

Collaboration using Avatars vs. Text Chat – An Experimental Comparison

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Introduction

Face to face meetings provide multiple opportunities for knowledge sharing and decision-making that goes far beyond verbal exchange. Today, however, more and more collaborative work is accomplished in teams and workgroups who are scattered across cities, countries, and continents. For such distant settings, different modes of collaboration have emerged, none of which has yet proven to be dominant. We believe that three-dimensional, online Multi-User Virtual Environments (MUVE) are a means that can significantly improve such virtual collaboration by offering novel and innovative ways of working together, both for knowledge sharing and decision-making tasks.

With this contribution, we present the design and the expected results of a controlled experiment in which participants need to share information and make team decisions, the intervention groups in a 3D Multi-User Virtual Environment, the control groups in pure text chat. Our analysis then compares these two conditions and their outcomes.

Experiment Design

We hypothesize that the fact of being embodied as avatars in an immersive 3D environment will lead to more effective and sustainable knowledge sharing, as well as to higher participant satisfaction, motivation and recall of shared knowledge and collaboratively made decisions. The experiment is designed to measure the added value of collaborating in a MUVE in comparison to collaboration through simple text chat. These two conditions are systematically comparable through an observation of both the experimental groups using an OpenSim virtual environment (a MUVE system similar to Second Life) and the control groups using pure text chat. The subjects of the experiment are

approximately 70 bachelor and master students, an already high enough number for the comparison to yield sound and meaningful results, hopefully with statistically significant findings.

The experiment simulates the kick-off meeting of a fictitious project with a project team consisting of five professionals. The meeting comprises three tasks: Participants first need to present themselves to their respective team members – as they are given no information about each other beforehand. Secondly, they need to jointly clarify the main goals of the project (as described in a case given to them). As a final task, the team is then asked to assign project roles to each member, based on their specific skills and experience (described beforehand in a personal, written briefing to each participant). This experiment design is intended to enable collaboration within a project team by distributing knowledge unevenly among the participants; the team members are thus required to share information and interact with each other in order to surface so-called transactive knowledge (knowledge that becomes available through transactions between people), for solving the latter tasks. Furthermore, the selected three tasks cover three major elements of collaborative work, namely knowledge sharing, grounding (sense making), and decision-making.

Measures and Expected Results

The main measured variables are the motivation to work together, the satisfaction with process and outcome, as well as the accuracy of the group result (i.e., correct assignment of roles based on the assigned profiles) and the recall of other's profiles and made decisions. The former, subjective assessments are measured through a post-task survey, while the latter, objective measurement of the recall is measured through a follow-up test, after a 45 minute distraction task. Our hypothesis is thus that the teams working in the virtual collaboration setting outperform the teams using chat. In addition we stipulate that these groups self-report higher levels of motivation and satisfaction than the chat groups.

While for the control groups all collaboration is conducted through text chat, in the MUVE condition participants can also use spatial information (such as proximity or distance), personalization (avatar appearance, gestures, animations), virtual objects (interactive or static), and other means introduced by 3D virtual environments to collaborate with their team members. Through our experiment, the added value of being represented as customizable avatars in a configurable three-dimensional virtual environment can be isolated for simple, team-based knowledge sharing and decision making tasks.

The results of this experiment can also point out key criteria that are relevant for designing value-adding immersive collaboration experiences. Finally, the (positive and negative) impact of interactive visual aids and interactive tools and instruments for remote team collaboration can be better assessed.