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Original Research Article

Role-Playing to Enhance Student Ill-Structured Problem-Solving Ability

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Abstract: In order to understand the effect of role-playing on enhancing student's ill-structured problem-solving ability, the study interprets the application of role-paying in education and explains the significance and importance of ill-structured problems in terms of student learning. In addition, the study briefly introduced the procedures of the experiment. The preliminary results and conclusion are also provided for references.

Keywords: Role-playing, ill-structured problem-solving.

INTRODUCTION

Students usually have to pay a lot to adapt to the real world's complexity after graduation. It is because the problems exist in the reality are always hard and difficult, and with multiple solutions. On the other hand, role-play has attracted much eyesight in the recent, educators then started to utilize role-playing to facilitate students' problem-solving ability.

THEORETICAL CONTEXT

Role-playing

The "role-playing" discussed in this section specifically refers to the design that request learners to play different personas and interact with the designed scenario in a digital-based environment, which is different from the above-stated one.

Role-playing has long been used in behavior and cognitive-behavioral therapies and also been utilized to evaluate interpersonal skills [1]. Prior research [2] pointed that researchers should integrate the advantage of role-play with online environment because it is generally acknowledged that online role-play provides learners with abounding problem-solving environment to enhance learning [3]. Therefore, online role-play has been well utilized in promoting learning engagement [4].

As past researcher noted, role-play involves students in different situations of an experiential learning cycle, which includes action, experience, reflection and theory [5]. Through proper guidance, learners could personally experience different cases or problems and learn to be perspective in terms of problem solving. Hence, past researcher noted: "The role-playing process provides a live sample of human behavior that serves as a vehicle for students to: (1) explore their feelings; (2) gain insight into their attitudes, values, and perceptions; (3) develop their problem-solving skills and attitudes; and (4) explore subject matter in varied ways" [6].

Some merits of role-playing reported by the previous study are described below [7]: (1) Having a more insightful view of learners' concepts, emotion and attitude toward the problems; (2) Enabling adults to concentrate on learning; (3) Driving learners to have more participation in learning and deeper understanding of the problems and obtain a better learning effect; (4) Enhancing learners' insight into the problems and reflection and thereby their original behavior and attitude could be changed. (5) Role-playing usually catches learners' attention in a short time because it is with the features like interesting and life-like.

The present study used virtual role-playing to guide students to have an experiential learning experience; it is because exposing them to an open environment not only costs too much but also makes the evaluation being very hard. Therefore, the present study argues that putting students in a closed virtual learning environment would be an advantageous alternative to facilitating students' problem-solving ability.

Why is learning ill-structured problem solving important?

Before addressing the issue, the present study has to describe the difference between well- and ill-structured problems. First, the well-structured problems we confronted are usually in textbooks or classrooms rather than in the authentic world, this implies that the ill-structured ones may be more complicated and complex; Second, well-structured problems have fixed answers while ill-structured ones not. This makes the multiple solving alternatives of ill-structured; Third, from another perspective, as noted previously, the information that problem solvers need to settle the problems is usually not well specified or unknown [8, 9]. This requires the solver's more organized thinking and sometimes the integration of different domain knowledge.

Based on the above, learning ill-structured problem solving outlined the following importance: (a) Enhance cognitive skills: The present study argues that knowledge remains inert if only it can be applied to the real life; similarly, when students are solving ill-structured problems, they have to transform the domain knowledge they learned from class to be a meaningful way rather than memorize a bunch of theories or concepts in their mind. Therefore, the process of learning ill-structured problem solving may enhance solvers cognitive skills [10]. (b) Enhance metacognitive skills: During the process of solving ill-structured problems, solvers often have to monitor, control or adjust the selection and execution of the solving alternatives [11-14]. In other words, students have to not only generate solution alternatives, but also utilize their prior knowledge to revise or modify the alternative and review the goal in order to achieve an optimized outcome [15, 16]. The process provides very good opportunity to enhance their metacognitive skills. (c) Enhance coordinating skills: At the last stage of problem solving, problem solvers usually have to select a best solution to fix the problem among various alternatives. Sometimes the decision is hard to make because of the argumentation that comes from different ways, this would be a challenge for the problem solver. To some extent, this is actually performing one of the five main functions of management--- coordination. From students' standpoint, that is a very important training before they become a management professional in the practical world.

Therefore, learning ill-structured problem solving is critically important.

METHOD

In order to conduct the preliminary research, the study randomly invited three voluntary college students to participate in the experiment. The participants were provided with one-hour orientation to understand the details of the procedure. Then they were taught to design a scenario-based problem and try to fix the problem by themselves. The consequences were recorded by the participants and sent to two different graders for grading.

RESULTS AND CONCLUSION

The preliminary results indicated that the results of combining role-playing and ill-structured problem-solving are quite satisfactory. It not only highly motivated the participants to bravely face the problem and fix the problem efficiently but also altered the complex situation to be more interesting and challengeable.

It is suggested that future study could elaborate the contents and classify the participants into more different levels so that the effects of applying role-playing to ill-structured problem-solving could be deeply explored.

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