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A Peer Tutoring-Based Concept Mapping Approach to Improving Students' Learning Achievements and Attitudes for a Social Studies Course

Chien-Wen Chuang, Graduate Institute of Applied Science and Technology, National Taiwan University of Science and Technology, Taipei, Taiwan

Gwo-Jen Hwang, Graduate Institute of Digital Learning and Education, National Taiwan University of Science and Technology, Taipei, Taiwan

Wen-Jen Tsai, Department of Information and Learning Technology, National University of Tainan, Taipei, Taiwan

ABSTRACT

Concept maps are well recognized as being an effective tool for helping students organize and construct their knowledge. However, previous studies have also indicated the difficulty encountered by young students in concept mapping. Therefore, how to provide an efficient strategy for enhancing students' learning achievement using concept mapping is worth studying. The purpose of this study is to explore the effects of the peer tutoring-based concept mapping approach on students' learning performance. A 5-week experiment was conducted in an elementary school social studies course in southern Taiwan. The participants were two classes of fifth graders. One class was the experimental group consisting of 33 students provided with a computerized concept map learning model based on peer tutoring, whereas the other class was the control group consisting of 32 students learning with a conventional computerized concept mapping approach. It was found that the learning achievements and the concept map scores of the students who learned with the peer-tutoring strategy were significantly higher than those students who learned with the conventional computerized concept mapping approach. Meanwhile, the result also indicated that the innovative approach is significantly helpful for improving the students' learning attitudes and technology acceptance levels.

KEYWORDS

Concept Mapping, Peer Tutoring, Social Studies Courses, Technology Acceptance Model

INTRODUCTION

Social studies for elementary schools is an interdisciplinary subject which needs to integrate different learning domains of theories and principles so that students can apply them in their daily life. In traditional instruction, most teachers tend to instruct via lectures, and hence students seldom have the chance to organize the learning content and link what they have learned with their daily life experience. In this case, it is likely that only the cognitive objectives at a low level can be obtained, while those at a high level and effective, instrumental objectives are ignored (Wang & Wu, 2008).

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Therefore, it is important to help students construct holistic concepts in social studies courses. By representing the learning content with contextual meanings, it could be easier for learners to memorize, comprehend and integrate the content into their cognitive structure, so that it can become part of their holistic knowledge system. Moreover, with a well-constructed knowledge system, learners are able to integrate knowledge from different subjects; computerized knowledge construction tools play an important role in helping students construct and organize knowledge (Hwang & Chang, 2011).

Among various knowledge construction tools, concept mapping has been recognized as an effective tool for helping students organize and construct knowledge (Hwang, Shi, & Chu, 2011; Peng, Su, Chou, & Tsai, 2009; Schwendimann & Linn, 2016). In the past decades, computerized concept mapping has been applied to different subjects with satisfactory effects (Liu, Chen, & Chang, 2010; Panjaburee, Hwang, Triampo, & Shih, 2010). However, some researchers have indicated that developing concept maps could be too difficult for young children (Bala, Dhasmana, Kalra, Kohli, & Sharma, 2016; Hwang, Wu, & Ke, 2011). Therefore, it remains a challenge to provide effective strategies or mechanisms to assist children to develop concept maps related to a specified target or issue.

Scholars have indicated that peer tutoring is an effective approach for helping children deal with complex learning tasks (Topping, 1996). Through the process of peer tutoring, students can be engaged in more practice, and can receive immediate feedback and suggestions from their peers. Therefore, this study aims to use peer tutoring to improve the learning achievement of computerized concept mapping. Meanwhile, the research questions were formulated as follows:

1. Do the students learning with the peer tutoring-based concept mapping approach have better learning achievement than those learning with the conventional concept mapping?
2. Do the students learning with the peer tutoring-based concept mapping approach have better attitudes toward taking the social studies course than those learning with the conventional concept mapping approach?
3. Do the students learning with the peer tutoring-based concept mapping approach show higher perceived usefulness, perceived ease of use, and satisfaction with the learning approach than those learning with the conventional concept mapping approach?
4. Is there a significant change in the students' perceived value of peer tutoring before and after participating in the peer tutoring-based concept mapping activity?

LITERATURE REVIEW

Concept Mapping

Concept mapping was proposed by researchers at Cornell University for representing conceptual knowledge structures (Novak & Musonda, 1991; Trent et al., 1998; Watson, Pelkey, Noyes, & Rodgers, 2016). Via qualitative and quantitative studies, researchers have shown that concept maps can promote meaningful learning, which leads to positive effects on students (Hwang, Wu, & Ke, 2011; Liu, Don, & Tsai, 2005). Moreover, concept maps can also be a visualized cognitive tool that helps students organize their knowledge and learning experiences, so that their self-awareness can be improved through reflective thinking (Kao, Lin, & Sun, 2008a; Hwang, Shi, & Chu, 2011).

Owing to the advancement and popularity of computer technologies, computerized concept mapping tools have been widely used by researchers when conducting learning activities for various courses. For example, Kao, Lin, and Sun (2008) indicated that concept mapping can be used in combination with any subject by expressing the domain knowledge in the concept map format to assist students in elaborating concepts, engaging in reflective thinking, or breaking concept boundaries. Liu, Chen, and Chang (2010) employed a computer-assisted concept mapping system to help EFL college learners improve their English reading comprehension. They found that the computer-assisted concept mapping learning strategy had greater reading benefit for the low-level group than for the high-level

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