Group Motivation for Social Games

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Abstract

The social aspect plays an important role in the user's motivation in many applications. In this paper design principles for the combination of cooperative and competitive game elements and reducing effects of the social loafing phenomenon are proposed. The concepts were evaluated in a focus group interview and a two-week study where the participants played the prototype of the educational serious game *JungleCrowd*, which attempts to tackle the issue of deforestation. The results supported the concepts of parallel cooperative teams to add a competitive component and introducing a visible measure for a user's unselfishness to encourage cooperation.

1 Introduction

"It's the people that are addictive not the game." This quote hints at a significant motivational potential of the social component in games (Lazzaro, 2004, p. 5). This paper aims to further investigate this potential and proposes two design principles to improve group motivation using the example of the educational serious game *JungleCrowd*. Approaches to integrate competitive elements to a cooperative game and to reduce effects of the social loafing phenomenon are discussed.

2 Related Work and Theoretical Concepts

Many group tasks suffer from bad cooperation. When the individual contribution cannot be identified, it might seem attractive to "free-ride". Empirically proven strategies to reduce these "social sucker" effects contain the identifiability of individual performance and competition (Schnake, 1991, p. 43). Additionally, competition is an effective motivator (Li and Counts, 2007). Another influencing factor for the quality of collaboration is the group size. Wood (2010) determined an optimal group size between five and seven people in a study about working groups in companies. Furthermore, Zagal (2006) proposes that a game which combines competitive and cooperative elements should introduce a tension between perceived individual and team utility and players should be allowed to take actions without the consent of the team.

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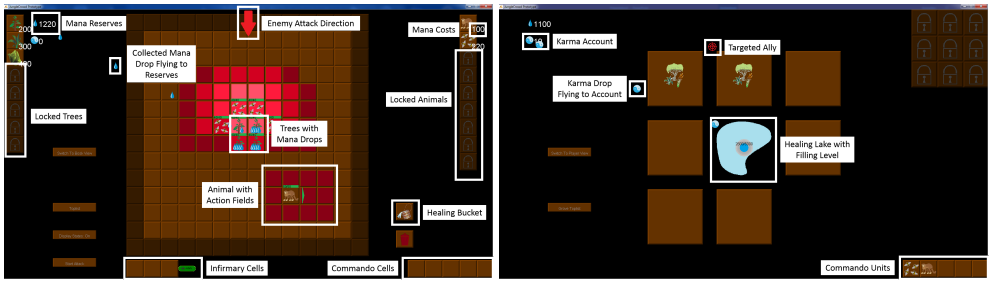
3 Game Design

In *JungleCrowd* the players work together to build and defend a virtual rain forest. The game tries to create awareness for the issue of deforestation. Furthermore, a certain amount of the revenues of the final game will be used to support nature conservation organizations. The players are organized in teams, which are called "groves". Every grove has a maximum capacity of eight players. Figure 1(a) shows the area of one player where he or she can build a part of the rain forest. Figure 1(b) displays the grove overview with the healing lake.

The game concept is to separate players into parallel cooperating teams to create a motivating competitive environment. To not disturb the cooperative character the competitive element is integrated in the form of leaderboards among the teams. As suggested by Zagal (2006), the game does not force the players to collaborate. Karma points are used to model a player's social commitment as an implementation of the "identifiability of individual performance" (Schnake, 1991, p. 43). Unselfish actions, e.g sending reinforcements and transferring resources to the healing lake, are rewarded with karma points.



(a) Player view. (b) Grove overview.

Figure 1: Annotated screenshots of the "JungleCrowd" prototype.

4 Concept Evaluation

The design concepts were evaluated using focus group interviews as a qualitative analysis of players' motivational needs. Those results were tested in an integrative two-week study with 34 participants to confirm the focus group hypotheses.

4.1 Focus Group

The focus group consisted of people with a similar scientific background. The four participants were male computer science students with an average age of approximately 26. One conclusion was that in addition to the indirect competition the game should offer more possibilities and incentives to interact. The visibility of karma points to the other players was supported as a way to add social pressure and improve cooperation. Overall, the proposed concepts of parallel cooperating teams and karma points were approved.

4.2 Study

In the second part of the evaluation 34 people played the *JungleCrowd* prototype for almost two weeks. According to real life groups they were divided into five groves. To test the impacts of the design principles the groves had different constraints. One grove had no karma points at all, in another one the karma points were not displayed to the group members, and a third one had no connection to the other groves via toplist. The test group was a diverse set of participants who work or study in different fields. They were asked to rate the effects of the given design principles on a Likert-scale from 0 (Totally disagree) to 4 (Totally agree). An overview of the results is given in table 1.

For the prototype the group size of eight players was considered appropriate by most participants. The grove with the most playtime per player (1290.8 minutes) had by far the most calls of the grove comparison toplist (30.5). This indicates a connection between the competitive aspect and motivation. The indirect competition apparently does not disturb the cooperative character of the game as the cooperation was still considered positive by most players. The group without karma points had the lowest rating for cooperation (1.0). Most players acknowledged the positive effect of karma points on cooperation (3.1). The players confirmed the importance of the visibility of karma points with little variation across the groves (3.0).

	Constraint	None	None	No karma points	No karma display	No grove toplist	ø	σ
	Number of players (grove size)	7	8	4	8	7		
	Women	4	6	0	2	2		
	Men	3	2	4	6	5		
	Average Age	24.9	26.0	24.3	23.3	23.6	24.4	1.0
	Playtime per player in minutes	279.0	594.3	233.0	**1290.8**	322.4	595	406
	Grove toplist count per player	5.6	13.0	3.0	**30.5**	0.0	11.7	11.3
Competition	I perceived the members of my grove as allies.	3.6	3.6	2.5	3.1	3.0	3.2	0.4
	I perceived the other groves as competitors.	2.4	1.9	1.0	2.6	0.7	1.8	0.7
	The comparison to other players has influenced my performance.	3.1	2.5	1.0	3.1	2.6	2.6	0.7
	The comparison to other groves has influenced my performance.	2.7	2.3	1.3	2.3	1.4	2.1	0.5
Cooperation	My team cooperated well.	2.7	3.1	**1.0**	2.6	2.4	2.5	0.6
	Karma points (would) have improved my motivation to cooperate.	3.1	2.9	3.3	2.6	3.7	**3.1**	0.4
	The visibility of karma points to group members improves cooperation.	3.1	2.9	3.3	2.8	3.0	**3.0**	0.2

Table 1: Overview of the study results. Average and deviation were calculated for groves weighted by the grove size.

5 Conclusion and Future Work

The results of the study supported the hypothesis that karma points improve cooperation. It was also confirmed that the display of karma points to group members can be used to reduce "social sucker" effects. The cooperative aspect did not seem to be disturbed by the competitive component. The connection between playtime and calls of the grove toplist indicates a positive motivational effect. Besides competition the game should offer more incentives and possibilities for interaction between players and groups, e.g. by distributing different abilities or responsibilities among the players. Also, the consequences of collective or individual rewards for karma points should be investigated. These findings will be integrated in the further development of *JungleCrowd*. New versions of the game will be used to conduct similar studies to refine and extend the results which were discussed in this paper.

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Authors

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