The Role of Reward in CAL Environment

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Introduction

CAL (Computer Assisted Learning) is one of the learning tool utilizing computer and network technologies. CAL provides new learning environment which is adaptive to each learner's characteristics. Although learner can learn by interacting with the computer, most research on CAL has mainly focused on enhancing cognitive aspects in learning. However, the motivational aspects in CAL environment should be investigated since the effectiveness of CAL depends on the learner's self-determination. Recent theories of motivation indicate that self-efficacy and goal orientation are found to be a good predictor for the intrinsic motivation in e-learning (Yi & Hwang, 2003). Besides these individual differences in motivation, the effects of rewards on learning and intrinsic motivation have been quite controversial. In this study, we investigated the individual differences in the effect of rewards on interest and comprehension in a specific CAL environment called Teachable Agent (TA).

Experiment

Method

Participants were 174 of 5th grade of elementary school students (94 males and 80 females). After all participants rated their own self-efficacy, metacognition, and goal orientation questionnaires, they were given instructions on TA program which provides learner an active role as a tutor (Kim et al., 2005). And then they were asked to use TA program at home at least 20 minutes per day for ten days and the reward manipulation was presented. In reward condition, participants were told that reward (i.e., stationery set) would be given to one-half of the participants who scored above the average in the comprehension test. In no-reward condition, participants did not receive any information about the reward. After 10 day trial with TA program, both task interest ratings and comprehension test were given.

Results

Multiple regression analysis showed that metacognition was the only positive predictor in task interest regardless of the presence of reward (F (1, 123) = 15.446, p < .001) for reward condition, (F (1, 49) = 6.547, p < .05) for no-reward condition) .On comprehension test scores, self- efficacy was a positive predictor in no-reward condition (F (1, 123) = 11.985, p < .001). In contrast, in the presence of reward, performance goal orientation was found to be a negative predictor of comprehension (F (2, 49) = 12.941, p < .05), whereas self-efficacy was a positive predictor (F (2, 49) = 12.941, p < .001).

Discussion

The main findings of this study are: (1) metacognition is a good predictor for task interest in CAL; (2) self-efficacy is a good predictor for comprehension in CAL; (3) the presence of rewards affects negatively on comprehension only for the learner with high performance goal orientation. These results indicate that CAL environment requires metacognitve awareness in order to enhance intrinsic motivation and the mere presence of reward hinders the comprehension of performance goal learners. This suggests that autonomy of the learner is critical in CAL environment and the presence of non-contingent reward in CAL should be avoided.

Acknowledgments

References

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