Orginal Article

Developing a Rapid Collaborative Knowledge Building Model to Encounter Emerging Situations Based on Grounded Theory

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Introduction

The emergence of new crises in recent decades (like coronavirus pandemic) has created a situation in which it is difficult to predict the future. Learnerss must be equipped with problem-solving tools to deal with emerging situations. Schools and universities must become knowledge-building communities. Rapid collaborative knowledge building (RCKB) is effective strategy for overcoming crisis and solving emerging problems. The focus of knowledge-building communities is on developing collective knowledge and improving learners' problem-solving skills.

Method

The purpose of this study was to develop a rapid collaborative knowledge building model to encounter emerging situations according to Scardamalia, Bereiter, and Stahl perspectives. Forty mechanical engineering students (8 groups) voluntarily participated in a time overcoming race designed by Yazd university's mechanical engineering professors. Students encountered an emergent problem on the day of the competition (which involved building a boat to carry at least one kilogram in the shortest possible time, and over the course of the long haul). Specific equipment and limited time were provided equally to all teams to examine the process of rapid collaborative knowledge building. After the competition (5 hours), the results were announced, the 3

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groups were named as successful and the other groups were named as unsuccessful. The qualitative method of grounded theory was used. Qualitative data were collected from focus group interviews, observations and scientific resources (scientific documents). Grounded theory was developed based on data triangulation.

Results

By categorizing the concepts, sub-categories and the discovery of the core categories, using data triangulation, RCKB in emergent situation as core phenomenon and the relations between categories emerged in the form of a paradigmatic model that included the causal conditions (6 categories: planning, idea storming, creativity, holding a maneuvers, preparation of responsible institutions, utilizing the power of specialists), and the consequences (3 categories: success in solving the emerging crisis, transform knowledge in to hardware or software, combination of intelligence, knowledge and artificial intelligence in the production of robots), contextual conditions (3 categories: positive perfectionism, achievement motivation, and time limitation), the strategies (4 categories: utilization of hardware and software tools, time management, communication, and speed in completing the mission), and the environmental conditions (3 categories: sudden occurrence of crisis, equipment limitations, and chaotic situation).

Conclusion

Based on studies reviewed by researchers, the process of RCKB in Iran, does not have a native model. Thus, by RCKB in a limited time and in an emerging situation, can be produced tools to encounter emerging situations, as well as, to solve the emerging crisis.

Keywords: rapid collaborative knowledge building, knowledge building communities, emerging situation, Yazd University