World Academy of Science, Engineering and Technology
International Journal of Cognitive and Language Sciences
Vol:12, No:08, 2018

Improving Creative Problem Solving for Teams through a Web-Based Peer Review System

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Abstract : Brainstorming and discussion are widely used around the world as formal techniques of collaborative creative problem solving. This study investigated whether a web-based peer review system would improve collaborative creative problem solving. In order to assess the efficiency of using web-based peer review system before brainstorming and discussion, we conducted a between-group design study for two conditions (a web-based peer review system vs. face-to-face brainstorming only) using two different scenarios. One hundred and twenty participants were divided into teams of four and randomly assigned to one of the four conditions. The participants were given problems for them to solve. The participants in the experimental group first generated ideas independently for 20 minutes and wrote down their ideas. Afterwards, they reviewed the list of ideas of their peers and gave and received feedback for 10 minutes. These activities were performed on-line. The last activity was face-to-face brain-storming and discussion for 30 minutes. In contrast, the control group participated in brainstorming and discussion for 60 minutes. The quantity and the quality of ideas were measured as dependent variables of creative problem solving. Two evaluators rated the quantity and quality of the proposed ideas. Inter-rater agreement rate was good or strong. The results showed that both the average number of unique ideas and the average quality of ideas generated for the experimental condition were significantly higher than those for the control condition in both scenarios. The results of this study support the hypothesis that collaborative creative problem solving is enhanced when individuals write their thoughts individually and review ideas written by peers before face-to-face brainstorming and discussion. The present study provides preliminary evidence that a web-based peer review system can be instrumental in improving creative problem solving for teams. This system also offers an effective means to quantify the contribution of each member in collaborative team activity. We are planning to replicate these results in real-life situations.

Keywords : brainstorming, creative problem solving, peer-review, team efficiency
Conference Title : ICCSP 2018 : International Conference on Cognitive Science and Psychology
Conference Location : London, United Kingdom
Conference Dates : August 20-21, 2018