

## LEARNING IN VIRTUAL WORLDS

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# LEARNING IN VIRTUAL WORLDS

## RESEARCH AND APPLICATIONS

Edited by

Sue Gregory, Mark J.W. Lee, Barney Dalgarno,  
and Belinda Tynan



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## VIRTUAL BODY

### Implications for Identity, Interaction, and Didactics

*Laura Fedeli*

This study is based on research developed in the theoretical framework of the cognitive sciences (Clancey, 1997; Damasio, 1995; Gallagher, 2005; Gallese, 2001; Lakoff & Johnson, 1980; Merleau-Ponty, 2009; Varela, 1990; Zlatev, 2009) and pedagogy (Gamelli, 2001; Kolb & Kolb, 2008; Manuzzi, 2002; Mendelson, 1998) that assign an essential value to the “body” for knowledge and comprehension. The relevance of the body and the concept of embodiment, or the act of “embodying,” is present in many theories in the field of pedagogical sciences.

Cicero proposed dramatization, for the acquisition of the rhetorical methods of controversy, in order to “transcend abstract principles and allow his students direct access to argument in action” (Mendelson, 1998, p. 29). In this way the student, through what is called a “discursive enactment,” is able to give “body” to the event. *Res* (“the thing”) and *verba* (“the words”) come to a synthesis, and through a “rhetoric of embodiment” prevent the student from becoming entrapped in theoretical abstraction. Instead, he succeeds in reaching full comprehension thanks to the performance that is “embodied” and “enacted,” as argued by Leff in his 1989 study (cited in Mendelson, 1998, p. 38).

If the environments and tools provided by the Internet are characterized by a synthesis between action and symbols in which representation has a primary value for the user because of the “disappearance” of the body in the communication flow, we can assume that virtual worlds are characterized by a new involvement of the body with an absence of mediation between the user and the medium. With the advent of virtual worlds, the body regains its status and

expresses its meanings/values in virtual interactions: the physicality of the body is substituted by the avatar.

This study addresses the multi-user virtual world Second Life (SL) and was conducted during the year 2010 with different groups of participants, drawn from educators and teachers.<sup>1</sup> Starting from the assumption that embodiment is a necessary condition for the development of cognitive processes, the aim of this study is to verify in what ways and with what value the concept of embodiment is present in Second Life and, specifically, how it may influence the learning/teaching process.

Taking into account the theoretical premises, the state-of-the-art literature, and the results of the analysis of two case studies related to the two consecutive editions (academic years 2008–2009, 2009–2010) of the post-laureate course “Teaching and Learning with MUVES” at the University of Macerata, Italy (Fedeli & Rossi, 2011), and developed within the initial framework of the European project MUVEnation (<http://www.muvenation.org>), I proposed the following hypotheses:

- The user “inhabits” the virtual world through his or her own body-avatar.
- The avatar has its own physical/aesthetic identity that affects “inworld” social relationships.
- The avatar has its own life story whose paths are marked on its body, on the space in which it lives, and on the artifacts it creates.
- Sensory motor skills, space management, and multi-sensorial involvement affect the didactic modalities in Second Life, opening new perspectives on the management of the teaching/learning process.

## The Research Design: Paradigm and Approach

This research is based on a qualitative approach and the “philosophical world-view” (Creswell, 2009) or “paradigm” (Guba, 2000) takes a socio-constructivist perspective (Berger & Luckmann, 2008; Guba, 2000; Lincoln & Guba, 1985; Schwandt, 2007). Thus this study is mostly based on participants’ viewpoints and perceptions. For this reason, I used data-gathering techniques that offer open questions and opportunities for interactions among the participants in order to make participants socially negotiate their subjective meanings (Cicognani, 2002).

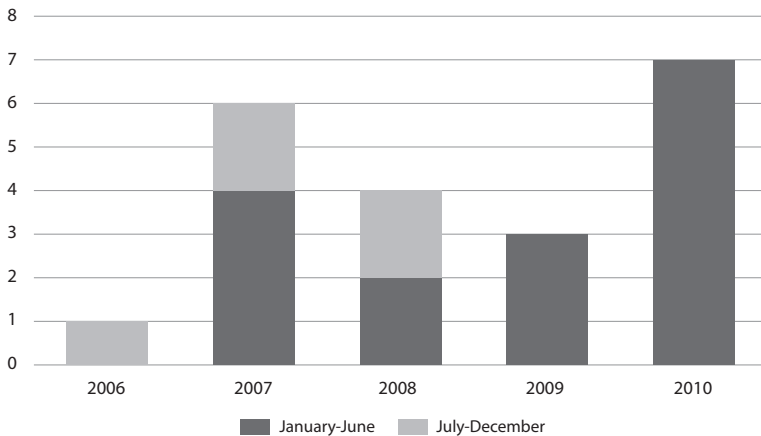
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<sup>1</sup> The results of the research presented in this chapter are discussed in greater detail in a book by Laura Fedeli originally published in 2013 in Italian under the title *Embodiment e mondi virtuali: Implicazioni didattiche* [Embodiment and virtual worlds: Didactical implications] by FrancoAngeli.



I followed a phenomenological approach (Creswell, 2009) due to the specific nature of the study: it was relevant to determine the participants' experiences about their lives in the virtual world in order to be able to elaborate models connected to the concept of embodiment. The choice of a small group of participants (21 Italian teachers) with whom I had extensive and deep contact is consistent with the procedural parameters of a phenomenological approach and the study's objectives. As the study is aimed at eliciting data on perceptions of teachers/educators and trainers in relation to the value of the concept of "body" for the teaching/learning process in Second Life, the sample needed to be representative of the professional educational context in order to be "purposive" (Zammuner, 2003, p.110), that is, appropriate to the aim of the research.

Participants were recruited by phone calls and were not part of a common inworld community. The following criteria were identified to select the participants: he or she had to be a teacher or a trainer in real life who had didactic experiences in Second Life (either as a teacher or student, or both). The graph in Figure 3.1 shows the avatar age range of the participants recruited.



**Figure 3.1** Research participants: registration in Second Life.

The research questions were designed to highlight the different dimensions of the user's presence and interaction in Second Life tied to the ownership of a "body."

### *Data Gathering*

In qualitative research it is common to use different data-gathering methods in the same investigation (Creswell, 2009; Miles & Huberman, 1994). This allows

the researcher to deepen the non-exhaustive feedback collected through asynchronous tools such as the questionnaire and integrate those data with additional tools like individual interviews.

In the analysis of social reality, as underlined by Corbetta (2003), there are three basic actions: observing, asking, and reading. These are connected to three main categories of researching in the qualitative approach: “direct observation,” the “in-depth interview,” and the use of documents.

In the present study I collected data using three tools: a web-based open-ended questionnaire, focus groups, and in-depth interviews. Participants were first asked to complete a questionnaire, second I interviewed them individually in Second Life, and finally they were divided into three small focus groups that were also run in Second Life. That sequence allowed me to make a progressive analysis of the data with a different level of detail in the provided feedback.

The questionnaire had 53 questions divided into different sections and included closed patterns (checkbox questions, table questions) and open-ended questions (text fields, essay questions, multi-text questions). In some cases, I used images to facilitate the comprehension of the questions related to concepts specifically tied to the Second Life environment, and to foster reflection about typical aspects of the world’s interaction.

The topics covered by the items were divided into two general areas:

1. Avatar: aspects connected to the care of the avatar’s appearance; the value of the presence of elements in Second Life that recall the habits/norms of real life and professionalism (economical, cultural, social, and educational); aspects tied to sensations/emotions.
2. Interaction: use of sensory motor skills, building, scripting to acquire knowledge; aspects tied to communication (voice, gestures, use of accessories/tools, posture, space management); aspects related to the relationship of the user with the medium Second Life.

Questions in the macro topic “Avatar” were aimed to elicit the perspectives of the participants in relation to their graphical 3D representation, collecting their opinions, perceptions, and reflections which may contain references to biological, social, and cultural aspects of the virtual “body.” The macro topic “Interaction” addresses a wide landscape of dimensions of analysis mostly based on the use of the sensory motor skills of the avatar.

To avoid eliciting answers to the questionnaire that were too synthetic or inappropriate because participants didn’t comprehend the questions (Jonassen, Tessmer, & Hannum, 1999), I interviewed each participant in order to better

highlight the collected data and attribute the right meaning to the statements expressed in the questionnaire.

Conducting the interviews inworld allowed me, as the researcher, to focus on specific items and let the participants express themselves in a more open and involved way. Furthermore, the “face-to-face” interviews offered the opportunity for me to establish direct contact with the participant and infer useful information through dialogue and argumentation.

I negotiated the date, time, and location with each interviewee with the choice to meet at the avatar’s own place, if requested, or in his or her professional inworld context (school, association, etc.) in order to make the event comfortable for the participant and to give him or her the opportunity to show anything (objects, tools, scenarios, etc.) considered helpful to explain didactic activities or approach in Second Life.

The interviews were designed to be semi-structured and leave the necessary space for topics introduced autonomously by the interviewees during the meeting itself (Corbetta, 2003).

The questions explored three topics introduced in the questionnaire, which had first undergone a process of analysis:

- The modalities in which the sense of presence of oneself and others is felt by the avatar and their implications for mutual comprehension and learning.
- The transition and permeability between real life and “second” life.
- The different nuances of the perception of a life cycle of the avatar in Second Life.

As for the focus groups, we need to consider the literature relating to this method. Morgan distinguishes three scenarios:

First, they are used as a self-contained method in studies in which they serve as the principal source of data. Second, they are used as a supplementary source of data in studies that rely on some other primary method such as a survey. Third, they are used in multimethod studies that combine two or more means of gathering data in which no one primary method determines the use of the others. (1997, p. 2)

In this study the focus group, the last step of the data-gathering process, had a structure that was affected by the partial analysis of the feedback resulting from the questionnaire and the interviews, with the aim to clarify and complete the perspectives users provided (Zammuner, 2003).

The process of elaborating on the questions followed the “questioning route” (Krueger, 1994) method, which creates a structured path. According to Zammuner (2003), this approach best meets the requirements of studies in an academic context where the researcher has previous knowledge of the participants’ characteristics. As I stated above, the participants’ demographic information and qualitative data relating to their perceptions about the object of the study were well known to me when I was organizing the focus groups, so I employed a structured set of questions. I followed the prescriptive rule of the focus group methodology to keep the question format open and, when necessary, asked retrospective questions to encourage the participant to make reference to his or her own experience. In both interviews and focus groups I was the only actor involved in directing and moderating the events.

### *Coding Data*

The qualitative research software QRS NVivo was used to organize and codify all the data gathered in written documents, images, and links to external resources.

As Figure 3.2 shows, the documents connected to the questionnaires, interviews, and focus groups (direct sources) were uploaded in the folder “Internals,” including images of the photographs in the avatars’ profiles in Second Life. The “External” folder was used to collect links to blogs or websites participants referred to during data collection. The interface screenshot showed an example of the interview document identifying the place in Second Life (SLURL) where the interview was conducted, the date and time, the name of the interviewer, and the identification code for the participant. Each document was also accompanied by a snapshot of the event.

All data were coded during the analysis process, which required several adjustments in the creation of categories (Figure 3.3). Three categories were identified: “Avatar,” “Interaction,” and “Didactics in Second Life.” Within the category “Avatar,” five subcategories were isolated:

- Identity value
- Alternate identity value
- Social value
- Emotional value
- Physiological value

The first two values, “Identity value” and “Alternate identity value,” refer to the concept of identity by Rosenberg (1990). The elements considered in the analysis were tied to “name,” “appearance” (personal identity), “gender,” “age,”

“profession” (social status), and labels, such as references to stereotyped attitudes and behaviours, for example, describing oneself as an “intellectual” or a “playboy” (social types). The only difference between the first two identity values was based on the type of avatar: “prime,” that is, the avatar most commonly used, and “alt,” an alternate/secondary avatar.

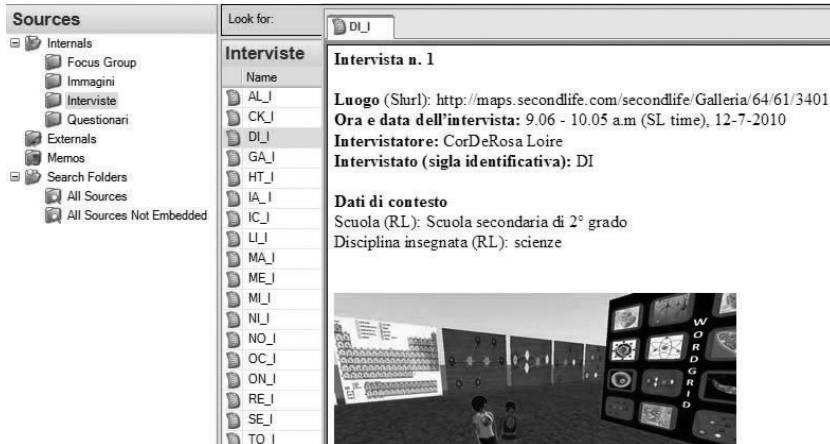


Figure 3.2 Interface of the NVivo 8 software: Organization of the data in documents and sections.

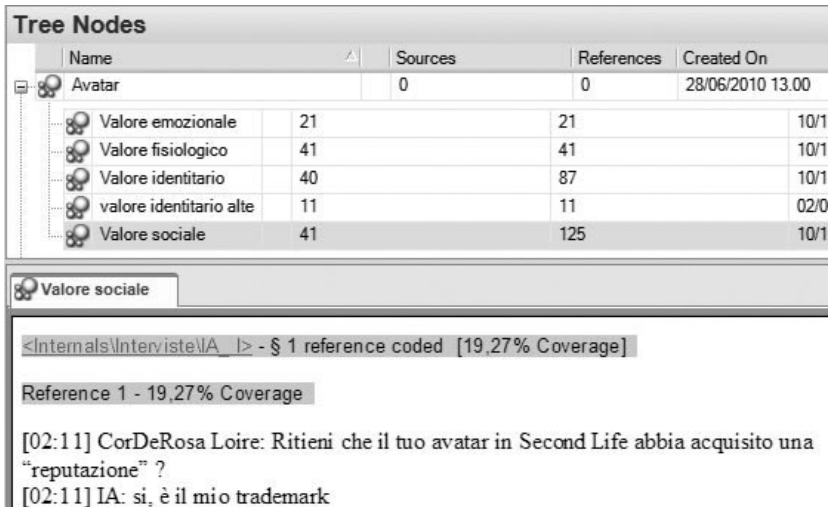


Figure 3.3 Interface of the NVivo 8 software: Category tree.

The subcategory “social value” is intended to gather all data related to the role played by the avatar in the community and social relationships in Second Life, the implications of the avatar’s personal and professional choices, and every piece of information that can be related to the avatar’s “life cycle.” Social value is also understood to be the source of reverse processes of influence: similar to the work done by Yee and Bailenson (2007), this study aimed to identify a connection between the avatar’s appearance and the phenomenon of social acceptance/refusal.

Emotional traits, feelings, and physical sensations have been coded in two different subcategories: “emotional value” and “physiological value,” to identify the connection with “body” in the frame of the avatars’ experiences. Second Life is a social environment, an aspect that was coded in the main category “Interaction” to analyze the role of the tools connected to the environment itself in relation to the dynamics of interaction and the implications for the development of didactic activity. Analysis of the communication and interaction dynamics was based on their effectiveness as perceived by the research participants, in relation to the technical characteristics of the virtual environment and the consequent didactic effect. By exploring synchronous interaction in a shared space, I hoped to discover data related to the concept of intersubjectivity and the role of sensory motor skills in the process of comprehension.

The data focused on the didactic activities were coded in the category “Didactics in Second Life” with the goal of highlighting the participants’ experiences, lived both as students and teachers, and to identify what value was attributed to the different educational modalities, strategies, and tools in relation to the perception of the teaching/learning process in the virtual world. Data from the questionnaire and the interview were triangulated with data gathered during the three focus groups run as the final stage of the study.

### *Data Analysis and Interpretation*

One way communities build their members’ sense of identity is to locate their existence in a time trajectory or “life cycle.” Linde (1993) states that it is necessary to have a history to exist in a social environment, a history that is consistent, acceptable, and in a continuous process of development.

As human beings we are born, grow, and age. In Second Life those patterns can assume alternative forms, not tied to biological factors of course, but equally relevant from a sociocultural viewpoint. The moment of registration in the virtual world is considered by the community as the avatar’s date of birth, and for

this reason it is visible in the avatar's profile and defined as the "rez day"—in Second Life "to rez" means "to appear" on the screen—(Boellstorff, 2008), that is, the day on which the avatar took shape and substance in the world. Among the 21 participants, just 8 stated they remembered their rez day and, with one exception, they were all "midbie" (with some expertise) or "oldbie" (expert) avatars. The data suggests a connection between the avatar's experience in the virtual world and the perception of a "second life" and thus embodiment in the avatar.

Personal names are social labels, and birth is tied to the choice of a name. In Second Life the avatar has a name that marks him or her for the rest of his or her life. The research data shows that the choosing a name for the avatar is not a casual procedure, but involves a series of reflections that can be summarized:

- Connection with the real name (original name, initials of the original name, anagram of the original name, nickname used on the Web, assonance with the original name/last name, part of a relative's name, combined word created from the synthesis of the original name and last name)
- Elements tied to personality, tastes, and interests
- Aspects connected to one's professional life

The choice of the last name is simpler since Linden Lab, the proprietors of Second Life, until mid-2010 offered a list of last names the user had to choose from during the registration process. Since mid-2010, users have been able to register with a single-word username and can change their "display name" as often as once a week. This option may have changed user attitudes and the value of the "name" issue in terms of embodiment, but study participants all registered before the new Second Life rules were in place.

Study participants indicated their parameters of choice: language, assonance with the avatar's name, and connection with the user's origin (city, culture).

Isomorphism between the avatar's name and a unique identity not connected with other online environments is present for 17 participants, who stated that they did not use their avatar's name in their blogs, social networks, or Learning Management Systems unless it was an environment that had a connection with their activity in Second Life. This behaviour shows a tendency to attribute a unique identity value to their avatar which underlines a different perception of presence in the virtual world. The embodiment, as a process of attribution of identity value to the avatar thanks to its "growth" and development of a life cycle, is present in statements made by the participants in relation to the perception of a story about their second lives.

The “second life” is characterized, in fact, by frequent references to “development” in terms of the avatar’s improvement in appearance (gesture management), technical skills (being able to use the tools in the environment’s interface), social habits (communicating and interacting with other residents, making friendships, creating professional relationships), and professional activities (learning, knowledge sharing, and teaching). An interesting aspect is the participants’ perception of acting in a place that is felt to be customizable according to the user’s need. The avatar’s growth is also felt to be due to its capacity to modify his or her surroundings, create objects, and interact with them.

Actually the avatar’s growth seems to follow certain steps that, according to some participants, resembles the stages of development of an inductive learning process: a first phase of exploration, a second of reflection and systematization of knowledge, and a final verification. These different phases are also compared to the real life cycle of childhood, adolescence, and adult life, showing that life inworld is affected by time spent there, a time that is organized by the community and the avatar him- or herself.

I also analyzed the personal images uploaded in the profiles, taking into consideration shots and framing. Four different types of shots were used for the profile photo: “Close-up,” “Medium close-up,” “Mid shot,” and “Very wide shot” (where the subject is too far away to make out clearly). Different cases include the absence of a photograph in the profile and the presence of a photograph where the avatar appears with a companion.

Analysis of those photographs shows that most participants with a midbie/oldbie avatar have chosen to use a personal image in their Second Life profile—a close-up or a medium close-up, showing the details of the avatar’s face and thus consolidating his or her identity. Almost all participants who did not use any photograph in the profile were “newbie” (beginner) avatars.

This data indicates that the older the user, and consequently the more experienced in the virtual world, the more they seem to pay attention to their representation and public recognition as an avatar (Bodur & Bélisle, 2010).

I must point out that no participant uploaded a generic image to their profile, that is, images of cartoons, landscapes or logos, as often happens in online environments used for social interactions such as social networks and social media. In the Second Life profile’s features it is also possible, along with the avatar’s photograph, to upload a photograph of the user in real life, but almost all the participants chose not to do this. This could explain the peculiarity of an environment lived as an “alternate” world in which the resident’s presence is completely satisfied by a virtual body and identity.



Users dedicating such attention to appearance and avatar recognition are supported by data from the questionnaire and interviews. Elements of appearance such as body shape, skin tone, and eye colour seem to be rarely changed during the avatar's life cycle. It is necessary to point out that those aspects are the ones that most characterize the avatar, exactly as in real life—human beings are recognizable by their height, build, complexion, and other somatic characters. In Second Life it is very easy for users to change their avatar's build and somatic characters, but a high percentage of participants stated they had changed them just once or never, instead playing a great deal with clothes and accessories.

The avatar has not only a precise aesthetic identity but also a personality, as illustrated by the words of participants, who described their avatar using different kinds of adjectives and noun phrases which can be grouped into three dimensions of traits reinforcing the hypothesis that the avatar, in Second Life, embodies a complete identity:

- Physical appearance: slim, tall, beautiful, etc.
- Style: simple, fashionable, elegant, casual, classy, etc.
- Attitude: dynamic, independent, free, interesting, charming, hardworking, cautious, etc.

The social element of Second Life is fostered by different features of the medium which allow communication and interactions to take place in a variety of modalities and represents the unique aspect of this virtual world compared with other multi-user virtual environments.

The avatar seems to create a relationship space, as Weinstone states, “the idea of an avatar usually implies an embodiment that is intentionally crafted—the product of *techne*—and thus a ‘zone of relationality’ between persons” (2004, p. 40).

I also investigated the perception and value of the avatar's daily routine, life choices, and professional activities. Reputation, credibility, and professionalism were identified as social parameters. These three elements appear to be closely related and also connected to the avatar's appearance.

Reputation is the product of social relationships, activities developed within the community, and social and cultural initiatives that continue for an extended period. More than half of the participants stated that they felt they had a reputation in Second Life, and reported that, to obtain it, they had to live there socially and needed considerable time to create relationships in the group/community. Those who said they had no reputation inworld were newbie avatars who were still struggling to find their position within the community.

To have a reputation implies a series of duties, such as taking care of one's appearance to keep one's social position and credibility. A reputation is the result of commitment and proper relationships. Paradoxically, the reputation acquired in Second Life sometimes represents the "trademark" of the user as a professional in real life: one of the participants explained how, as a language teacher in real life, it was difficult to interact and be recognized by a community, but as an avatar her reputation affected her real-life professionalism.

According to the data, "professionalism" in Second Life for educators means being able to manage technical aspects inworld and be skilled at "building." The participants underlined the importance of showing their abilities as teachers to gain credibility.

The perception of different feelings and moods, such as feeling un/comfortable, frightened, or satisfied, are described as frequent in the avatar's life and these emotions are addressed in relation to social presence. All participants reported feeling at ease in the presence of friends, colleagues, and people who supported them in different ways. They often spoke about events when they were helped by mentors, especially in the first period of their new life.

As for experiences where participants experienced fear, discomfort, or discrimination, the data cover different scenarios:

- The use of stereotypes and unease at being judged for the role participants played.
- The presence of groups and the risk of being considered not appropriate and being excluded.
- The presence of a "griever" and the fear of being attacked or having one's avatar "invaded" by being engaged, hit, or shot.
- The sense of *dépaysement* when a place/land was felt to be unknown and risky.
- The sense of frustration when a participant was not able to follow an event/class.
- The discussions/fights that take place inworld and that can affect real life.

The aspect of satisfaction, instead, was strictly related to the possibility of creating, producing, and sharing a product or event. Satisfaction was tied to the development of activities that were immediately visible, concrete, and recognized by the community. These activities were, for example, the organization of exhibitions, cultural or didactic events, and participation in conferences.

The participants were asked if they ever felt a physical commitment to activities which normally involve the body, and there were 10 positive replies, almost

half of the sample. The fields they described being active in were the following: leisure/sport activities (horseback riding, cycling) and emotional/sexual activities (hugging, falling in love, having a baby, getting married, having sex).

Having romantic experiences that could result in relationships was an element strictly tied to the social aspect of the environment and the concept of embodiment. This aspect is also connected with the concept of life cycle I previously described; to be a couple and experiment with the emotional/sentimental and sexual components of a relationship is an extension of the potentialities of physicality in Second Life. Reification of the relationship may occur through the search for social formalization (wedding) and the creation of a child and/or a house to share with the loved avatar.

Some participants also indicated music, dance, and daily activities such as eating and drinking as sources of physical sensations. Participants reported being involved in different learning/teaching activities as examples of body involvement.

Conducting an analysis of the tools used in Second Life to foster and support interaction among residents and between avatar and the environment, I wished to identify how those tools can affect the value of embodiment. Within the dynamics of interaction, I focused on the opportunity to change point of view (POV) and be able to manage different perspectives.

All the participants, except one, used the four different options of POV, for reasons that can be summarized as management of the situation in its complexity, management of oneself, management of interaction with other avatars, and management of specific details in the situation. The POV options are:

- “Traditional view,” used to gain a general view of the surroundings and keep the situation under control.
- “Zoom,” lets the avatar orientate and identify elements or details.
- The pre-set “view of one’s avatar from the front,” used to observe oneself and imagine how one looks to other avatars.
- “Mouse look” view, a seldom-used option; it is important to remember that in Second Life the “first person perspective” is one in which, by default, the image of the avatar disappears.

Among the four available options, “mouse look” was the least used and it could be guessed that the user, using the “first person” view option, loses contact with his or her avatar who is no longer the protagonist of the scene. The phenomenon of *dépaysement* is clearly expressed by the user and some

participants' statements highlight its value, expressing the desire to see their presence embodied in the avatar.

The importance for the user to perceive the avatar as a body that occupies a physical space in the virtual world is strengthened by participant statements reporting the wish to observe and control the avatar, and observe and comprehend the avatars with whom they interact. The embodiment of the user in the avatar appears to be a primary aspect; to be able to look at oneself, to “physically” meet friends and colleagues becomes a need. The interactions that develop in Second Life are not comparable to what happens in a “blind” chat, according to one of the participants.

The wish to comprehend the other and be understood during a virtual interaction also explains the use of so-called gestures and animations to change the avatar's facial expressions, movements, and postures. The participants stated they used gestures and animations aimed at enhancing the effectiveness of interaction (expressing moods and sensations) both for their professional activities and daily routines to make their avatars act in a more natural way.

Since synchronous interaction in Second Life happens in a specific shared place, participants were asked how this could help/support a didactic event. The feedback received highlighted the following aspects:

- The chance to infer useful information from the position and movement of the avatars in space;
- The reproduction of dynamics similar to those developed in real life (but different from other online environments);
- The sensation of being part of a group or team.

These elements are connected to the concept of intersubjectivity and show how the shared space and meanings associated with the movements and postures of the avatars can have a relevant role in the process of mutual comprehension during an interaction that occurred inworld. The avatar represents what in real life is the face, a unique identification marker (Fedeli & Rossi, 2010) that, in “face-to-face” interactions, has an essential role for effective communication (Cole 1998). In Second Life, participants insisted on the relevance of being physically involved through affective/sensory-motor modalities, as reported by Zlatev. The process of sharing experiences also occurs on an “action oriented” participatory level and is based on bodily interaction represented by “empathic perception, imitation, gesture and practical collaboration” (2009, p. 14).

One of the most basic aspects of the research question that deals with the value of the embodiment concept to the teaching/learning process refers to the

participants' feedback about the different perceptions that occur in the virtual world compared to other online environments used for education/didactics. Due to the possibility of having a shared physical space perceived as "lived" and "alive," and because of the movements and actions of the avatars, we can say that the interactions that occur inworld are embodied in the consequences and effects they have on both the environment and avatars themselves. Such a situation resembles, according to many participants, one that can occur in real life in face-to-face classes, where teachers and students share either a classroom or a lab and their interactions are also affected by the spatial relations among them.

Sharing a space facilitates collaborative work by enhancing group cohesion; that sense is clearly expressed with the word "team" used by more than one of the participants. In the participants' words there are often expressions tied to the concreteness of the virtual space and avatar, such as the use of the verb "to rub oneself" which implies the physical presence of a body. A relevant aspect tied to the concept of embodiment is the use of "building" and "scripting" in Second Life to create educational content; the "prims," that is, the basic elements used to build inworld, offer the chance to "embody" disciplinary concepts. A 3D map built by a student that can be touched, manipulated, crossed, and visualized in different perspectives, transforms a mere representation (such as a 2D map developed by a graphics editor or a desktop/online application) to a bodily experience interpreting an enactive approach to cognition (Varela, 1990). The experience of building allows the avatar to be active and not just involved in a visual experience.

Data I gathered during the three focus groups show that the participants need to find new ways to contact with their students in order to make online educational practices more interactive. Participants who had previous experience in e-learning report the peculiarity of Second Life in relation to the dynamics of interaction and collaboration already described through data from the interviews.

For some participants, activities in Second Life seem to have developed interaction and group management skills that made relationships with students more productive. Both students and teacher perceived the educational process as a shared one; the teacher abandons a mainly directive role and is open to different modalities of interaction.

The process of design in Second Life seems to be greatly affected by the "learning by doing" approach. Creating and modifying objects makes it easier for the teacher to personalize and readjust his or her course based on the different learners' needs.

The example of the participant who reported using “prims” in Second Life to teach how to manage “blocks” in the Learning Management System Moodle demonstrates how the 3D building and direct manipulation of objects can be used to facilitate comprehension and memorization. The action of “building” becomes the foundation of the course’s design, and practical “hands-on” activities stimulate the development of cognitive skills.

Participants also underscored the relevance of designing activities that can take advantage of opportunities to act upon stimuli from multiple sensory channels or modalities. Multimedia becomes the tool by which it is possible to acquire a concept in a modality that can be defined as “synesthetic.” One of the participants, describing an activity about musical education, reported using physical involvement to help students comprehend a musical tone. He referred to an activity structured as a game, in which the students were required to guess the instrument related to the sound they could hear, and to stand on the image of the instruments to check the correctness of their guess. That game was part of an interdisciplinary activity based on the fairy tale “Peter and the Wolf” (set to music by Sergei Prokofiev) in which, thanks to a multimedia approach, the music becomes an “object” to walk on and acquires new sensory characteristics.

These aspects, along with the participatory and evocative ones, emerge as the main elements of the didactic experience in Second Life and the most productive for a successful teaching/learning process.

## Future Directions and Conclusion

Study results indicate that immersion and interaction, addressed as the main affordances of Second Life can be ascribed to the involvement of the user avatar’s body in many directions.

The level of interaction is determined by the quality of the user’s participation in the “life” of the virtual world in terms of identity, management of social relationships, and power on the world itself, a world that is continuously under development.

A 3D avatar is an online presence that establishes itself in all its identity values, demonstrating that the choice and creation of an avatar with a specific appearance, is a sensitive procedure that intensifies the effects on communication and the development of social connections. The avatar can rely on sensory motor and kinaesthetic skills to enhance the concept of a living physical body that has feelings, sensations, and grasps the presence of other avatars.

The experiences and reports of the participants in this study amply demonstrate the effect of “presence” in a reality that does not suffer from the privation

of a physical and relational space but, conversely, can take advantage of a situation of augmented cognition thanks to the phenomenon of embodiment.

The immediacy and depth of perception of one's own presence in the virtual world creates situations that can reproduce out-of-world (real world as opposed to virtual world) social dynamics. This reasserts what Krueger (1992) stated in the mid-1970s with his experiments in artificial reality, but with the difference that today we no longer speak of "visual" experiences. Instead, we deal with "embodied" experiences.

Second Life allows a practice of body involvement that fosters, in the didactic application, new questions and inputs that satisfy a learning model based on dialectics between "action/reflection" and "experience/abstraction," opening the way to a pedagogy that succeeds in "giving body to the thoughts and forms of thoughts to the body" (Manuzzi, 2002, p. 64).

The body-avatar is a source of information that helps create that common ground of experiences and understanding that develops intersubjectivity: I observe, share the same space and touch my interlocutors; my cognition is launched even from their presence. Second Life is a world that is felt to be real when the body-avatar experiences physical sensations and emotions evoked by lived experiences; the avatar intensifies the effects on communication and the development of social relationships (Merola & Peña, 2010).

The data gathered supports the hypothesis that experiences gained in the virtual world cannot be interpreted as merely representational. It is a real life where the user is not just a "resident" but actually builds his or her own habitat in environmental, geographical, and human/social terms; he or she experiences pleasure and satisfaction such as apprehension or embarrassment in a life that is "real," even if "other."

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