

## Chapter 2

# Traditional Settings and New Technologies for Role-Play Implementation

It is widely recognised that role play is particularly suited to experiential learning. It is a powerful tool that enables participants to draw into an experience and move the learning experience from an impersonal, theoretical and notional form into interactive and participative dimensions.

Regardless of the field and discipline of application, we believe that role-play technique does not simply enhance experiential learning. Role play uses the art form of dramatisation onto an educational stage, enabling learners to increase awareness of self and others, enhance mental flexibility and imagination, enlarge personal perspectives and create multiple perspectives and extend thoughts and feelings beyond the horizon of personal interpretation. Role enactment nurtures both cognitive and emotional skills and capabilities that can open up new solutions and opportunities for actions, and helps to identify and face a new level of reality and interpretation of the surrounding environment, both in relation to ourselves and in the interaction with others (Boggs et al. 2007).

Since its origins, role-play technique has been variously adapted and applied to different settings and contexts, for different purposes and to many disciplines, such as psychology, organisational change, sociology and pedagogy.

Psychodrama, sociodrama and simulation settings can be seen as different implementations of role play, which according to different purposes have been exploited in psychotherapy, education, counselling, personal development, business and organisational and training contexts. Role play has extensively been recognised as a powerful technique for enhancing the traditional training practice, boosting participants' learning experience, facilitating knowledge and promoting skills, competencies and group, as well as personal development, in face-to-face activities (e.g. McGill and Beaty 2001; Shaw et al. 1980; Turner 1992; Van Ments 1999). Thus, the term role play describes a range of activities where two or more people act out the part of individuals in a hypothetical situation (Black 1978) who are involved in "as-if" or simulated actions and circumstances (Yardley-Matwiejczuk 1997) that project participants into an imaginative-creative process established through the

interpretation of a real or fictional role in a specific given situation (Aronson and Carlsmith 1968).

The term role play was originally introduced by J.L. Moreno in 1934 after his experience and findings with the “theatre of spontaneity” in 1921. Moreno discovered the therapeutic potential of dramatic improvisation activity, as the enactments had positive effects on the personal lives of actors involved in the representations, and he called role-playing techniques the application of the principles of the “theatre of spontaneity” to educational purposes, in order to avoid any confusion with therapeutic psychodrama. Acting spontaneously does not mean being driven by uncontrolled emotions or impulsive activities. Instead, it is the psychological state to respond with new and adequate actions to external circumstances without being influenced by prescriptive social roles. This, according to Moreno, means to act creatively. Role play as a derivative of an art form invites the expression of novel or original ideas (Blatner 1995). Moreno developed and formalised these ideas into the methods of psychodrama and sociodrama, addressed briefly below.

Moreno (1946a, b) defines role as the functioning form that individuals assume in the specific moment they respond to specific situations in which other persons or objects are involved and highlights that roles do not emerge from the self, rather the self emerges from the roles.

The dynamic relationships between the individual and others are expressed through roles and can be explored through sociometry (Moreno 1953), a method that identifies the socio-emotional networks of relationships between group members. In terms of role theory, each individual can be imagined as constituted by multiple roles reciprocally interacting. Individual ways of being and behaving are an expression of this interaction of roles in combination with a series of personal attributes (abilities, interests, life story, cultural and social components, genetics aspects, etc.). Role play allows exploration of how personal individual and social roles interact with others’ individual and social roles.

Although the different purposes of role play depend on the specific setting in which they are applied, they share similar principles and dynamics. Role plays can be adopted to deal with personal (psychodrama) or collective (sociodrama) issues and used to exercise a variety of specific skills (learning simulations). However, overall role-play technique is recognised as an effective vehicle for accelerating learning and stimulating interpersonal and intrapersonal communication.

Role play encourages new ways of thinking and interacting with things and people of our personal environment. This technique uses a variety of dramatic instruments derived from sociodrama and psychodrama, such as replaying a scene or a part of a scene, role reversal, making asides, mirror and double. These enactment tools facilitate learners to explore their emotions, concepts and thoughts from a detached perspective and the development of metacognition capacity (Weinert and Kluwe 1987). Thus, it is an effective method for fostering the skill of empathy and self-awareness. In the double, a group member (auxiliary) takes the role of the inner voice of the protagonist, helping to express and clarify feelings, thoughts or experiences unspoken and unaccepted by the individual. In role-reversal participants are invited to temporarily exchange their roles in the drama with others’ roles.

In using the mirror technique, the protagonist steps out of the scene, while another member (auxiliary ego) is asked to replay the role and behaviours portrayed by the individual. The protagonist of a role play can be involved into the scene contemporarily either as outside the situation being represented by auxiliary egos or as active participant in role-reversal or mirroring positions.

A crucial role is played by the role-play director, who guides, coordinates and monitors the process. The director facilitates the role-play enactment and more specifically suggests possible actions to be undertaken, according to the needs expressed by protagonists and/or the group. He can review the performance and intervene during the enactment, invite protagonists to play different roles, exchange parts and introduce, support and instruct the auxiliary players.

Once the performance is concluded, the director invites all participants, including audience and auxiliaries, to self-reflection and disclosure process of what the enactment meant in personal terms and group experiences.

One of the key aspects supporting self-awareness enhancement is represented by the personal dialogue that participants can entertain with the director during the pauses allowed in the action. From this pausing and the feedback offered by the director, the learner can experience the so-called phenomenon of role distance. Through this process, the player can meta-communicate with the role she represents, as she is encouraged and supported to look at himself in the performance “from the outside”, considering the different point of views of other players and audience. This process helps to develop the competency of building mental flexibility and creative adaptation. Role-play technique develops a type of knowledge that transcends procedural knowledge. Indeed, role players are involved in experiences concerning a level of “conditional knowledge” that refers to being aware of the “why” and “when” to use and apply what has been learnt. Role plays should train and develop a general aptitude in individuals, although focusing on specific behaviours and aspects. The aim is to promote transferral of the learning to both similar and different situations from those experienced, therefore generalise and apply behaviours different from those that have been the object of attention (Perkins and Salomon 1992).

Two fundamental characteristics of role play emerged from this discussion: one is related to the role of the director who can be referred to as the therapist, educator, trainer, coach, consultant or psychologist (within a specific setting, she defines scenarios to be performed, harmonising roles to be explored, feedback and debriefing processes with layers, as well as group needs); and the other is that role play implies a level of personal growth through experiences that is possible, thanks to the presence of a group. Indeed, the peculiarity of role-play activities and its learning potential is represented by the interactions between members of the group involved in the enactment. Regardless of the nature of problems or dynamics represented either at individual and social level, the group itself represents the metaphoric stage allowing roles and dynamics to be revealed and disclosed.

It is interesting that, in recent years, role-play technique and its principles have been also implemented in digital environments and thus used in relevant context of applications by different professionals according to specific needs and purposes.

In literature, it is possible to find various and diverse examples of how role play transferred to virtual environments has been used and applied. Some of them can complement face-to-face activities, or provide stand-alone solutions, and envisage single-player or multiplayer interactions. Both multiplayer and single-player applications can be based on approaches characterised by conversational and emotional interaction, in other words open dynamic, or interaction mediated by objects and action exchange. In this case, the training methodology relies on defined steps. For a more detailed discussion of differences and peculiarities of the two approaches, the reader is referred to Chap. 3 of this book.

The following paragraph explores principles and applications of role-play technique in traditional settings. Subsequently, a review of online role-play examples and their main features, proprieties and applications to different contexts is described.

## 2.1 Role Play in Traditional Settings

As mentioned earlier, because of its intrinsic nature of being a vehicle for learning, role-play technique has been widely used in therapeutic, psychological, sociological, educational and organisational settings, thus with different implementations according to given specific needs.

A particularly interesting aspect of the current research findings in this area is that interactive training methods proved especially effective at enhancing cognitive, affective and skill-based outcomes of interpersonal skills; therefore, it is crucial to realise the link between training of soft skills and enhancement of individuals' relationships with others, their personal (or self) evaluations and job performance (Klein 2009).

Role play is used to create simulated scenarios where individuals are assigned specific roles to enact specific defined situations within a system of rules or guidelines (Betts et al. 2009). More specifically, role play exploits its learning potential through the interactions between group members enabling both individual and group learning and change. However, although its origins lie within group dynamics, role-play technique is also applied to situations involving only two people interactions (Bell 2001), with the advantage of focusing on specific aspects of interest without the need of managing the complexity of group dynamic as well.

As previously discussed, role play derives from psychodrama and sociodrama, methods introduced by J. Moreno for investigating, respectively, individual and social problems and dynamics, or more specifically, as a way to heal both individuals and groups (Sternberg and Garcia 2000).

As Moreno clarifies, while psychodrama deals with problems and dilemmas of an individual in psychotherapy, sociodrama works in mainly nonclinical contexts to clarify the issues involved in intergroup conflicts (Moreno 1946b). They are both grounded on Moreno's role theory and utilise group dynamics, enactment and principal psychodramatic methodologies. It is possible to state that the main differences

between the two methods reside in the types of role that are explored. Psychodrama deals with individual problems and involves the role playing of personal aspect of individuals' life, as result of the concourse and concurrence of many different roles. Diversely, sociodrama focuses on the exploration of conflicting interactions at the level of social-common roles. In other words, if the action aims to explore parents' roles, we refer to a social role; conversely, if the focus is on how a specific parent is experienced, conceptualised and performed by a single individual, we refer to a psychodramatic role. Therefore, while in psychodrama, the enactment process is focused on individuals taking on the role of protagonists, in sociodrama, the protagonist of the session becomes the group itself.

Psychodrama and sociodrama are similar in that they employ common psychodramatic tools considered as invaluable experiential resources for cultivating empathy, effective feedback culture, self-disclosure, self-awareness and mental flexibility, such as "double", "role reversal", "mirror" and their combinations.

Over the years, the so-called classical Moreno psychodrama has been adapted and integrated with a variety of therapeutic approaches such as Gestalt, behaviour, family and psychoanalytic group therapies.

Although psychodrama is most often known in its form of group psychotherapy, Moreno believed that this method should also have been made available to a more general public in order to benefit people who were not psychotherapy clients. Moreno always tried to show that his method was meant as much more than a psychotherapeutic method, as his idea empathised as creativity and spontaneity affect our involvements in every sphere of our lives.

For example, people might wish to experience the psychodramatic method for educational purposes or for personal growth or for increasing emotional fulfilment. From the same perspective, role play for psychodramatic as well as sociodramatic methods may be effectively integrated in many fields aside from psychotherapy, which require some exploration of the psychological dimension of a problem or situation such as education, training programmes, organisational development and change, consulting to business, self-help groups' sense, industrial relations, mental health and primary and secondary education. Therefore, psychodramatic techniques can be employed to address socio-economic issues, social conflicts in communities, professional subgroupings, group and organisational climate changes, workplace and public relationships and peer and parental relationships (Blatner 2000; Betts et al. 2009; Zanardo 2011).

In literature, the term role play for learning purposes is often used interchangeably and inconsistently with the term simulation. Indeed, we believe that they can be considered as different points along a continuum; as the difference, it is a matter of learning purposes and objectives rather than typology (Sutcliffe 2002; Ladousse 1987). According to this view, role play engages participants in acting in a given role in a specific situation and can leave space for individual initiative, improvisation and imagination. Simulations could instead include role play involving participants to act a role which is bounded by the rules and the degree of structuration of the simulation itself. In general, they tend to mimic more familiar or realistic situations than role play. On the other hand, it is true that role play is based on a simulation

process, since participants are invited to act in “as-if” actions and circumstances. Other authors identify the term role play as techniques used in therapeutic situations (Ruben 1999).

In this work, we use the term simulation to refer to role-play activities for training and educational purposes.

Role plays applied in educational and training settings create a stimulating opportunity for simulating particular events or situations that can help, for example, to master key aspects of a specific theory or deepen the understanding of a certain topic of study.

This is evidenced by the work of Hollander (1978) and Hollander and Hollander (1978) demonstrating that role-playing and sociodramatic enactments can help children in subject matter learning. They placed great emphasis on role reversal as being crucial in the learning process.

Applications of role playing in primary and secondary education settings—in their form of psychodrama and sociodrama for training purposes—have involved a variety of settings (Blatner 1996; Hollander and Hollander 1978; Altschuler and Picon 1980; Schlanger and Birkmann 1978; Lee 1991) such as:

1. Discussion of class material
2. Family life education programmes for exploring dating, marriage relationships and conflict resolution
3. Creative drama, more based on improvisation than prescribed scripts
4. Special situations involving issues concerning, for example, parent-student conflicts, ethnic strife and alcohol abuse programmes
5. Special education, which refers to special classes for people with learning disabilities that are helped with problems related to defeatism, poor self-esteem, behaviour problems, crippling disabilities, diabetes, deafness and blindness. Special classes can also include children with severe emotional disturbances, psychosis or problems with hyperactive, impulsive behaviours and autism
6. Learning about feelings, which refers to what is also known as emotional intelligence (EI), education regarding emotions and feelings experienced, teaching children to recognise personal emotions and learn how to manage those feelings along with the development of coping skills in interpersonal relationships (soft skills). These applications can be possible only if pupils are highly supported by professionals in personal exploration and self-discovery. Other researches in educational settings have emphasised the influential effect of role play for the development of social values (Shaftel and Shaftel 1967), interpersonal abilities (Schonke 1975) and creativity in the classroom (Torrance and Myers 1973) and therefore the potential of introduction of role playing as a teaching method in the curriculum (Shaftel and Shaftel 1982).

A recent and important area for the application of psychodramatic role-play methods regards professional training and industry. The major application of role play in both contexts is to develop interpersonal and intrapersonal skills (soft skills) of professionals, employees, managers, personnel and staff. Special attention has been given to the enhancement of sensitivity for students in training for care professions, such as nurses, teachers, policemen, doctors and so on.

Blatner (2006), for example, with regard to the use of the sociodramatic technique in education, argues that role play is the best way to develop soft skills such as initiative, communication, problem solving, self-awareness and working cooperatively in teams. Also Bollens and Marshall (1973) have highlighted the fact that role play finds particular application in relational contexts, typically in such areas as counselling and soft skills training.

The use of sociodrama, psychodrama and simulations recognises the fact that people better learn “by doing” and by experiencing situations in practice. In these contexts, people can practice and exercise skills explicitly and rehearse individual and group effective behaviours in not treating and non-judgemental environments through the interaction of different roles. In role play, there is always a chance to learn from one own mistakes as they are source of self-reflection.

For example, the benefits to using role play in psychodrama for training purposes can help to focus on the representation of professional roles associated with real working contexts in order to investigate personal emotions, fears and expectations associated with that role. This process can help participants to disentangle roles from unpleasant perceptions and to regain a more effective vision and potential of possible personal evolution of the role and within the role.

Yet, sociodramatic role playing can focus on political, organisational and collective issues (e.g. economic crisis, abortion, organisational culture change, immigration streams and so on) played out by groups of people. The mechanisms of role reversal, mirroring and doubling foster deep and true understanding of people and problems, contribute to identify values, convictions and perspectives and expand people’s mental maps with new perceptions and experiences.

Simulations can focus on a specific theoretical area (leadership, negotiation, decision-making) that is transferred into experiential role-play activities, where the aim is to complement the mere theoretical acquisition of knowledge by supporting learners in mastering practical aspects and relational dimensions that can be related to a specific theory, to be applied to real-life contexts and situations.

During the simulation, for example, a player can be invited to exchange her role with another one so to understand situations experienced by other people, while observers can be asked to play the role of the double with the aim of helping players to become more aware of feelings and thoughts not completely expressed. Once the simulation is concluded, a debriefing process takes place. The postgame session allows players, observers and trainers to share the experienced feelings, to examine behaviours acted and to elaborate on individual and group experiences (Kozma et al. 1978). As Thatcher (1990), Petranek and colleagues (Petranek et al. 1992) have also pointed out, the value of the debriefing process is crucial because throughout the discussion between trainers and trainees, learners clarify their objectives and reflect on their own learning process. Towards more conventional methods, the benefits of using simulations have shown to enhance learners’ motivation and interest and promote a positive impact on attitude change (Pierfy 1977; Bredemeier and Greenblat 1981; Van Sickel 1986) and may provide better behavioural, cognitive and affective learning and personal understanding of social issues and events (Bredemeier and Greenblat 1981; Foster et al. 1980; Hankinson 1987).



In organisational contexts, role playing and simulating real-life situations are extensively used for selection and development under the method of assessment centre in combination with a variety of other criteria (interview, paper-pencil questionnaires and business cases). When applied for selection purposes, role play can support understanding of how a person would act when placed in a given organisational role or react to a problematic situation, as, for example, dealing with a passive-aggressive boss or a passive co-worker or yet with stress and anxiety in the workplace. The use of role play within potential and performance appraisal processes helps to identify and evaluate an employee's job performances both individually and collectively, as well as their potential to assume higher positions and responsibilities. Role play can simulate situations eliciting behaviours and outcomes that bear evidence about key competencies associated with a strategic role or position in the organisation, such as decision-making and leadership power, resistance to stress, organisation and planning abilities, analytical thinking and capacity of vision.

### ***2.1.1 Role Play in Digital Environments***

As highlighted earlier, because of their experiential and behavioural nature, soft skills cannot be effectively imparted and accomplished with traditional pedagogical approaches. For meaningful transfer of relevant skills and behaviours to real-life and working contexts, a pedagogical shift to participating-active methods is needed.

Several studies have confirmed that training methods involving only symbolic modelling, such as lectures and presentations, rank lower in cognitive and behavioural involvement than methods that involve participative modelling processes, as role plays (Klein 2009; Bandura 1977).

Multimedia and simulation-based training systems and digital role playing have become increasingly adopted for soft skills development. For the purpose of this book, we will specifically focus on digital role playing.

The advent of personal computers and the Internet has dramatically changed the domain of applicability of role-play techniques, by allowing the exploration of novel settings, based on artificial and digital environments. Indeed, the use and the growth of online games have been swift and widespread in the last decade, and the intrinsic power of this form of games for engaging large groups of people for significant periods of time and for creating community culture and sharing common interests and objectives is consistently more and more evident.

Literature has already highlighted the increased interest around online games as a medium for learning and demonstrates how these could be adopted within education and training contexts (Squire 2003; Egenfeldt-Nielsen 2005; Michael and Chen 2005a, b; de Freitas and Oliver 2006). Within this context, particular attention has been given to games that encompass both the engaging and immersive principles of games and the effectiveness of simulations as a meaningful learning space (Martens et al. 2008). From this perspective, the key challenge for effective learning games is about creating experiences that are engaging, motivating and interesting for learners



that need to be supported through a system of feedback, reflection and transference to real-life situations. Therefore, consideration of using games for learning purposes has been changing in recent years, especially the perceptions about the suitability of commercial-off-the-shelf role-play simulations and games to support learning (Egenfeldt-Nielsen 2007) as well as skill assessment (Gee and Shaffer 2010). The key to success for e-educational role-playing games resides in being different from commercial online video games that pursue different objectives from education and workplace skill acquisition. *Everquest* and *World of Warcraft*, the two most subscribed fantasy-themed, massively multiplayer online games (MMORPG) based on role-play technology, are examples of leisure games used for educational purposes although not explicitly designed for learning objectives. Moreover, the development of e-educational role-playing games cannot compete with multinational millionaire budgets.

More and more, researchers, psychologists, tutors, educators and game developers have recognised the importance of working together to draw a system of principles that could help in the design and use of games as effective learning tools. In this domain, role-play simulation games can be conceived as tools that can boost effective learning when appropriately integrated in a training program designed on clear and predefined learning objectives and desired outcomes, as we will see in the next chapter.

In literature, there is no unique definition of game for learning purposes, such as serious games, simulations and virtual worlds, and this is not the objective of this work either. However, they can be considered as points along a continuum, according to the rigorous structure of the game and the specificity of learning goals (Aldrich 2009; Carr et al. 2010). Nevertheless, those are all forms of experiential learning activities or active methods (Dewey 1938, 1966) used for developing different skills, at different levels (procedural knowledge technical and vocational skills, social and soft competencies), with distinct purposes and in multiple environments, such as health, military, education, training and vocational areas.

## 2.2 Digital Role-Playing Games

As this work aims to focus mainly on role-play simulations for boosting effective learning processes, in the rest of this section, we will focus on the implementation of digital role-play setting and some platforms which have been specifically designed for role-play simulations.

It has been already said that role-play methodology derives from psychodrama and sociodrama (Moreno 1934) and that they have been adapted and applied to various domains, such as psychotherapy, education, business and organisational and training settings to intensify and accelerate learning. Recently, a variety of factors such as the introduction of the Internet, the progressive development of new technologies, the newest communication social systems and the innovative applications of artificial



**Fig. 2.1** Secondhealth: Virtual hospital in the 3D virtual world of Second Life-Scilands (Screenshot by Dave Taylor, Copyright Imperial College London, reproduced with permission)

intelligence have allowed role play to be performed on a computer screen and on a number of other platforms including consoles and portable devices.

Role plays in e-learning environments provide a learning experience where both interactive (Wills et al. 2010) and reflective (Laurillard 2001) dimensions take place.

Among the possible implementations of role-play games for learning purposes, multiplayer online role-play games (MORPGs) are considered one of the most powerful forms of modern gaming avatar-based role plays, and they seem to embed the methodology and the psycho-pedagogical principles originally expired by J. Moreno more closely than other types of role playing. There are limitations, however. As we will see below, there are circumstances in which multiplayer role playing is not always the best scenario for learning.

One of the most successful examples of this kind of virtual world is Second Life. The potential of using Second Life and other immersive virtual worlds initially created with social and entertainment purposes for supporting educational purposes has been presented in the work of Kirriemuir (2008), de Freitas (2008), and more recently by Gregory and Masters (2012) and in a review on the use of Second Life in primary, secondary and higher education (TOJDE 2011). For example, SciLands is a virtual environment within Second Life dedicated to science and technology. Secondhealth<sup>1</sup> represents a virtual operating theatre within the 3D virtual world of Second Life-Scilands, used for testing standardised training modules for surgical students through a series of hands-on lectures (Fig. 2.1).

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<sup>1</sup> <http://secondhealth.wordpress.com>

Another example is represented by the VirtualPREX<sup>2</sup> project that uses classroom environments from Second Life for creating role play for pre-service teachers in order to enhance teaching skills before teaching in real professional contexts.

There are few examples of open-source platforms that deploy learning-oriented 3D virtual environments. Among them, some worth mentioning are Croquet (2006), Open Wonderland (2011) and OpenSim (2010). However, it seems that none of these platforms are currently actively used in educational and training contexts. OpenSim is the alternative open-source multiplatform of Second Life used to create persistent shared multi-user 3D virtual environment (metaverse). It may be accessed using a variety of clients on multiple protocols and has been applied to support learning across a range of computer science topics, such as human-computer interaction, data communications and computer networks (Miller et al. 2010).

*Croquet* has been conceived as a complete development and delivery platform for context-based collaboration to support communication, resource sharing and synchronous computation among large numbers of users. Diversely from the commercial virtual world Second Life or the related OpenSim, the platform offers much more flexibility to end users. Implemented in squeak language (based on Smalltalk-80), its flexible peer-based architecture enables the creation and deployment of collaborative multi-user online applications across multiple operating systems and devices. Any user has the ability to create and modify a personal information world and create links to any other Croquet world and network-deliverable information networks (as the World Wide Web). User or groups of users can visit and work inside any other world on the net, via spatial portals (Smith et al. 2003). After 2007, when Croquet SDK was released; the development of the technology continued under the Open Cobalt<sup>3</sup> project up to 2010.

Croquet has implemented interactive solutions for the teaching of language, ancient history and architecture, collaborations and resources sharing for scholars' communities. *Croquelandia* is one of the first spaces developed within Croquet as an immersive language instruction tool, designed to support Spanish pragmatics teaching. The tool uses narrative-based activities that guide the learner on a quest.

Players, immersed into a 3D space reproducing various geographical locations of real Spanish-speaking areas (e.g. Otavalo, Ecuador, Merida, Mexico), are engaged in a variety of gamelike goal-directed activities. The users are provided with corrective feedback through the interaction with nonplayer character speakers.

Qwaq forum is a licensed-oriented version of Croquet software. It is a quick tool for creating virtual meeting places to support a range of academic groups, such as astrophysics (Hut 2008) where students have opportunities to intervene in real time and have live chats and ask questions to the scientists. For example, within Qwaq forums, astrophysicians can meet up, exchange documents, share knowledge and set up large-scale simulations.

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<sup>2</sup><http://www.virtualprex.com>

<sup>3</sup><http://www.opencobalt.org/>

Another application using Croquet is Igrishe, developed to support arts-related topics. It allows artists to build and run real-time visual performances and installations in theatres, art galleries and learning labs.

A further interesting application is Ancient Spaces, a 3D modelling program for the study of antiquity, art history and archaeology that engages students in virtual reconstructions of Athens. The software gives students access to a repertoire of 3D primitive shapes and elements that can be assembled to model and populate the Athenian agora. Students can “learn by reconstructing” key architectural and artistic environments of the ancient world (Lombardi 2006).

Similarly, *Open Wonderland* is an open-source toolkit cross-platform that provides a client-server architecture and set of technologies for creating personal and specialised virtual and mixed-reality worlds. Open Wonderland provides a rich set of tools for creating environments supported by several technologies (e.g. jVoiceBridge for creating realistic immersive audio models, Collada loader for importing 3D objects in the scenes), as well as supports shared software applications, such as word processors, web browsers and document-presentation tools. For example, users can draw on a virtual whiteboard and view documents and presentations. Users interact through avatars, digital representations of themselves in the virtual environments. Users communicate in the virtual world by means of headsets and speakers or dedicated chat windows for text messages. For the development of professional skills in a business context, Wonderland has been used to improve remote collaboration. Users are able to build reproductions of different settings, such as offices or lecture rooms where people can use their digital alter ego to attend meetings, give presentations and interact. Within the project SIMiLLE developed by Sun Microsystems, Wonderland has been used to design learning activity scenarios to boost foreign language learning competences and skills and help students to learn about UK cultural aspects. The platform tools allow teachers to develop realistic learning scenarios, observe student interactions and making records of the activities performed. Similarly, students acting in the virtual world will carry out tasks and assume roles, according to the defined learning objectives, and make recordings or producing reports of their experiences to foster further reflections (Gardner et al. 2011).

In spite of the applications described above, there are very few research studies regarding role-play methodology implemented in virtual environments (Gao et al. 2009) and very few e-learning role-play environments explicitly designed for soft skills training and development. However, it is possible to find suitable examples in this direction represented by e-learning platforms such as *E-drama* and *Unigame*, where online learning scenarios and contents are designed and assessed by tutors, trainers and psychologists. These are integrated systems of learning tools to be used by trainers, teachers and learners to support the training experience. We will specifically refer to this technology with the term of EMORPG. *Educational* denotes both characteristics and purpose of the play; *multiplayer* refers to the fact that learners play simultaneously in the same online world; *online* specifies that the game to be played requires an Internet connection; *role-playing games* indicates that when

players join the virtual environment, they interact with each other through controlling a digital alter ego (an avatar) with physical appearance and personality aspects that can be more or less related to the real player interpreting it.

Thus, our definition of EMORPG encompasses various aspects: it is an experiential and imaginative activity inspired by the role-play principles, taking place in a virtual world where interpersonal dynamics occur because of people interacting at the same time with each other through the presence of an avatar and under the supervision and guidance of a role-play director. The director (who according to the context of role-play setting applications can be a psychologist, teacher, trainer, educator, consultant or therapist) can play different roles. They can write a storyboard as a playwright, assign roles to players as a casting director, guide the action in the performances, as a movie director, and, finally, give personalised feedback to the group by recording and analysing significant parts of the scene of the enacted performance (feedback and debriefing phase). EMORPG provides a structure, a design of the narrative experience, processes of feedback, reflection and self-awareness, ensuring occurrence and transference of learning, as the simulation scenario is designed and implemented in line with identified pedagogical objectives and taking into account group training needs.

Moreover, among the e-learning technologies designed for training purposes, there are few examples of platforms based on user-avatar interactions presenting different characteristics. They may differ depending on various rules to be followed in order to achieve learning objectives, possibility of improvisation, time available to perform the tasks, type of interactions between players (with real users or with computer bots), number of players involved in the virtual environment (multiplayers or single player) and so on.

Interestingly, as will be seen in Chap. 3, some of the limits identified with EMORPG (such as the complexity for facilitators to take into account too many variables during the role playing going from the observation of group dynamics to the feedback processes) have induced professionals to consider the advantages of introducing game technology less dependent on the supervision of real facilitators.

Some examples identified in literature are based on single players interacting with BOT controlled by a computer programme, such as *At-risk* (Kognito Interactive 2009) *E-Adventure*, and *Not-Fear* within the EU *E-circus* project-Education Through Characters with Interactive Role-playing Capabilities that Understand Social Interaction (Aylett et al. 2006).

*At-risk* is an avatar-based gatekeeper training simulation designed to allow university students (*At-risk* for students) and high school educators and staff (*At-risk* for educators) to build interpersonal skills and learn how to manage effective conversations in the area of behavioural health. The games are designed to support and prepare university and college students and staff to recognise, approach and refer students exhibiting signs of psychological distress including depression, anxiety and thoughts of suicide, in order to identify students that can be potentially at risk. Role play engages staff and students, respectively, in 45-min and 1-h conversations with an “expert student” computer-controlled avatar, with its own story and personality





**Fig. 2.2** E-adventure: Learn about Galician traditions and culture

that guide the learner through the steps to follow in order to achieve the identified learning outcome.

Through these conversations, they practice and learn to use active and reflective listening techniques in order to effectively encourage disclosure of psychological distress, motivate students to seek help and avoid common pitfalls such as attempting to diagnose the problem and giving unprofessional advice. At-Risk for High School Educators is part of a suite of gatekeeper training simulations tailored to the needs of different groups of learners, such as university faculty, college students and families of returning veterans, multicultural teams, health providers and emergency department personnel.

*E-adventure* (<http://e-adventure.e-ucm.es>) is a single-player interaction-based educational authoring platform, created with the aim of facilitating both the development of 2D point-and-click games and learning simulations for various purposes (a well-known example of point-and-click adventure game is *MonkeyIsland*<sup>4</sup>). An interesting feature of it is the direct involvement of educators in its development. The platform is the result of a project developed by the e-UCM e-learning research group at Universidad Complutense de Madrid, with the aim to promote the integration of simulations and games in traditional education processes and more specifically in Virtual Learning Environments (VLE). E-adventures provide educators with a user-friendly game editor that allows them to define characters, rules, contents, items and scenarios of the game to be played both in first and third person. The E-adventure game learning scenarios can vary and regard different subject matters and contexts such as teaching history (Fig. 2.2) and English language, evacuation protocol principles, assembly of hardware components, etc.

<sup>4</sup><https://www.facebook.com/pages/Monkey-Island-Adventures/78883723363>

Another example, based on the E-circus project, offers both a 3D single (*Fear-Not*) and multiplayer (*ORIENT*) virtual environments aiming at enhancing social and emotional learning through the interaction of users with virtual characters and establishing effective and empathic relations with learners. Similarly to the previous example, learners are presented with a series of options to be selected directing the learning path. *Fear-Not* and *ORIENT* are two types of software created for the use of children and young adolescents in schools to support students in dealing with bullying and foster intercultural empathy, in combination with traditional educational methods. *Not-Fear* is a single-player videogame consisting of a series of interactive, bullying stories where students aged between 9 and 12 years interact with virtual characters in the role of bullies, helpers or victims who are endowed with their own emotions and memories and behave according to the roles assigned (victim, bully, victim's friend, etc.). Users, after having observed a bullying episode, advise the victim about how to act, by choosing from a list of coping strategies, as, for instance, inviting the character to ask for support from a teacher. The user observes how this suggestion is enacted by the victim of the bully and which consequences occur. At the end of the scenario, a universal message regarding the most appropriate coping strategy is displayed to the user. *ORIENT* (Overcoming Refugee Integration with Empathic Novel Technology) is a multi-user game designed to be played by a group of 2–3 teenagers aged between 13 and 14 years aiming at the integration of refugee and immigrant children in schools, as well as boosting team building competence. The group plays the role of a spaceship crew that land on the planet *ORIENT* populated by aliens represented by virtual characters. Their mission is to understand the local culture and find and learn the most effective way of interacting and cooperating with the aliens inhabitants in order to save *ORIENT* from an imminent catastrophes (Lim, Dias et al. 2008, Lim, Aylett et al. 2009).

Continuing with the previous, other examples are represented by multiplayer platforms allowing real-time interaction between real participants, such as *Unigame*, *Infiniteams* and *E-drama*.

*Unigame* Social Skills and Knowledge Training web platform was developed within the *Unigame* project funded by the EU Socrates/Minerva program in 2003–2004. *Unigame* can be defined as an online group chat-based role-play game to be used by tutors within university and lifelong learning framework in order to support various domains, as part of face-to-face learning activities (Dziabenko et al. 2003). The final aim is to acquire knowledge within a specified topic area by interacting with other players and different team groups and by using different means of communication such as private or discussion forums. The interactions between participants are based on open dynamics; thus, there is no unique or prescriptive way to achieve the identified learning objective. This means that specific ways of interacting between specific people and within a specific context will always determine peculiar training dynamics. The nature of the interactive experience itself can boost soft skills such as problem solving, effective communication and teamwork as the overall aim of the game, regardless if the specific topic is to reach mutual agreement within team members as well as the other teams involved.

*Unigame* has often been used as part of a blended learning approach comprising of a number of sessions where players are introduced to topics to play and team to



be part of and involved in discussions around topics for reaching consensus or reflecting on the specific part played in the game.

An example of team-based multiplayer online game is *Infiniteams*<sup>5</sup>, developed by TPLD. It can be defined as an example of online multiplayer task-based activity game rather than a role-play experience (e.g. the team has to cooperatively build up a bridge over a river), which integrates education with gameplay (Seeney and Routledge 2011). It makes use of avatars to represent the players, and the game scenario is based on deserted island survival elements. This software has been designed to be used for team building, management training and recruitment in order to encourage teamwork, communication, leadership, trust, problem solving and negotiation. The training activity is organised around modules that are time based scored, depending on time taken to complete the game and strategy chosen by the team.

Each module (mini-game) is based upon 1-hour activities comprising of debriefing to set up and discuss about the scenario to play, two rounds of games spaced out by discussions and analysis of the team performance in the first game phase and conclusion and reflections facilitated by trainers. In education, TPLD has also developed *Eduteams* multiplayer software for providing experiential learning to pupils aged between 10 and 14 year old. It is used to support the development of a variety of skills such as communication, teamwork and problem solving, as well as IT skills.

From the perspective of the EMORPG, E-drama is probably one of the most renewed platforms; however, it was never actually meant to be used for education and training but as opposed to being a research prototype that could point towards development of a practical system. It was only briefly used in various schools in Birmingham for a couple of days in an evaluation study<sup>6</sup>. Initially developed in 1999 by Hi8us, E-drama is a web-based role-play multi-user environment that incorporates a variety of tools for creating and customising role-play sessions.

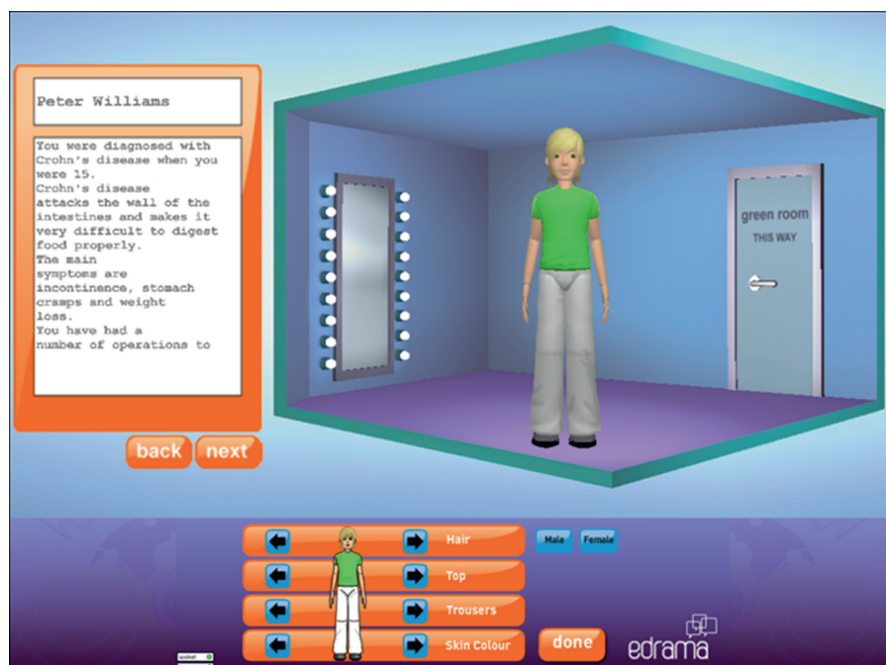
With E-drama, a group of five people can interact online under the guidance of a real or computerised director that initiates the simulation, changes the background of the scenarios, intervenes in the role play and communicates with players using text chat. Users, represented by avatars, can customise the physical appearance of their virtual alter ego according to the scenario that they are invited to enact by trainers (see Fig. 2.3).

The E-drama software comprises of two user interfaces, “Actor” and “Director” client applications, used, respectively, by learners and trainers. The first version of the software (E-drama) provides a 2D environment as interactive ground for both learners (actors) and trainers (directors), while the enhanced version introduces a 3D flash interface for scenario backgrounds and animated characters replacing the previous 2D static avatars. The new 3D version is referred as E-drama software and was the result of the collaboration between Hi8us, Maverick TV, Birmingham University and BT Innovate with the support of the PACCIT programme. The 2D

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<sup>5</sup><http://www.infiniteams.com>

<sup>6</sup>Prof. John A Barnden and Dr. Li Zhan, personal communication, October 9, 2014



**Fig. 2.3** E-drama, customisation of avatars (Screenshot by Dr. Li Zhang, reproduced with permission)

E-drama was used in formal education for teaching aspect of drama and supporting a different range of subject areas such as creative writing and career advice with a version of the software called Dream Factory, commissioned by the UK University for Industry (Dhaliwal et al. 2007). The enhanced version E-drama also introduces computerised AI-guided agents in order to offer new elements to the scenario for developing participants' dynamics and especially to reduce burdens and responsibilities of real directors in the role-play process (Zhang et al. 2009). The AI actor is driven by a system called EMMA (emotion, metaphor and affect).

The impact played by EMMA and the 3D animated characters on users' experiences was assessed in various trials in secondary schools that involved participants in dealing with scenarios regarding homophobic and school bullying and Crohn's disease (Zhang et al. 2009).

Within E-drama, trainers and trainees can communicate to each other by typing in messages that are shown in speech bubbles above avatars' heads (see Fig. 2.4). A variety of non-verbal signals, such as facial expressions, gestures and a range of body movements, can animate the 3D avatars, with the aim of making the interactions between players more engaging emotionally.

In recent years, the interest towards the implementation of role-playing approach into technological artefacts is expanding, and a number of software have been developed, both from research institutions and the private sector. The latter case is



**Fig. 2.4** E-drama improvisation interface with three human-controlled characters (on the stage) and one AI character, Dave (Screenshot by Dr. Li Zhang, reproduced with permission)

particularly interesting, as it demonstrates the real potential of the technologies we are discussing in this book. As we argue throughout the book, virtual role-playing games are mainly explored in the field of soft skills as a natural extensions of traditional training techniques. Indeed, the modern literature in this field presents some examples of virtual role-play application to communication and negotiation. The area of communication is currently the most promising and natural candidate. The US company Alelo has developed a suite of software for training cross-cultural communication skills in different critical environment which is currently used for training US military personnel deployed in conflict area, especially in the Middle East, and for colloquial English training (Johnson 2014).

Communication skill is also the target of a platform developed by the University of Utrecht in the Netherlands (Jeuring et al. 2015). The platform name is *Communicate!* and is a serious game for practicing communication skills. It supports practicing interpersonal communication skills between a healthcare professional such as a doctor or a pharmacist, or a (business) psychologist, and a patient or client. A player selects a scenario and holds a consultation with a virtual character. In the consultation, the player chooses between the various options offered in the scenario. The player scores on the learning goals addressed by the scenario and gets immediate feedback through the effect of the choice between the answer options on the utterance and emotion of the virtual character. *Communicate!* also offers an editor for developing role-playing scenarios.

In the field of negotiation, besides our platform ENACT, that will be described in a dedicated chapter, an increasing body of research is particularly focusing of training negotiation skills in virtual environments with role-playing approaches.

The platform *BiLAT* (Kim et al. 2009) and related instantiations described in, e.g., (Gratch et al. 2015) is a role-playing serious game for the training of bilateral negotiation through interactions with virtual agents in a simulated environment. The platform is enhanced by an intelligent tutoring systems that provide guidance and feedback on the user's performance. The system is particularly interesting as it is based on a long stream of research around the design of a virtual human, involving both advanced 3D graphic techniques and artificial intelligence (Core et al. 2006).

A different perspective in role-playing implementation is taken from a different group of game, in which a set of formal rules and interactions has to be followed in order for learners to achieve the relevant learning objectives. These set of steps are embedded in the software; they do not require the presence of any experienced external guidance and drive the player to a stable training outcome. Indeed, the advantage of this method lies in the fact that it is very low cost, as after an initial phase to familiarise users with the system, it can be used without the guidance of a tutor, as the system is self-regulated. Although this methodology enables players to rapidly learn and asses specific skills or behaviours (e.g. problem solving), on the other end the richness of the unpredictable dynamics occurring between trainees may be lost, especially when we refer those soft skills that require continual guidance and feedback. DECIDE-IT and Learn to Lead are examples of formal rule-based role-playing technology.

As discussed more in detail in Chap. 3, we will propose a possible taxonomy of games reflecting the approaches, namely, psycho-pedagogical and technological, used by the authors to designing Technologically Enhanced Educational Role-Playing Game (EduTechRPG) for soft skills training along different EU funded projects. The first dimension specifies the psycho-pedagogical foundations of the learning approach adopted and identifies two main categories of EduTechRPG: Drama-based and Rule-based depending whether the objective of the game focuses more on a direct involvement with the learning objectives through a personal dramatisation (Drama-based) or more on the logical and reasoning aspects involved by the user for achieving specific learning objectives (Rule-based).

Moreover, EduTechRPG are exploited by the use of two main technological systems that result in Communication Technology-based (ComTech) EduTechRPG and Simulation Technology-based (SimTech) EduTechRPG. The first system allows a virtual extension of traditional face-to-face psychodramatic mechanism and experiences that are transposed to a digital setting (see Chap. 1). The second technological approach permits the production of "artificial" micro-worlds based on computer simulated, formal models about social and psychological phenomena.

Eutopia (Chap. 4) and ENACT (Chap. 5) represent two different examples of drama-based training environments, respectively, a stand-alone SimTech and ComTech EduRPGs. DREAD-ED (Chap. 6) and Learn to Lead (Chap. 7) are instead examples of rule-based role-playing technology, respectively, ComTech based and SimTech based.

The peculiarity and the novelty of our psycho-pedagogical methodology, throughout all the above-mentioned EduTechRPG, are represented by the importance of feedback and debriefing processes that can be conveyed to learners through different means (online group or individual chats/meetings with tutors, a brief automatic report at the conclusion of a training session, etc.). Tutors, which can be either real or guided by an artificial agent, are a key factor facilitating the training process, the personal and group development through the interactions with learners, as we will see in the following chapters.

It is important to remark that the aforementioned dimensions used by the authors to develop those different EduTechRPG should not be considered as mutually exclusive but rather as complementary. Indeed, is the ability of integrating such dimensions in a single game implementation that contributes to the design of an educational tool to create meaningful learning.

Characteristics, limitations and strengths of the above-mentioned EduTechRPG will be analysed in detail in the following dedicated chapters.

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New Perspectives

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Ferdinando, A.; Schembri, M.; Miglino, O.

2017, XI, 169 p. 30 illus., 28 illus. in color., Hardcover

ISBN: 978-3-319-06310-2