Experimental Comparisons of Face-to-Face and Anonymous Real-Time Team Competition in a Networked Gaming Learning Environment

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The use of computer and online games for serious educational purposes has increasingly drawn attention from educators and researchers worldwide (Aldrich, 2005; Jenkins, 2002). While the characteristics, usage patterns, and motivations of users of these environments have produced valuable insights for both researchers and game designers (Dondlinger, 2007; Jansz & Tanis, 2007; Yee, 2006), empirical evidence supporting the effectiveness of computer game technologies as instructional tools in general and how certain game mechanics work is still in its infancy (Jenkins, 2002; Squire, Barnett, Grant & Higginbotham, 2004).

Based on the premise that competition is frequently embedded in digital game-based learning environments as a motivational-enrichment strategy, and acts as a powerful motivator for game players (Jansz & Tanis, 2007; Yee, 2006), and that anonymity might regulate individual psychological states, perceptions and behaviors (Festinger, Pepitone & Newcomb, 1952; Gergen, Gergen & Barton, 1973), the present study examined whether anonymity might alleviate the negative effects as reported as susceptible to face-to-face competition environments—motivation, satisfaction and interpersonal relationships (Butler & Kedar, 1990; Clinkenbeard, 1989; Deci, Betley, Kahle, Abrams & Porac, 1981) in a computerized, synchronized gaming learning space.

A synchronous gaming learning system was developed to have dyads compete against each other in answering multiple-choice questions set in accordance with the school curriculum (Fig. 1). A quasi-experimental research design was adopted. Two classes of fourth-graders (N=68) were randomly assigned to the face-to-face and anonymous treatment conditions. Students participated in three 40-minute instructional sessions for three consecutive weeks. These sessions were introduced as drill-and-practice activities for the students' social studies and science learning. Students were given a 38-item 5-point Likert-type questionnaire with validated validity and reliability.
Separate analyses of covariance with gender as a covariate found that students in the anonymous team competition condition responded significantly more positively than those in the face-to-face condition on motivation at 0.050 level, $f(1, 66)=3.98$, and on satisfaction at 0.056 level, $f(1, 66)=3.78$. No statistically significant differences were found between the two groups in students’ perceptual impressions of their opponents, $f(1, 66)=1.71$, $p=0.195$.

**Effect of anonymity on motivation**

It is important to note that the competitors’ identities are concealed from participants in the anonymous situation. Based on Malone and Lepper’s theory of intrinsic motivation (Malone & Lepper, 1987), the authors conjectured that the addition of the anonymous feature should increase the intrinsic motivational value of a competitive learning activity due to the increased element of uncertainty for success. The results of this study substantiated this conjecture.

**Effect of anonymity on satisfaction**

The seminal work by Festinger and his associates (1952) suggested that deindividuation permits group members to meet their needs for security and respect that they cannot otherwise satisfy. Gergen et al. (1973) later provided empirical evidence signifying that anonymity promoted intimacy, affection, and playfulness, with subjects reporting that they deeply enjoyed their anonymous interaction. Thus, the authors hypothesized that anonymous competitive learning should promote students’ satisfaction. The $p=.056$ significant effect indicated that students in the anonymous group had a higher tendency to rate the competitive gaming learning experience as more satisfying than those in the face-to-face group. Being anonymous during the learning activity enables individuals to focus more on the given task than on dealing with emotional burdens such as fearing of negative evaluation by others or the loss of self-esteem (Festinger, Pepitone & Newcomb, 1952; Gergen & Gergen, 1873). This in turn helps induce a more pleasant learning experience for the student.
Effect of anonymity on interpersonal relationships

Social communications researchers suggested that nonverbal cues, such as gestures and facial expressions, are more easily detected in face-to-face situations (Festinger, 1950; Williams, 1977). Because defensive reactions and negative emotions are more visible and hence more easily detected by opponents in face-to-face team competition (Williams, 1977), the authors suspected that it might have caused students to have more negative perceptions of their opponents. The analyzed results, however, did not find statistically differential effects between the two conditions. Anecdotal observations led the authors to suggest that it may be because students in both conditions were too engrossed in the game to allocate any part of their attention outside the peripheries of the computer monitor—fluid state, a phenomenon frequently identified in games-based research (Corti, 2006). So, even if any kinds of defensive behaviors were transpired in the face-to-face condition, opponents would be too focused on what’s on the monitor to notice the behaviors of their opponents sitting nearby.

Conclusions

In view of the preliminary nature of the present study, it is clear that much more in-depth research in this area is needed to extend the scope and generalizability of the present study. Although further studies regarding the effects of anonymous interaction in a networked gaming learning environment are imperative, the positive effects detected in this preliminary study indicate that anonymity is a viable feature for mitigating the negative effects that competition may inflict on motivation and satisfaction as reported in traditional face-to-face environments.

*For a complete list of references please refer to the paper published in CyberPsychology & Behavior or contact the corresponding author.

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