Massively Multi-user Online Games: The Emergence of Effective Collaborative Activities for Learning

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Abstract

The features and potential of MMOGs to constitute environments for collaborative problem solving activities for learning are the main focus of this paper. Principles from the area of CSCL, problem-solving, cognition and learning can be applied to the design of an educational MMOG so as for effective interactions and collaboration among the players to be fostered. We attempt to propose a framework for the investigation and design of effective collaborative problem solving tasks within MMOGs.

1. Introduction

The potential of computer games as instructional and learning tools has been discussed over the past two decades [1], [2], [3], [4], [5], [6] with the focus of research now shifting to the area of collaborative activities and learning through multi-player games [7], [8], [10], [12], [20].

Massively Multi-user Online Games (MMOGs) constitute highly social virtual environments where the users, through their virtual characters can interact with each other, with the environment and with computer generated characters in order to complete a number of tasks either individually or collaboratively and involving a complex “set of multi-modal social and communicative practices” [7]. The social aspect is strengthened by the fact that the interactions emerging are not a sub-product of the game but they are rather an integral part of successful gaming and attainment of the goal.

The core question of our research is “How can we exploit the inherent features of MMOGs and design effective collaborative problem solving activities for learning?” In this paper we mainly focus on the investigation of communication and interaction in MMOGs. The design of the environment directs the strategies a player employs and the extent and quality of the interactions emerging [19]. We attempt to propose a framework for the design and analysis of the interaction and communication affordances of an environment for the facilitation of in-game collaboration and meaningful communication. A number of studies have focused on the design of games [14], [21]. Our objective, though, is to incorporate collaborative problem solving activities theory into the games design framework, with the perspective to design effective environments for learning.

2. Collaboration and communication in the game environment

Even in the case of multi-user games, players seem to cooperate with others only when they are required to, by the nature of the tasks. Hämäläinen [12] observed that players first attempted to individually solve the problems, before resorting to the help of other players. It seems, therefore, essential that the game mechanics not only encourage but rather require that the players engage in collaborative interactions in order to solve certain problems. For this purpose, he proposed the integration of tasks with higher risk levels and penalties, so as to prevent individual attempts.

After the player has been led to seek the support of a group, it is essential that the links among the members of the group are strengthened and appropriate channels and instances for productive interactions and cooperation rather than aggressive competition are provided. For the promotion of collaborative rather than competitive interactions, Rauterberg [14] introduced the concept of a Shared Social Space (SSS) which summarises the features of a networked multi-player game that promote coalitions. The factors relevant to the promotion of coalitions are the visibility among the characters, the audibility of voice, verbal as well as non-verbal communication and the physical distance of the players. Since physical distance of the players is not always possible in multi-user games, social or virtual nearness is fostered via a number of different mechanisms such as awareness information [13] available to the users through Friend Lists that allow the players to see when their friends are online and invite them for collaborative gaming, or indications on whether other group members are online. In some games, each clan may also have a dedicated Hall, where the virtual
characters may gather, socialise and communicate in virtual proximity.

This unity and sometimes altruism among group members may even be strengthened by seemingly irrelevant, though critical factors, such as the severe death penalties. As Nick Yee reported in his article on Social Architectures in MMOs “Some players felt that the severe death penalties increased the general willingness of players to help each other, because all players understood the burden of death and, more importantly, all players knew that they too would need help one day” [37]. It is not, furthermore, uncommon that people already knowing each other in real life join an MMOG together and form their own teams, or group with players they have become friends with in the game, or even engage in general social chat with other party members. Such conditions seem to also strengthen the affinity of the group.

In the area of collaborative problem solving and learning distributed knowledge and shared goals constitute a defining factor. Knowledge and skills distributed among students seem to positively influence collaboration due to their interdependence [9]. If the players want to attain a common goal and each one of them holds a different piece of the “puzzle”, then they all have to work together for achieving it. This heterogeneity of resources available to the students seems, furthermore to be a positive factor for the quality and quantity of interactions [18]. In MMOGs the available knowledge does not reside in one individual but is distributed across the players [9], [3]. Exchange of information and advice, mentoring and peer-learning are encouraged since new players can take advantage of the experience of older players.

The roles assumed by the collaborating parties appear to constitute an important cognitive dimension for the collaborative problem solving activities and for learning [9]. Different and complimentary roles have a positive effect on collaboration. The characters supplement each other. In specific MMOG cases, for example, fighters have to cooperate with wizards if they want to survive a difficult battle with a strong enemy or a siege.

Once the foundations for cooperative activities have been laid, the next step is the support and promotion of these activities, the support and promotion of player communication and cooperation through appropriate channels and mechanisms. Collaborative interactions are generally distinguished in (a) actions and (b) discussions with Manninen [15] proposing a more detailed taxonomy of verbal and non-verbal interactions used in a Networked Virtual Environment ranging from the appearance of the avatar, the gestures and the body language to the language based communication and the manipulation of the objects and the world. The players act through their virtual selves, their avatars and discuss with other players through text or audio. The main discourse support mechanism in most MMOGs is textual communication through a chat window. In-game verbal communication does not always seem to suffice, though, and therefore the players often rely to external applications (e.g. Skype, TeamSpeak) for elaborating further on an issue. Although this seems to be a solution, it illustrates the emerging need of the players for higher level communication structures, especially when more sophisticated situations and problems rise. Structures for high level questions and explanations seem to also constitute a requirement from a cognitive point of view. An environment which provides communication structures for high level questions, explanations and collaborative problem solving processes such a as aggregation, conflict creation, revision and solution, and supports the extent and ease of communication and interaction may more effectively support learning in groups [9].

With respect to the non-verbal players’ interactions, the visual quality of the online presence and of the actions of the players is also important for effective and rich interactions [15]. Manninen focuses on the non-verbal interactions as the key for coping with problems encountered through CMC and argues that features such as realism of the avatars, the gestures and expressions can enhance the gaming experience and promote interactions among players [16], [17].

Research in the area of collaborative learning indicates that there not seems to be an optimal group size but this is rather dependent on the nature of the task and the background of the members of the group [11], [35]. While discussing a modelling framework for the support of collaborative problem solving and learning Hope [9] proposed the implementation of a support function for the formation of the groups according to the given problem. Within an intelligent environment the size of the group may be defined depending on the requirements of the collaborative problem.

Players of MMOGs communicate not only through the integrated tools of the environment, but also through other channels, outside the game. They communicate via websites, newsgroups, discussion fora, chat, messaging and even over the phone or real life [3]. They exchange tips and perceptions on the game, and even develop new strategies for playing. They develop communities of practice. Participation in these virtual communities is intrinsically motivated by the environment as it is linked to the successful completion of the tasks and quests of the game.

3. Conclusions

The new generation of games is far more sophisticated in terms of player-player and player-environment interaction and there is a complex matrix of in-game and
beyond-the-game factors involved in the gaming experience both internal to the design of the system as well as external to the system and relevant to the player or the cultural context [21]. We mainly focused on elements internal to the design of the system in relation to the intended cognitive processes and learning outcomes and more specifically the collaborative problem solving activities as components of an MMOG within a learning context. Our next step will be to examine the design of the tasks as components of the collaborative problem solving interactions and situate them in an analysis and design framework aiming at the effectiveness of the gaming and learning experience.

4. References


