Comparing Student Interactions in Second Life and Face-to-Face Role-playing Activities

Abstract: This study compared student performances in role-playing activities in both face-to-face environment and Second Life. It was found that students produced similar amount of communication in the two environments, but the communication styles were different. In SL role-playing activities, students tended to take more turns, and have shorter exchanges in each turn-taking than in FTF environment. Students also tended to generate more concept-related dialogues in SL, though they may not be as elaborated as those in FTF environments. The educational implications for this study were discussed.

Introduction

In education, role-playing is a learning activity in which students assume the role of another person and improvise behaviors or consider a problem in a particular, pre-defined situation. Students are usually asked in role-playing to make a decision, resolve conflict, or act out the conclusion to an unfinished story. Although artificial, role-playing helps to stimulate reality in the classroom and is recognized teaching practice to encourage active experiential learning (Ments, 1989; Ladousse, 1987).

With the development of online education, online role-playing activity is becoming increasingly popular. Studies in text-based online role-playing activities suggest that online role-playing may be an effective method for developing understanding and exploring complex concepts and ideas (Bell, 2001a; 2001b; Freeman & Capper, 1999). Very few researchers, however, have begun studying role-playing in 3-D online environments. Dickey (2003, 2005) explored the role-playing in a 3-D environment called Active Worlds, finding that role-playing activities offered opportunities for experiential learning and situated learning within a collaboration learning environment.

To date, no studies have been conducted that contrast how (or if) the learning afforded by online 3-D environments, differs from that of face-to-face (FTF) environments. Such an understanding is an important one for educators who must be aware of the different nature of interactions in the two environments, and how to best design learning activities for their students.

The purpose of this study, therefore, is to examine how students interact differently or similarly in a 3-D online environment (Second Life) and in FTF environment. Second Life (SL) is an online virtual world where players can represent themselves as avatars, and interact with each other through various tools that allow them to make gestures, have text-based conversations and so on. Our research question, then, is what are the differences and similarities in nature of interactions in role-playing activities in FTF environment and SL environment?

Method

Thirty-six undergraduate students volunteered to participate in the study. Participants completed one FTF role-play activity, and one similar SL activity. None of them have much experience with SL before.

The role-playing activities were used to teach concepts of motivation, and were conducted within the curriculum scope and sequence of the course. Activity A focused on the concepts of effort-attribution and ability-attribution, and Activity B on the concepts of intrinsic motivation and extrinsic motivation. In each

role-playing activity, there were three roles, one teacher, one highly-motivated student, and one less-motivated student. Possible dialogue was suggested to the student, but it was recommended that they try to improvise based on the dialogue and be convincing in their portrayal of the characters. The time limit for both role-playing activities was ten minutes.

The 36 students were divided into 12 mini-groups of three students each. Each mini-group was randomly assigned an overall group (I or II). The six mini-groups in Group I did Activity A in SL first, and Activity B face-to-face second. The other mini-groups in Group II did Activity A face-to-face first, and Activity B in SL second. The mini-groups remained constant and all students remained the same roles in both activities.

The researcher observed both activities, audio recorded six mini-groups (Mini-group 1-3 are from Group I, and mini-group 4-6 are from Group II) FTF role-playing activities, and saved the same six groups' chat history in SL. When all students finished both activities, they completed a survey asking about their experiences of participating in the activities. The survey was based on a small pilot study, and comprised of nine items, asking the students to rate and compare their degree of interest, involvement, formality, focus and so on in the two role-playing activities.

Results and Discussion

In order to compare the amount of communication between the two environments, we first counted the numbers of words produced by each individual respectively within the mini-groups, and compared each individual student's amount of communication between the two environments. Using ANOVA, we found that there was no difference in the number of words between the SL and FTF activities [$F(1, 30)<1.00$, $p>.05$], accounting for the mini-group membership, topic of the activity (A or B), or order (FTF or SL first), and role that the student played in the activity. The role the student played in the activity, however, did affect the mean number of words students produced [$F(1,30)=8.7$, $p=.006$]. This is understandable, because based on the settings in both role-playing activities, the "teacher role" required students to assume greater responsibility in initiating and sustaining the conversation.

We examined the nature of turn-taking in both SL and FTF role-playing activities by first comparing the frequencies of turn-taking in these two conditions using ANOVA. On average, students in the SL role-playing activities took significantly more turns in the conversation (10.33), than they did during the FTF role-playing exercise (4.56) [$F(1,30)=11.20$, $p=.002$]. The frequencies were also affected by types of roles, as the role of teacher usually took more turns [$F(1,30)=8.06$, $p=.008$]. We went on to analyze the amount of communication in each turn, finding that students in SL (mean=7.81) tended to produce far fewer number of words than in FTF environment (mean=16.77) [$F(1,30)=61.11$, $p<.001$].

We also examined what students were talking about, with respect to the course goals for each activity. We analyzed transcripts, looking for evidence that students were talking about important conceptual ideas. Two raters cooperatively generated the codes used to analyze the transcripts. For example, they identified *Effort-Attribution* as a major concept, and five sub-ideas related to effort-attribution were discussed by participants: (a) willingness to try; (b) importance of effort; (c) persistence; (d) focus and concentration; and (e) commitment and dedication. Other major concepts identified were: *Ability-attribution*, *Intrinsic Motivation*, and *Extrinsic Motivation*. The two raters then independently coded the data looking for examples of these five concepts, with a 78.8% level of agreement. They discussed differences in coding until agreement was reached. As suggested in Table 1, we found more units containing sub-concepts in SL than in FTF environment.

Table 1. Number of Units Containing Sub-concepts in SL and FTF role-playing activities

	SL	FTF
Effort-attribution	15	10
Ability-attribution	7	5
Intrinsic Motivation	6	5
Extrinsic Motivation	5	4

Conclusion

The study showed that there was no difference in the amount of communication between the role-playing activities in the two environments. In SL role-playing activities, however, students tended to take more turns, and have shorter exchanges in each turn-taking than in FTF activities. In the SL environment, students also generated more concept-related, though they may not be as elaborated as those in FTF environments.

As a 3D virtual online environment, the educational potential of SL has barely been tapped. This study is among the first few studies that carefully examine the SL interactions for educational purposes. The comparison of student role-playing activities in FTF environment and SL has the following implications. First, role-playing activities work in both environments, SL and FTF. This may be surprising to some people who are concerned role-playing may not be as effective without direct face-to-face interactions. Second, for online educators who are interested in using role-playing activities, the study brings good news. It seemed that role-playing in SL can help achieve the similar pedagogical goals as FTF role-playing activities. Third, as revealed by this study, there are unique affordances of each environment, however. For example, SL lends itself to a different conversational style — shorter exchanges but more turn-taking. FTF environment, on the other hand, may allow for more elaboration.

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