On Studying Collaborative Learning Interactions in Massively Multiplayer Online Games

Iro Voulgari, Vassilis Komis
Department of Educational Sciences and Early Childhood Education
University of Patras
Patras, Greece
{avoulgari, komis}@upatras.gr

***Abstract*— in this paper we propose and apply a framework for the investigation of the potential of Massively Multiplayer Online Games (MMOGs) for collaborative learning. We focus on the group structure and processes. The findings suggest the interconnection of design features and players' practices.**

Keywords-massively multiplayer online games; collaborative learning, collaborative problem solving, mmogs, virtual worlds

I. INTRODUCTION

Skills and expertise in an MMOG seem to go beyond the acquisition of knowledge of the game mechanics for attaining the goals: the highly social, collaborative and competitive nature of MMOGs also triggers the practice of communication, interpersonal and social skills [1]. The players have to not only learn the game, but also learn the rules and communicative and social practices of the players' community in order to operate and progress in the environment.

In this study, we build upon research on the learning opportunities, the motivation, and the communicative and social interactions in MMOGs [2-5], on online games and virtual worlds [6-8] and on CSCL [9-11], we propose a framework for the investigation of the factors involved in the collaborative processes within an MMOG, and apply this framework on data gathered through mixed method research, during a doctoral study. Our purpose was to explore the conditions that promote collaborative interactions for learning in MMOGs.

II. THEORETICAL FRAMEWORK

Our framework was based on literature in the area of collaborative learning and problem solving, group interactions [12] and CMC and further informed -for application in MMOGs- through a preliminary review of our data. The main constructs of our framework, as factors involved in and affecting collaborative learning process, are: a) the tasks the players have to cope with, b) the features of the individuals (e.g. behaviour, attitude, preferences) c) the group process and interactions with other players, d) the group formation and structure, e) the environment design and affordances, f) the social environment, the rules and ethics as defined by the community of the players [13], and as the axes having an impact on the learning experience and outcomes [14, 15]: g) the motivation, h) the cognitive space, and i) the sociability, the relational space. Our framework is schematically represented in Fig. 1 (for further analysis of this framework please see [1, 16]).

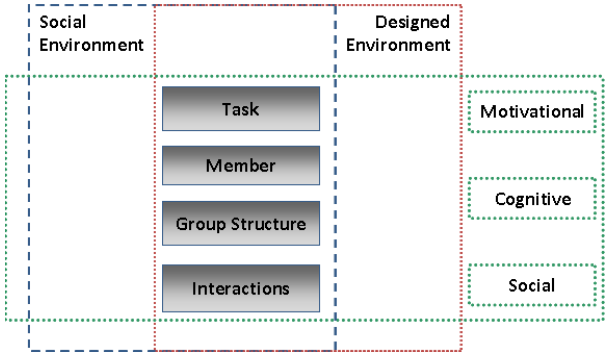

Figure 1. Conceptual framework of analysis

III. METHODOLOGY

For addressing the complexity of the issue methodologically and conceptually, a mixed method approach combining qualitative and quantitative data was employed [17]. We addressed players of different MMOGs so as to cross-examine features of different games. We initially employed virtual ethnography. We collected video recordings, notes, screen captures through a one-year participant observation in two MMOs of different format (*Lineage II* and *Tribal Wars)* and player discussions and images from related online resources (e.g. fora, websites). We conducted a survey through semi-structured interviews and focus groups (18 interviews and 2 focus groups) and an online questionnaire (220 responses), with questions on the players' preferences, experiences, interactions with others, gaming habits and group processes. For longitudinally observing the gameplay, we invited players to record (screen capture-video) their game over a period of 3 months (5 players).

Our data was separated into self-contained units: phrases in the answers in interviews, questionnaires (for the open-ended questions) and from in-game player discourse, player actions in

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the videos. Statistical analysis of the quantitative questionnaire answers is not presented in this paper.

For the first cycle of coding, the units were thematically categorized, based on the constructs of the framework. In the second cycle of coding, the data were reviewed through the lens of our research question: facilitating or inhibiting features or conditions for effective collaborative interactions were identified, so as to explore emerging patterns.

IV. FINDINGS

In this paper, we mainly focus on the Group (formation, structure, interactions). Collaboration and support is essential for exploration of the content and for progress. Most of our respondents reported that they belong in a group, even if they prefer to engage in tasks alone. Different types of groups are defined both by the design and also by the social relations of players. Players build up on the general requirements of the game for an optimal group size and synthesis and they try different combinations of roles, techniques and virtual characters. They also employ social and affective criteria (e.g. behaviour, personality, and friendships). Group cohesion, trust, commitment, helpful behaviour seem to emerge more in long-term groups than in random, task-oriented parties.

Privileges of group membership are provided both by the environment (e.g. special skills) and by the relational space (e.g. bonds, trust) of the group (e.g. peer mentoring). Group communicative processes, decision-making, rules, and goals are highly dependable on the players' decisions and personalities. For promoting practices of interaction, communication, knowledge sharing, and group management players not only take advantage of the in-game tools but very often resort to third-party external applications.

V. CONCLUSIONS

In this paper we presented a framework involving factors relevant to collaborative learning and adapted to the area of MMOGs, and reviewed data gathered from a mixed method research, through the perspective of this framework.

From our analysis, focusing on the group, specific trends emerged, indicating the interconnection of both the features of the environment and the community processes, for the support or failure of collaborative interactions. The players seem to build up on the basic rules and tools and extend them by adding their own social rules, equally critical for effective collaborative group processes and expertise acquisition.

Further in-depth investigation is certainly required, as for example the examination of the interactional relationships of actions and discussions of different actors which seem to promote collaborative learning [18]. There are, nevertheless, indications that the design of MMOGs combined with the appropriate educational design, could inform the development of effective collaborative environments for learning. Through this study we aim at contributing to the dialogue for the development of the appropriate tools for the investigation of the MMOGs' collaborative learning potential.

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