

The impact of structured discussion forums of learning by computer science students / Tibi, Moanes

Abstract

Online learning is becoming increasingly common in universities and colleges. Several modern communication technologies can be utilized in online courses for the purpose of increasing collaborative interactions among the participants, but the asynchronous discussion forum is currently the most preferred tool. Discussion forums have been examined for their usefulness in promoting online learning among students. Recent research has shown that structured discussion forums are more effective for the improvement of critical thinking skills by the students than are unstructured discussion forums. However, little attention has been paid to how to structure discussion forums in order to make their use among the students more effective for the acquisition of different kinds of knowledge and the improvement of their collaborative skills.

The purpose of this study was to evaluate the impact of structured discussion forums on students' learning in computer science courses that were entirely conducted online. More specifically, the study proposed a structure for discussion forums and investigated its impact on the acquisition of the three kinds of knowledge: know-what, know-how, and know-why. Know-what refers to knowledge about facts, know-how refers to the ability to do something, and know-why refers to knowledge about causality nature, in the human mind and in society. The second research question examined the impact of structured discussion forums on the improvement of collaborative skills by the students. In addition, the study investigated whether there is a relationship between students' active participation and the level of knowledge they have acquired from the discussion forum.

The study employed a field experiment using pre- and post-tests and a survey design in order to answer the research questions. One hundred twenty three students from two academic education colleges participated in seven computer science online courses. At the beginning of each delivered online course, students were randomly divided into two groups: the experimental group which participated in the structured discussion forum and the control group which participated in the unstructured discussion forum.

The pre-and post-test design was used for the purpose of evaluating the knowledge level by the students in the three knowledge kinds before and after the participation in the online course. The post-test data was used for measuring and comparing the differences in knowledge acquisition between the participants of the structured and the unstructured discussion forum. For the second research question, a survey design in a form of a questionnaire was used to determine the differences in the improvement of collaborative skills by the students of both research groups. The questionnaire was distributed to the students in a face-to-face meeting after the end of the online course. For the third research question, statistical analyses were conducted on the data collected from the online learning environment about the activity of each student in the discussion forum in order to explore the relationship between students' active participation and the level of knowledge they acquired in the online course.

The main findings of the current study showed that: (1) students of the structured discussion forum acquired more knowledge of the kinds "how" and "why" compared to the students who participated in the unstructured discussion forum, (2) the obtained differences in knowledge acquisition were also dependent on the student's prior knowledge of subject matter, and (3) the students of the structured discussion forum significantly improved their collaborative skills in comparison to the students of the unstructured discussion forum.

The findings of the study can contribute to the field of asynchronous online learning in providing a structure for discussion forums that has the potential to enhance knowledge acquisition of different kinds and to improve collaborative skills by the students.

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