Chapter 8
Creative Collaboration in Young Digital Communities

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8.1 Introduction

We recently attended several video game fairs in different European cities. Some researchers, such as Wortley (2013), refer to these contexts as a starting point for exploring creativity and innovation. These fairs are quite similar to film festivals, even if there are no real actors or celebrities there. Instead, we find large screens, consoles, new forms of entertainment, and the players (the visitors to the fair) take precedence. While walking around the different stands, they don't just observe; they play and discover the novelties created by the industry of these cultural objects. Wandering around people of all ages, families, and groups of friends (more boys than girls), the thought came to us that we are *witnessing the result of innovation, the ability to create in contemporary society.*

One cannot help but get the impression that we are experiencing something new, a different type of culture where a new form of entertainment is shared. While we were looking at the large posters advertising games and observing people while they played, we thought that creation has now become a collective activity. The great creators of classical art we learned about at school were individuals. They were individually named together with their masterpieces, for example, Michelangelo's David or Picasso's Guernica. *Video games are quite different.* In the case of video games, the environment from which specific distributors and freelance designers have emerged or the saga they have participated in is of greater importance. When people mention *The Sims,* fans are well aware, for instance, that the distributor is Electronic Arts and that its designer came from Will Wright's team. We are therefore faced with a different form of creation here.

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We could reflect on who created the products which have made these new popular cultural expressions possible, but there is no one answer or single factor involved. One should mention the technology behind them, the interdisciplinary team sometimes working for years toward the launch of a new game, the financing involved in presenting the product to the player, and, undoubtedly, the people who actively play and respond to it. Creative processes are embodied within video games, just like cinema, novels, or architecture. They are the result of their creator's application, but, as educators, we are convinced that interacting with them could foster the development of such creativity.

Summing up, *old and new media require collective creation processes* according to different contexts and work processes. In this research, creation is inseparable from a teenage community while creating video games as part of an after-school program. The goal of this chapter is to analyze the creative processes present in a community of teenagers when they design games and participate in a collective blog at school and several interviews in which they express their reflections during the process.

The specific objectives are the following:

1. To analyze the game creation processes taking place in the classroom and to define dialogical contexts favoring intersubjectivity and the creative process
2. To explore the creative process from the creators' perspective in a system defined by the roles assumed by the participants in the game creation process
3. To propose *educational strategies supporting the acquisition of creative ways of thinking and acting* when video games are considered as cultural tools present in the classroom

8.2 Theoretical Framework

This chapter focuses on the cultural practices of video game creation as involving new media, explored from the general frame of convergent culture. Creation is understood as *a cultural, collective, and historically situated process in which relationships are established between different conceptual elements that become meaningful in the social practices of the community* (John-Steiner 1985/1997, 2000). Sociocultural psychology, classic or contemporary, serves as a starting point. Figure 8.1 includes a synthesis of these theoretical models and their main concepts, as well as some possible relationships between them.

We understand creativity from the models provided by two classical authors (Bakhtin and Vygotsky) and others who more recently worked on their legacy. For Bakhtin, culture is immersed in intersubjective and discursive processes. Vygotsky, however, approaches creativity from emotions and thinks of community settings interpreted from the concept of ZPD (zone of proximal development). In the following pages we will delve into these models.

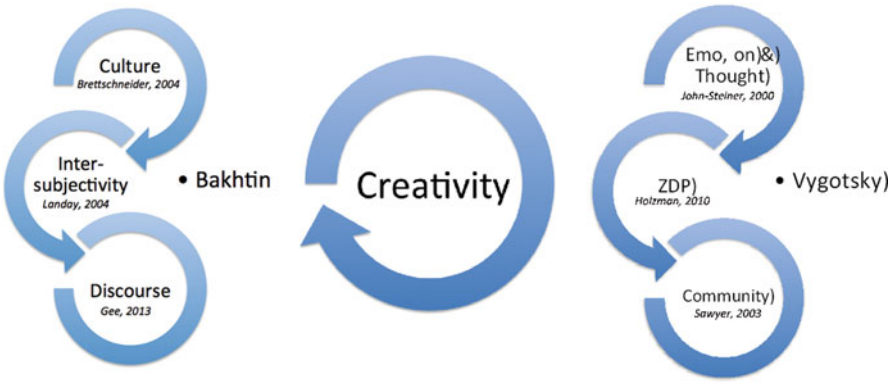

Fig. 8.1 Theoretical models

8.2.1 Dialogue, Creation, and Intersubjectivity

Bakhtin's words help us to understand how the creative dialogue takes place in the classroom (Brettschneider 2004). In a very general sense, creative comprehension does not become exhausted into itself:

> Creative understanding does not renounce itself, its own place in time, its own culture; and it forgets nothing. In order to understand, it is immensely important for the person who understands to be **located outside** the object of his or her creative understanding – in time, in space, in culture. (Bakhtin et al. 1986, p. 7)

In order to understand the integrity of a cultural production, rather than merely focusing on it as the author himself understood it, we should go further. True understanding is active and creative by nature. In that sense, a process of co-creativity of those who understand is being generated, and this is true whatever is the basis of our "outsideness," be it personal, spatial, temporal, national, or otherwise.

It is in this framework where we can place the notion of intersubjectivity, supporting creative processes. It is merged into cooperation considering that it is necessary to share goals and values. This collaboration needs to be understood as a process interwoven in history and culture where creative individuals develop.

According to this model, Landay (2004) identifies four principles of Bakhtinian theory which are a starting point to create educational environments favoring creativity. They are the following:

- Heteroglossia. The meaning of any utterance is never fixed; it differs in rich and complex ways according to the context and conditions in which it is used. The same words can have different meanings and create difficulties that must be overcome when designing a game collectively.
- Dialogue, which merges into the social world. Dialogism is embedded in speaking subjects. Meanings need to be shared, and when they are they create intersubjective communication contexts. Considering dialogues when the game is

created, the fact of sharing meanings will favor new representations of the world as presented in the game.
- Social language, characterized by specific group activities, professional jargon, and so on. The thinking process behind the creation of games relates to social language that includes, for example, going in depth into concepts and words such as story, programming, designing, rules, and enemies. All of them have specific meanings for specific groups of people.
- Power relationships as present in language. In that context, Bakhtin differentiates between two kinds of discourses. The first is authoritative discourse as the voice of tradition, of the official line. The second is internally persuasive discourses that work toward a concrete verbal and ideological unification when symmetrical social relationships are preponderant.

Through discourse analysis, we will examine how language contributes to favor certain processes of creativity.

8.2.2 Emotion, Thinking, and Creative Collaboration

Vygotsky's work on creativity complements this perspective and helps to clarify how the subject must go out of himself to create. Let's see how creators should do this in the real world to go beyond pure formal abstraction:

> From our point of view, imagination is a transforming, creative activity directed from the concrete toward a new concrete. The movement itself from a given concrete toward a created concrete, the feasibility of creative construction is possible only with the help of abstraction. Thus, the abstract enters as a requisite constituent into the activity of imagination, but is not the center of this activity. The movement from the concrete through the abstract to the construction of a new concrete image is the path that imagination describes during the transitional age. (Vygotsky 1998, p. 162)

From that theoretical framework, creativity is understood as *a process in which the abstract and the concrete merge*. Also, emotion and cognition merge and need to be considered as involved in specific processes:

> Specifically the secrecy of the fantasy indicates that it is closely connected with internal desires, inventiveness, drives, and emotions of the personality and begins to serve this whole aspect of the adolescent's life. In this respect, the connection between fantasy and emotion is extremely significant. (Vygotsky 1998, p. 164)

From this point of view, Vygotsky proposes the idea of *zone of proximal development (ZPD)* to explain the relationships between development and learning:

> What we call the Zone of Proximal Development (…) is the distance between the actual developmental level as determined by independent problem solving, and the level of potential development as determined through problem solving under guidance or in collaboration with more capable peers. (Vygotsky 1978/1986, p. 86)

Following these Vygotskian ideas, Holzman (2010) relates ZPD and creativity. He refers not to an attribute of individuals but to social units that are present in

everyday life creative processes. From this perspective, *development is the practice of becoming, where people shape and reshape* their relationships with themselves, with each other, and with the material and psychological tools and objects of their world.

By approaching social relationships as a nuclear process of creativity, John-Steiner (2000) faces the topic treating "self" and "community" as two poles in a form of dialectical interaction, even bearing in mind that a perfect synthesis between both poles is not always possible. Her approach is concerned with *creative collaboration* and with the principle that *humans come into being and mature in relation to others*. Moreover, in those relationships the partners may develop previously unknown aspects of themselves through *joint participation.*

8.3 Methodology

In this chapter, an ethnographic perspective is assumed and understood as a situated activity that places the researcher in specific communities that will be understood by specific processes of building meaning (Denzin and Lincoln 2011; Gee 2014; Tsui 2014; Hamera 2011). The validity of this approach relies on detailed descriptions of cases to explain how people build the meaning of their activities in specific socio-cultural contexts. We observe people's practices in specific environments, in this case the classroom (Lacasa 2013; Lacasa et al. 2009, 2013). In this chapter, we focus on creativity as a social and cultural phenomenon.

8.3.1 The Project, Contexts, and Participants

The project was carried out at a secondary education school during the 2012–2013 school year. The context is a private school[1] next to the university, where the research team worked for 3 years introducing video games as educational tools in the classroom.

A group of 20 students, 14 girls and 6 boys aged 14–16, participated in a workshop during 14 sessions (each 1 h and a half long). They worked in a large group and five small ones. Each student played a different role in the smaller groups, all of them oriented to reach specific goals that focused on the game's main elements: team director, designer, art director, sound director, and programmer. To define their roles, we considered Mitchell's (2012) proposal when he describes the different functions associated with work situations in relation to the creation of video games. The teacher and the interdisciplinary research team (consisting of an educational psychologist and a specialist in communication and computing) also took part in the experience. All of them planned and monitored the workshop.

[1] In Spain, public schools are funded by the government and private schools are not.

In this chapter, we focus on one of the groups (made up by three girls and two boys) as a unit of analysis. Each of them played a different role in the creative process. From a theoretical and methodological approach, the reason for this decision is related to the ethnographic perspective guiding this research. Both the large group and each of the five small groups became independent units of analysis related to each other but maintained some degree of autonomy. In the small groups, which make sense in the overall context of a large group, activities are considered from a holistic point of view. Moreover, we must take into account that the practices and meaning change over time. However, while all groups participated in similar activities, only the selected group had the opportunity to attend an interview on a local radio station to present the experience. That happened a month after the workshop ended. This gave the students the opportunity to reflect and synthesize collectively the meaning attributed to its activity and faced them with questions coming from both the broadcaster and a professional video game critic who also participated in the interview.

8.3.2 The Data

The corpus of data consists of video- and audio-recorded sessions, the photographs taken during the most relevant moments of the workshop, and the video games created by the students; moreover, the researchers elaborated an interpretative summary of the sessions, and we carried out interviews to the groups. Four focus-group interviews were carried out (one per team) at the end of the workshop. A final interview, as previously mentioned, took place at the local radio station in which the participants were the students in the group that will be examined in this chapter. Moreover, the whole class participated in a Weblog, presenting personal collective and personal reflections. All this allowed for different interpretations of the same activities. The data collected appear in Table 8.1.

Table 8.1 allows us to see the data collected throughout the workshop and, more specifically, those corresponding to the group whose activities will be analyzed in this chapter (group 2). All data have been combined following an interpretative approach, which allows us to examine both practices and mental representations as present in conversations.

8.3.3 Data Analysis

We adopted Gumperz's (1981) concept of ethnography. This is defined as a "thick description," including participant observation, interviews, mapping and charting, interaction analysis, study of historical records, and current public documents. It is assumed that ethnography is much more than a set of methods or techniques; it is understood as a way of approaching culture to understand people's practices in

Table 8.1 Data collected across the session during the workshop

Tools for collecting data	Total	Group 2
Video recording (14 sessions)	39:39:52	08:39:25
Audio recording	33:17:45	09:03:27
Group interviews	05:26:33	01:25:44
Photographs	1,290	268
Radio interview[a]		00:32:14
Researchers' summaries	11	1
Student materials		
Written material (texts)	10	22
Blog	54	12
Power point	3	1
Drawings	125	31
Sound files	50	8
Video games (3 trailers)	00:03:35	00:01:26
Researchers' materials		
Videos	01:13:53	
Power point presentations	7	
Texts	25	6

[a]Radio https://www.facebook.com/JessWePlay/info http://www.ivoox.com/podcast-podcast-jess-we-play_sq_f133474_1.html (oj no es la correcta)

specific communities. Moreover, other authors (Gee 2010; Green and Wallat 1981) provide the rationale for conducting discourse analysis combined with an ethnographic approach. We looked for the flow of the classroom conversations to identify thematic units of varying length, to produce structural maps, and to identify insights related to people's ideas, explanations, and beliefs.

The analysis is considered as a circular process beginning during fieldwork (Holstein and Gabrium 2011). In this chapter, we analyze the process followed in the workshop to understand the process itself and not only the final product of the video game design activity (Pulsipher 2012b). From a discourse analysis perspective (Gee 2010), the enquiry was carried out with Transana software (2.5.3) in order to understand the adolescents' experiences in the context in which they occurred. The recordings of each session were segmented and transcribed in order to analyze the conversations to understand the meaning that this experience had for teenagers and researchers.

8.4 The Creative Process in the Classroom

Results are presented through an analysis of the workshop sessions, analyzing the conversations in small and large groups. In addition to this, other materials were considered to have the general contexts of these conversations. Through this analysis, we can see how students become aware of their creative processes and how that awareness is generated progressively throughout the sessions we'll present.

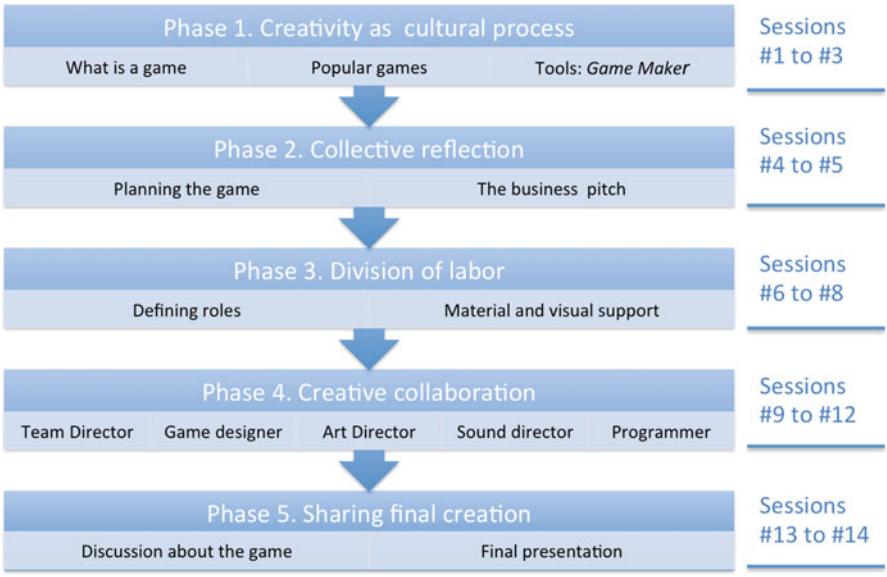

Fig. 8.2 Workshop context: phases and sessions

Figure 8.2 presents the main moments of the workshop; this is the result of the researchers' interpretation, and it serves as the general framework for the analysis of the creative process in one of the small groups participating there.

8.4.1 Phase 1. Creativity as a Cultural Process

This phase took place over three sessions, serving as an introduction and inviting the students to reflect on three main concepts. The brain storming generated awareness that video games are cultural tools, so it was uplifting to consider them as the starting point of the game creation. Also, to create a video game, some material elements support creative activity. At that moment Game Maker was considered as the software to develop the game.

8.4.1.1 Approaching the Game

A discussion on existing games in session 1 allowed to define the starting point. Guitar Hero, Space Invaders, Portal, SimCity, Pokemon, God of War, Final Fantasy VII, Prince of Persia, Dead Space, and Angry Birds were mentioned as those preferred by teenagers. All of them are popular and almost mythical games. Following Russ and Fiorelli (2010), it could be said that the creative process, contextualized in

this scenario, implies that improvisation is complemented by a collective inspiration which focuses on certain cultural products. This is the theoretical framework to interpret the adolescents' conversations with the researcher.

Fragment 1. Analyzing commercial video games *Session 2. 2012 12 13*
Researcher: Have you understood why we are doing this exercise? Student: Yes, to get an idea so that we can design our own, to get some inspiration. Researcher: To be inspired, that's the main idea. So today we will learn what games are (…). And I think we will learn to be critical, to look at games differently.

The researcher tried to promote the awareness that it is possible to create from something but, mainly, that creating may require a prior analysis of what others have created. Vera John-Steiner (2000) has referred to this process of inspiration that goes beyond the individual when it comes to artistic inspiration. The dialogue shows, moreover, that video games can be analyzed from different perspectives and the students express it clearly.

Fragment 2. Video games. Introduction to the workshop *Blog. 2012 12 19*
We are Evany and Mar; we are in 9th grade in high school. We look forward to starting to develop our own game. We have been exploring other games, and we have learned to look at them from new perspectives. We hope to have more knowledge for the project in the coming sessions. Greetings!

8.4.1.2 What Is a Game for You?

After initial discussions, students reflect and write a text individually about the features that define games and video games. Let's consider, for example, the definition provided by the art director in the group being analyzed.

Fragment 3. What is a game? *Session 3. 2012 12 20*
What is a game? "A game is an object or a set of conditions defined in a given situation in order to have fun and some time for entertainment. Games can also be educational, that is, we can learn by playing." What is a video game for you? "To me, a game is a kind of electronic game. It is projected on a screen and you have a series of commands or controls that can be used to modify what appears on the screen. Video games, in my opinion, are the type of games to which teenagers dedicate most of the time."

Focusing on the representation that the student has about the game, we noticed that she refers to it as a *set of conditions*, which could be the rules or mechanics. In

addition to this, she associated it with entertainment contexts. It is clear that, in her opinion, video games are not present in formal learning environments; they are often missing in schools. From this perspective, Holzman (2010) refers to the fact that "in nearly all schools the elements of ZPD-creating, freedom from knowing, creative imitation, and completion are absent" (p. 36), hence the motivation surely felt by students entering the game in formal learning contexts.

8.4.1.3 Tools and Creative Processes: Specific Software for Game Design

The use of specific instruments to create is relevant in the context of sociocultural psychology. In this case, one of them was the software, Game Maker. From this perspective, for example, Connery (2010) states that knowledge and creation are not directly internalized processes but through the use of instruments, not just the language but also the physical tools and materials. Managing this tool required interdisciplinary work between the different members of each group, i. e., scheduling the game involves creating a scenario, integrating the characters, defining a pattern of sounds, developing game options, and so on. The teacher and the student programmer were aware of it, and that's how it was described in an interview on a local radio station maintained once we finished the workshop.

Fragment 4. The meaning of software *Radio interview. 2013 05 25*
Programmer: In general, I think none of the programmers of the four groups had any idea of programming.
Radio broadcaster: No idea? Did you start from scratch?
Programmer: Well, I for one did not know that the program existed.
Radio broadcaster: What program did you use?
Programmer: Game Maker
Radio broadcaster: So is it a program designed [asking the teacher] to make video games?
Teacher: Yes, it is a program that gives you the basics and, because it is otherwise (…) clear, it gives you ideas on how to establish forces, vectors, and so on. It is quite complicated. But through the program they can see what happens when a force is applied, something that they already know from their physics and chemistry lessons. That is, something like Newton's apple falling down [laughing]. They see it in their language, that is, the language of video games."

We will emphasize the importance given to the software by the students, which will allow them to build the game. The software presents another kind of language that the students must learn to communicate in a digital society. The teacher is concerned about how to apply school knowledge to everyday life.

8.4.2 *Phase 2. Collective Reflection: Anticipating the Final Product*

The dialogue among team members while planning the game helps to achieve awareness of the game's elements, anticipating the final product. This activity can be interpreted from the reflections of Moran and John-Steiner (2003) when they consider that creative thought starts as an imaginary sense of how things must be, which is expressed in an ongoing dialectic between the general categories of the culture and the specific materials and emotional experiences which with the individual works. These authors mention how Vygotsky (1986) emphasizes verbalization processes in creative thinking: "*There is a continuing interaction between generative thought, which is often condensed, fluctuating, and unstable and communicated thought, which is expanded and organized for maximum impact"* (Moran and John-Steiner 2003, p. 75).

The results of the reflections, focusing on the product planning that they would create, were expressed in a collective text, including the fundamentals of the game. The text was written in a session dedicated to planning a "business pitch" oriented to present the game model in which they were interested.

Fragment 5, session 4. Planning the pitch. Designer's text *Session 4. 2013 01 10*
Synthesis
The game presents a parent who realizes his family has been infected by a virus passed on by his zombie mother-in-law.
Each floor is a level, and he will find specific challenges in every room and will have to face his infected family.
If he manages to get through all floors, he will reach the attic, where he will have to fight his mother-in-law, who will throw croquettes at him. If he beats her, he will win the game. If not, he must start all over.
Goal
The goal is to beat the mother-in-law, which cannot be done without killing the rest of the family so as not to be infected by the virus.
Apart from escaping death, he needs to be careful not to come in contact with bacteria in the house, because if he did, he would be infected and die a slow death unless he finds a new life in one of the bonus boxes.
Some mechanics
Five limited lives and limited time. Bacteria that will be eating you alive if infected unless an antidote is found in a bonus box. If this is not the case, the game will come to an end.

In this game's description, the narrative dimension and the rules orienting the player's activity are differentiated from player activity (Juul 2005). Both dimensions are intertwined. Looking at the story, the physical context is observed; it is defined by a multistory house around which the characters wander. They may be infected with the virus created by the mother-in-law, on the top floor. The goal,

achieved by following the rules, is clear: to kill the mother-in-law without coming in contact with the rest of the characters. The mechanics of the game are also presented by proposing a limit on the characters' lives and the antidotes to prevent infection. Fantasy and imagination are present in the creative process (Vygotsky 1998, p. 164).

8.4.3 Phase 3. Specific Roles in the Creative Process

As indicated, this phase of the workshops focuses on the organization of work and the distribution of the roles that each of the members of the group will play in creating the game. Among them there will be collaborative processes. In these activities, students are guided by the research team, more specifically by the computer specialists. They provide two clear strategies. The first one relates to the distribution of roles. The second will provide techniques for work organization.

8.4.3.1 Division of Labor

Looking at Fig. 8.3, we can see that there is a very clear division of labor. If we apply Vera John-Steiner's (2000) contributions, it could be defined as complementary collaboration. In this case, it is not necessary for all people to be involved in the

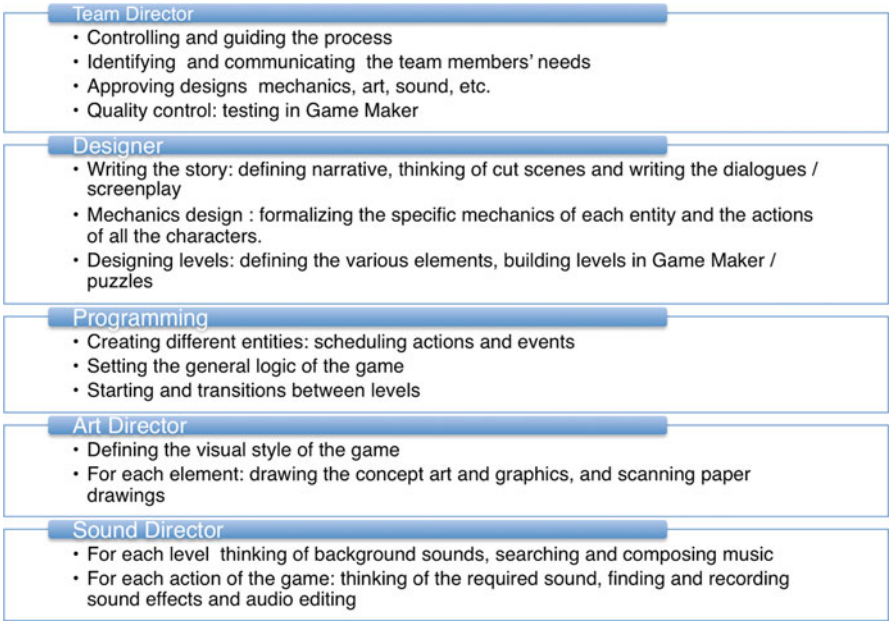

Fig. 8.3 The division of labor. Tasks assigned to each of the team members

creative process of the final production. Tasks can be segmented, and each sub-task must be done at the right time. Delays will cause a problem to the rest of the group. According to John-Steiner, there is another way of working, where each member of the group is present in all tasks. This way of acting leads to a transformation of the participants' global vision of the creative process. The latter is defined as "integrative collaboration." They are not mutually exclusive but complementary; this is the main reason why we mentioned both of them.

8.4.3.2 Material and Visual Support

Having described and distributed all roles, it was necessary to manage the setup. The students had not suggested any planning process over time. Therefore, the researchers proposed a dynamic strategy based on a division of tasks supported by the generation of different game elements. The strategy will allow them to go forward together and organize visually several tasks, displayed using Post-its and cards. Let's see how the researchers present their proposal for work organization.

Fragment 6. Work organization: The researchers' proposal *Session 6. 2013 01 24*
Researcher:
We were thinking about the process you can follow to organize all the work you need to do…
The process we are proposing is quite visual; it employs cards and Post-its, okay?
Then, to organize the group, we will take a giant card and place stickers and move from side to side…
Now I'll tell you roughly, and then I will present an example of what I'm saying.
So the first thing for what it is used is to identify all the elements that you will see in the game.
I think we are being quite insistent on this idea all the time…
Later on this will be useful for planning, because each of these elements will require some work; you will need some graphics, sound, programming, planning…
And then each of those elements, which requires work, will have to be passed from hand to hand.
The first step might be to design, then draw graphs, and then look at the sound and audio, and finally the developer will have to gather everything in the process…
You have to distribute the elements of the game between you.
So how do we identify the elements of the game?
Well, with stickers, with Post-its. What we do when we start organizing the team…
What you will do at first is ask: What are the game's entities? And you will do one Post-it for each of them.

Reading the text in detail, we notice that the researcher has structured his speech stopping at the steps students must follow in their activity. Figure 8.4 shows the implementation of the strategy by the students in one of the sessions during the workshop.

In this context, the role of the team director is especially relevant, as she realized herself in the final interview on the local radio station.

Fig. 8.4 Planning tools in session 8. 2013 02 14

Fragment 7. Task coordination *Radio interview. 2013 05 25*
Radio broadcaster: Are you the boss? Team Manager: Yeah, well, we are a good group, but when there are many people, it is more difficult to pay attention and a firm hand is needed. Radio broadcaster: But basically you function well as a group, right? Team Manager: Yes, more or less. At first we used a system we were taught to organize the work consisting in a large card. I put the names of all the tasks for each of them, for example, the design of the main character, on the one hand, and then placed it in a column to organize everything and put it all together…

Students need to coordinate their work. Their ideas intersect, and the decision-making process is collective, although each of them performs their own work. According to John-Steiner (2000), collaboration involves a process of appropriation, in the sense of taking something that belongs to others to rebuild it together.

8.4.4 Phase 4. Creative Collaboration

The differences in the working mode do not impede shared creativity. Several authors reported distributions of collaborative work in creating video games when exploring specific contexts in companies, semiprofessional, or amateur teams (Mitchell 2012; Pulsipher 2012b; 2013, July). Over four workshop sessions, the team members performed their task relatively independently and integrated it all in a game programmed with Game Maker. The students explained it later on, during the interview, and this allowed us to understand what their roles were and how each

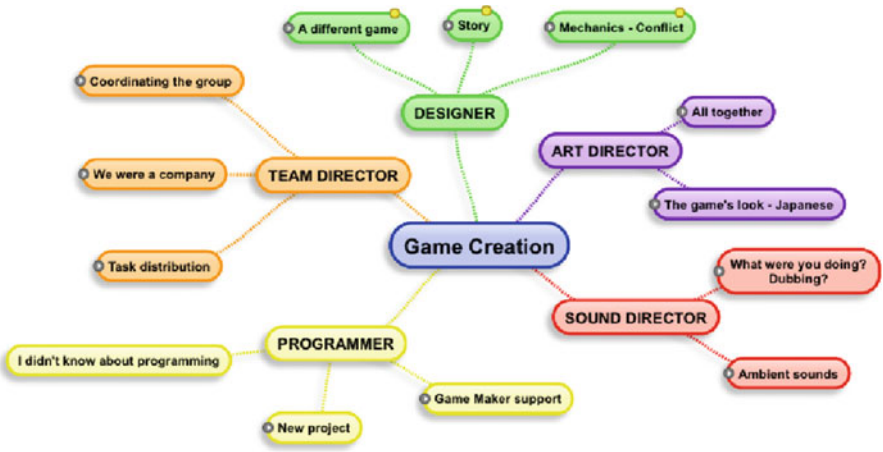

Fig. 8.5 Student interpretations of their own creative roles when designing the game

of them interpreted his/her work. A synthesis of the content of this conversation appears in Fig. 8.5.

The previous fragment presented the team director's explanations about her own role. Her main ideas, when she answered the questions of the radio broadcaster, are included in the conversation map: first, her role as group coordinator; second, how she distributed the tasks in order to create the final product; third, adopting the practices of brands and companies where she helped the team to organize a business pitch to present the project in session 5 and the final product on session 14. We will now focus on how they approached and interpreted the work of the rest of the team. To understand their roles, the following paragraphs will include both the video game elements as proposed by each of the team members and the student's explanation when replying to the radio broadcaster in the final interview. The process of creating the game would not have been possible without the cooperation that took place between them, always acting in a complementary way.

8.4.4.1 The Game Designer's Role

The designer had two tasks. She had to write the script for the game and also to integrate its rules into the story in order to guide the player's activities. Figure 8.6 is a summary of the chapter prepared for delivery to the programmer as an example of the game mechanics.

It's very clear how important game mechanics are for her. They focus on the confrontation between enemies. To achieve this, the hero must find the antidote in the bonus boxes. How the students interpreted her work is presented in the following fragment.

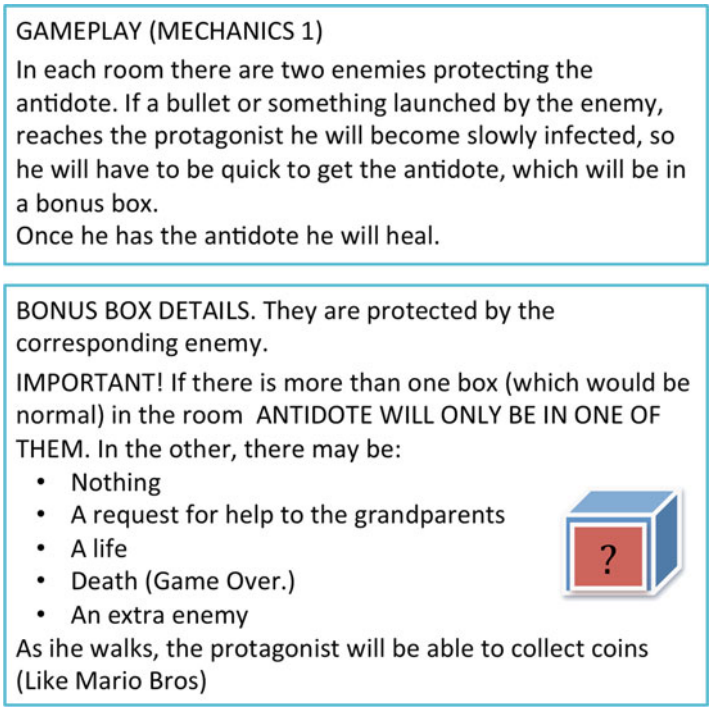

Fig. 8.6 Creating the game mechanics

Fragment 8. The designer's role *Local radio interview. 2013 05 25*
Radio broadcaster: You're the designer, right? Why did you choose this plot?
Designer: Let's see. First, we wanted something different because I think there are many video games about families infected by zombies, and here we have a murderous mother-in-law infecting the whole family.
Radio broadcaster: Is there something like that in the market?
Designer: Yes, we were also watching different games, and the one we liked the most has action and zombies and such. Then I wanted to create an environment slightly recreating daily life. The mother-in-law idea infecting the whole family was oriented to having a more attractive game.
Radio broadcaster: That's fine, fine, and also the difference in your game (…). But you do something more constructive than to cure the zombies, which I think is the goal, right?
Designer: Yes, because killing the entire family was going to be a little (…) then (…) they have to find the antidote in the house and avoid those already infected.

Here, we can see that the game designer has two messages. First, the team wanted to be present in game markets, so they looked for something new that didn't exist and considered ordinary people. Anticipating the final product plays an important role from the beginning (Sawyer 2003). Second, she focuses on the game mechanics considering antidotes that will save those who have been infected. As she wrote in

her proposal for the programmer, she was inspired by other games, for example, Mario Bros. Again, the presence of culture is undeniable; the designer not only integrates the work of their peers to be compatible with her own but also a cultural product on the market (Connery 2010).

8.4.4.2 The Art Director

Let's now consider the contributions of the art director, as she explained in the radio interview.

Fragment 9. Collective art: art uninspired and freehand *Local radio interview. 2013 05 25*
Radio broadcaster: (…) what about the art director? Because I think it's you who were in charge of how the game looks like.
Art director: Yeah, more or less.
Art director: Well, all together, a little bit.
Radio broadcaster: Why did you choose this look for the game? It reminded me a little of some Japanese drawings.
(…)
Art director: No, the truth is that I started at home picking up a piece of paper and starting to draw with a set square, compass…. I didn't look at any other drawings for inspiration.

This student brings us two messages showing the potential importance in the game production process of both individual and collective creation (John-Steiner 1985/1997). First, the student recognizes that there is some collective work involved; perhaps, she refers to the ideas that helped her to generate her drawings from the group dialogues with peers or to the story they had previously built together. On the other hand, she refers to the result of her own creation, the product to be integrated into the whole game. Interestingly, according to her words, she was not inspired by other artworks; she just mentions the tools she was using. Figure 8.7 includes a sample of her characters as they were integrated in the overall context of the game.

8.4.4.3 The Sound Director

We will now see the sound director's interpretation. He also refers to creative activity in an individual and collective context (Sawyer 2010).

Fragment 10. Downloading and editing sound *Local radio interview. 2013 05 25*
Audio manager: Well, I had the task of adding music in the background….
Radio broadcaster: Yes, did you add music?
Audio manager: I had to get into a Web page, obviously, to download sounds without copyright.
Radio broadcaster: Very good.

Audio manager: Editing them was the most difficult task, and after editing I added it to the game.

(…)

Radio broadcaster: Which style did you finally choose? Terror or tension? Or you added something different to have an intense break?

Audio manager: I used mainly two sounds, I added one of tension, and… I don't know how to say that… a sound that rises to create a special environment.

His task was to accompany the player with a music background when playing. He feels limited by copyright. He didn't compose the music. He downloaded and edited it. He chose the sound style according to the game, what he felt most appropriate, and then he combined sounds and controlled their intensity.

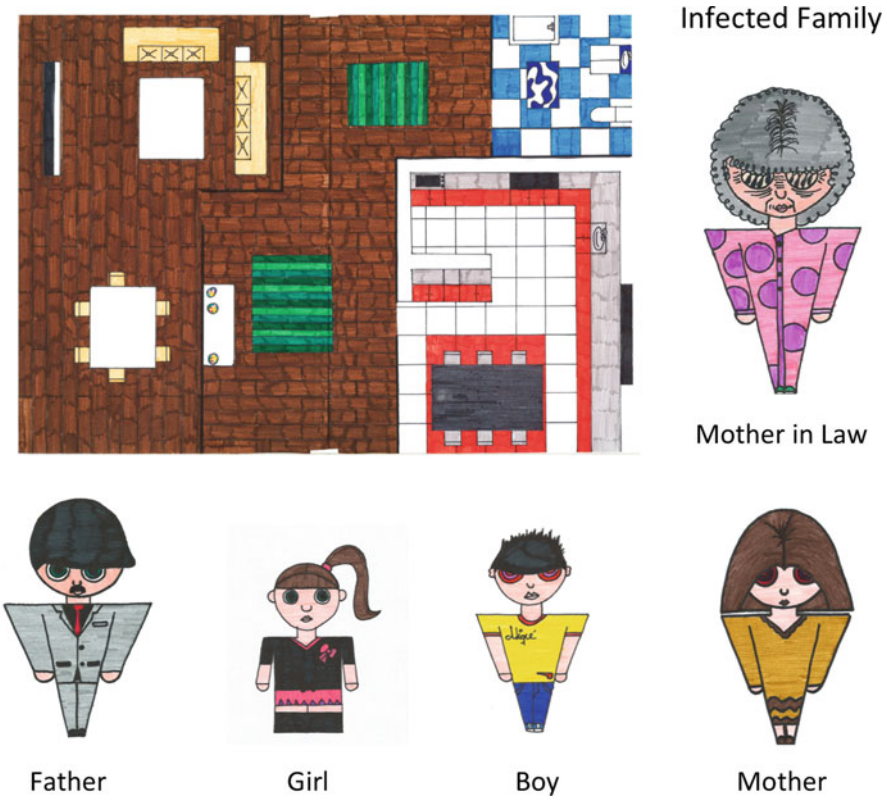

Fig. 8.7 Graphical representation and the game environment

8.4.4.4 The Programmer

Finally, the role of programmer is related to the integration of the previous creations in the game system. Although supported by the Game Maker software, he tells us that sometimes his work was not easy. The program imposes its limits, even if not all team members are fully aware of this fact.

Fragment 11. The programmer's perspective *Local radio interview. 2013 05 25*
Programmer: It is a program that gives you the option of including codes, as you said, but if you don't know about programming, it gives you the main parts. For example, you can include a picture and it makes a graphic, as you said before, and you can create an object all together with that picture.
(…)
Game reviewer: So let's say you are going to have meetings with the members of your team, right? A meeting with the sound person, another meeting with the art director?
Programmer: Right, because, for example, Verónica (game designer) kept coming over, and she was always telling me, "take that" and "do that"! And it was difficult…
Radio broadcaster: Writers! (…) They give a lot of problems!
Programmer: Because you can't tell the game that the character must do that! No! You need to write some variables, things like that. And it is not as easy as it seems!

For this programmer, the specific software was helpful even though it was not necessary to program the code, but sometimes difficulties arise because peers are not aware of its limitations.

8.4.5 Phase 5. Sharing Final Creation: Awareness of Difficulties

Difficulties were present in the final phase of the workshop. They can be noticed through the conversations (intersubjective processes) that students had with the research team. Those allowed for progress in overcoming some problematic questions related, for example, to the game mechanics, specially its levels.

Fragment 12. Final presentation: difficulties appear Session 14. 2013 04 11
Researcher
Well, I have noted that you have done very well; the narrative is well told and the game dynamic is well integrated. I also like how you developed the characters.
They've insisted that the first level is pretty hard. What you did is okay but move it to level 10! [laughs]
(…)

This game can be seen from above, many times. This is called aerial view. The overhead shot is not very realistic, of course, because you start to see angles and dimensions; you are somewhat aware of this problem.

What has been missing is explaining a little or telling a little bit about the other levels. Because level one was in the house, the rest consisting that in each level one character was saved and (…).

Director

Levels were defined in relation to the floors, adapted to the house, and then the house was to have five floors.

And then there would be several family members on each floor, and the upstairs floor would be entirely for the mother-in-law that was who was infecting everybody and who you must fight in the end.

The conversation between the researcher, in this case a computer person, and the team director shows that the students are aware of the game's elements. She tried to overcome the problems posed by the research. Verbalization processes, the use of language, are what helps to transcend and expand the students' awareness of the game elements. Reading the previous fragment carefully, we observe that the researcher, acting as a jury to choose the best game in the final presentation, values the narrative and the character design but also points out some problems with the mechanics that define the levels of the game. Sharing his doubts with the students helps them focus on the issues that remain to be defined. Responding to these issues, the team director expresses verbally how each level relates to a different scenario and how certain characters are associated with them. Once again, she is aware that some elements which were previously presented had not been integrated into the game.

It is relevant to show what this experience means for each of the participants. The radio broadcaster asked all the students to summarize the project and their personal experience while creating the game in one sentence. These were the responses of the team members.

Fragment 13. Final synthesis

Local radio interview. 2013 05 25

Programmer: Well, I don't know. This was a unique experience. As you mentioned, not everyone has this opportunity (…) to learn programming, and also (…) people buy and play games, but they are unaware of all the work behind them, no?

Audio manager: I think the best thing about this project was teamwork or the ability to work with others; usually in other subjects you have to do a project by yourself….

Art director: That is what is amazing; you create a video game, and like my colleagues said, it is very complicated, but later, knowing that you are playing your own game is incredible.

Designer: To me, what I find amazing is seeing that what you had in mind is working. There has been a whole process, sometime later, and working hard you see it on a screen. You are watching something that didn't exist before that you imagined, and that works!

Team director: Well, I think it would be a little mix of the four ideas. It gives you another perspective, another view on video games. Next time you grab a video game, you'll play but you'll also look at more things. Teamwork is also very important, and it is something you'll always need in your everyday life. And then there is the satisfaction of knowing that at the beginning we had nothing but now we have created something that is just ours.

In short, creating a game turns out to be a unique experience, emerging as a collective enterprise. It allows us to look at games from a different perspective. Moreover, that has contributed to the realization of a project, which was only a set of mental representations at the beginning of sessions but has become a reality, a video game that works.

8.5 Conclusions

Society demands that people face new challenges, implementing skills often lacking in formal educational environments. Among those skills is the ability to create something new and meaningful in specific social and cultural contexts (Connery et al. 2010; John-Steiner 1985/1997, 2000). In this chapter, we show how a formal educational setting can become an environment that encourages creativity. In any case, both the stage, organized around the game design activities in a school setting, and the process of collaboration among students must be taken into account. The innovative scenario was built on the following foundations.

First, the creative process was organized around a cultural product, the game relevant for the actors in entertainment environments (Gardner 2011; Gee 2013). The students, who at first understand games as an object designed for leisure, discover new ways to look at them, once it is they who have created them.

Second, people have created the video game using two instruments (Cole 1996): materials embedded in physical reality, which include not only software but also any type of technology, analogical or digital, which supports the activities during the workshop, and tools linked to the participants' mental representations and the collective ideas which have served as inspiration (Sawyer 2010, 2012).

Creativity is inseparable from the social context where it appears, and that can happen from a double perspective. First, when people dialogue in small or large groups, they are aware of their ideas, and they are forced to rebuild them, according to other perspectives, in an environment in which the subject interacts with others, which results in intersubjective processes. Moreover, we find collaborative creativity. Second, people act in small groups, taking on different roles with positions, goals, and functions (Moran 2010) associated to these roles.

At the end of the day, it's the role one plays in the creation of the game which allows him/her to integrate as an individual. Creation as a cultural becomes intertwined with individual activity (Sawyer 2010). The construction of meaning is not independent of the played role, which helps to bring different perspectives and to mix them.

Summing up, this research sets up particular creative universes that educators, parents, and researchers often forget. By being there and participating with the students, we understand the world without sacrificing fantasy, which is so often abandoned in schools. Playing, imagining, and creating are indispensable activities that humans, young or old, have to learn in the twenty-first century.

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