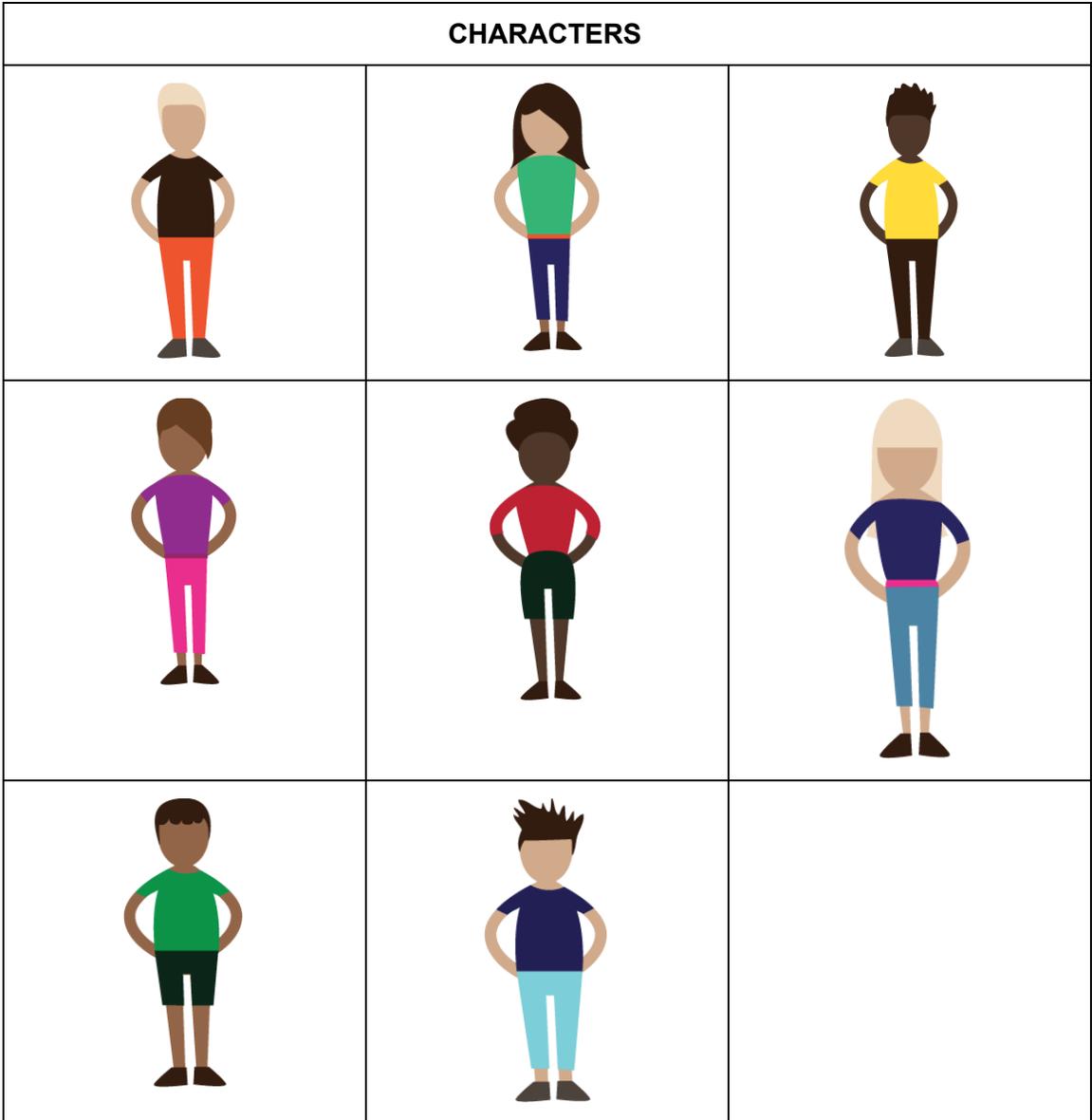
- (a) *While modifying the story, were you more interested in creating the illustrated story than following the sense of the story?*
- (b) *Did the episode happen to you?*
- (c) *Did the main character represent yourself? or someone you know?*
- (d) *Did you find yourself thinking about what you would do in real life, while elaborating the narrative?*
- (e) *Would you consider talking about the story to other people?*
- (f) *After the digital reconstruction of the story, do you think that if the episode would happen to you, your action now would be different?*
- (g) *What could be the advantages in using the technologies for creating the narratives? and the disadvantages?*

CASE STUDY: CHILDREN AND CLASSROOM'S CONFLICT
GRAPHICAL AND TEXTUAL CONTENT ELEMENTS

BACKGROUNDS







PREDEFINED TEXT

- XI. Hi!
- XII. Hello!
- XIII. Bye!
- XIV. How are you?
- XV. What's your name?
- XVI. Welcome in class!
- XVII. How did you spend your holidays?
- XVIII. What do you expect from this academic year?
- XIX. Would you like to do some new experiences with your classmate?
- XX. What happened?
- XXI. Can you describe what happened?
- XXII. Would you like to say something?
- XXIII. Would you like to add something?
- XXIV. Do you know the game's rules?
- XXV. Why did the conflict begin?
- XXVI. How did you feel?
- XXVII. What emotions did you feel?
- XXVIII. Could you have avoided the conflicts?
- XXIX. Think about the conflict
- XXX. What can you do in the future to avoid the conflict?
- XXXI. Let's analyze this answer
- XXXII. I spend my holidays very well
- XXXIII. During my holidays I felt a bit bored
- XXXIV. I am happy to be back at school
- XXXV. I would like to go on a trip
- XXXVI. It wasn't my fault
- XXXVII. He started the conflict!
- XXXVIII. He doesn't respect the game's rules
- XXXIX. I don't know the game's rules
- XL. Yes
- XLI. No
- XLII. In this game, I felt penalized
- XLIII. I have an idea!
- XLIV. I can never play the role of foreman!
- XLV. When making teams I am always chosen last
- XLVI. I do not want to play!
- XLVII. Why?
- XLVIII. I reacted to his provocation
- XLIX. You do not play fairly
- L. I would like to make a suggestion

SET OF QUESTIONS FOR THE INTERVIEW

SEMI-STRUCTURED INTERVIEW - CHILDREN

- (a) *How was your experience in using technology individually?*
- (b) *How was your experience in using technology collaboratively?*
- (c) *Can you describe your experience in using comic-based digital storytelling?*
- (d) *What are the positive aspects of using technology and comics for reflecting on conflict situations?*
- (e) *What are the negative aspects of using technology and comics for reflecting on conflict situations?*
- (f) *Did you use the predefined textual elements? Why?*
- (g) *Did you use graphical elements? Why?*
- (h) *What are the differences in using traditional narration and comics?*

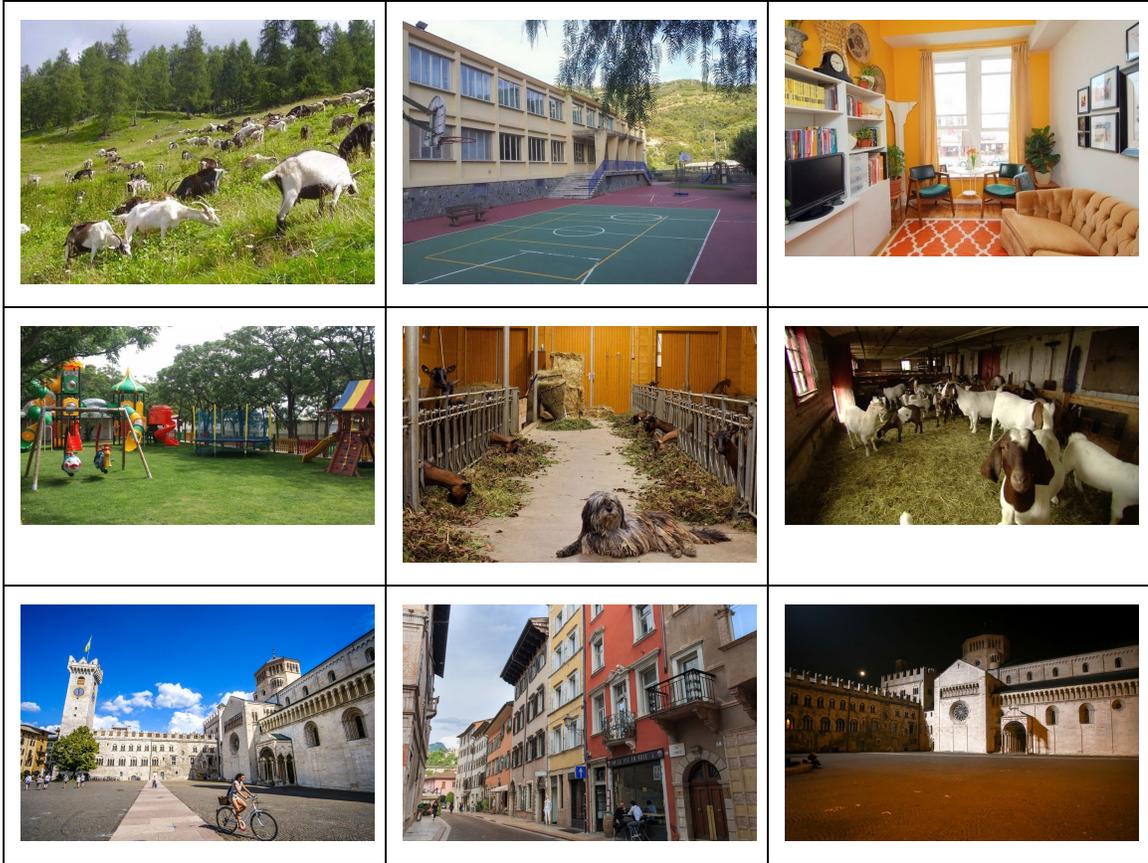
SEMI-STRUCTURED INTERVIEW - TEACHERS

- (a) *How do you think children experienced the individual composition of narratives?*
- (b) *How do you think children experienced the collaborative composition of narratives?*
- (c) *How did you perceive technology introduction? How do you think children experienced it?*
- (d) *How do you consider comics' use for reflecting on situations involving conflicts? How do you think children experienced it?*
- (e) *How do you consider children's work including both individual and collaborative activity?*

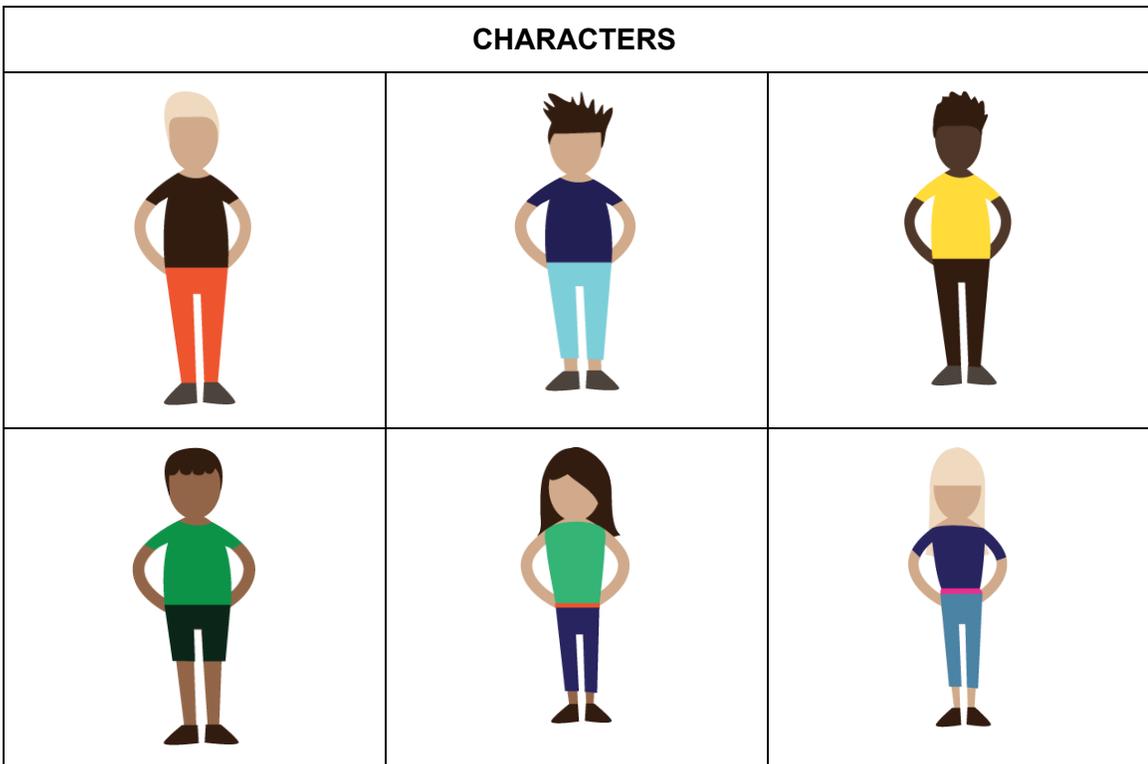
CASE STUDY: YOUNG STUDENTS AND ETHICS, GENDER AND RELIGION CONFLICT

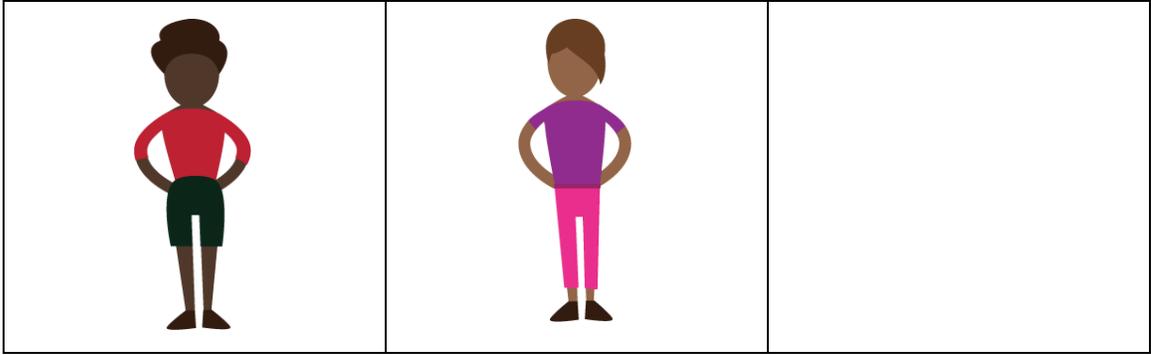
GRAPHICAL AND TEXTUAL CONTENT ELEMENTS

BACKGROUNDS		
		
		
		
		



CHARACTERS





PREDEFINED TEXT

- I. Hi
- II. Thanks
- III. How are you?
- IV. Where are you from?
- V. You?
- VI. Where?
- VII. Why?
- VIII. What are you saying?
- IX. What are you doing?
- X. All right!
- XI. You are right!
- XII. See you soon
- XIII. No, I do not want it
- XIV. I do not like you behaviour
- XV. I was wrong
- XVI. You are right!
- XVII. I'm sorry
- XVIII. I do not care
- XIX. I hope to see you again!
- XX. I do not feel so well!
- XXI. You are the best!
- XXII. You're a champion!
- XXIII. Women always speak
- XXIV. You are my little princess!
- XXV. Men and women need to share housework equally
- XXVI. Just gossip!
- XXVII. Try to be a little more graceful
- XXVIII. Crying is female
- XXIX. Males and females are equal
- XXX. Males and females are different
- XXXI. Males are smarter than women
- XXXII. Females are not inclined for technology
- XXXIII. Women must stay at home
- XXXIV. Men should manage money
- XXXV. It is right for men to rule
- XXXVI. Women are smarter than males
- XXXVII. Why can she and I not?
- XXXVIII. Why are you going to work?
- XXXIX. Women should stay home
- XL. Women and men have the same rights and duties
- XLI. They talk only about shoes and clothes
- XLII. They say one thing, but it means the opposite!
- XLIII. There is gender equality
- XLIV. Females must look after children

- XLV. Men and women have the same opportunities
- XLVI. The important thing is that she is beautiful, not intelligent
- XLVII. She made her career only because she is a woman!
- XLVIII. What does she have that I do not have?
- XLIX. I'm not racist
 - L. I am racist
 - LI. It was a girl
 - LII. You and I are the same
 - LIII. You came here to steal the job from the Italians
 - LIV. Do you want to play together?
 - LV. I am happy that there are different cultures in my country
 - LVI. You should all die
 - LVII. I'm not afraid
 - LVIII. I felt welcomed in this country
 - LIX. Go back to your country!
 - LX. What do you want?
 - LXI. I have a lot of friends in Italy
 - LXII. I didn't do anything to you!
 - LXIII. I do not want you here
 - LXIV. You have to go
 - LXV. I want to feel safe!
 - LXVI. I just wish I could work
 - LXVII. If you need help, you can count on me
 - LXVIII. I don't want to be your friend
 - LXIX. I want to be your friend
 - LXX. I can't feel safe in my country
 - LXXI. Now I'm calling the police
 - LXXII. I'm scared
 - LXXIII. I have been very well received in Italy

SET OF QUESTIONS FOR THE INTERVIEW

SEMI-STRUCTURED INTERVIEW - YOUNG STUDENTS

- (1) Were you able to express your creativity through Communicics? Motivate your answer*
- (2) Were you satisfied by the narration that you represented through Communicics? Why?*
- (3) Could you adequately express yourself in producing the narrative? Motivate your answer*
- (4) What are the aspects that you liked most and least about this activity?*
- (5) What aspects did you like most and least about this tool?*
- (6) Was the application useful to consider different ideas and possibilities of narration in relation to situations involving discrimination? How?*
- (7) How did you collaborate with your classmate?*
- (8) What do you think was the meaning of the activity?*

SEMI-STRUCTURED INTERVIEW - TEACHER

- (1) How did you experience this intervention?*
- (2) How students perceive the utilization of Communicics? Technology? Comics?*
- (3) How did the students collaborate?*