

Influence of Grouping by Learning Styles on Learning Performance in Computer-Supported Collaborative Learning

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Abstract: Grouping is important factor for successful computer-supported collaborative learning(CSCL). Studies on CSCL focus on heterogeneity and homogeneity about observable part such as learners' expertise or learning ability. However, preference of teaching style and learning method varies from learners' learning style. Therefore, learning styles can be considered as a strategy for grouping in CSCL. This study aims to compare the learning performance of groups based on Kolb's learning style index. 100 high school students participated in this study which compared five conditions - assimilating, diverging, accommodating, converging, heterogeneous. Cmap Tools was used to externalize the participants' knowledge during the collaborative learning.

Keywords: CSCL, learning style, grouping, concept map, Kolb's learning style inventory,

1. Introduction

Grouping is important factor for successful computer-supported collaborative learning (CSCL). Studies on CSCL focus on heterogeneity and homogeneity about observable part such as learners' expertise or learning ability. Precedent studies assert heterogeneity is effective for divergence and conflict of knowledge. (Jorzak, 2011). However, others have opposite opinion because of unilateral interaction between high-achievement student and low-achievement student, hostility from different expertise, and so on.

Preference of teaching style and learning method varies from learners' learning style. (Kang, Kwon, 2000; Do, Hwang, 2006; Park, 2005). Therefore, learning style can be considered for grouping. Current study aims to compare the learning performance of five groups based on learning styles.

2. Research Questions and Method

- (1) Which group has more divergence of knowledge during collaborative learning?
- (2) Which group has better learning performance?

3. Theoretical Background

3.1. Grouping

Not only an individual also a group acquires knowledge by repeating of externalization and internalization of information caused by learners. (Jorzak, 2011). Learners' heterogeneity is essential because conflict of knowledge is triggered. Learners can obtain more opportunities from others in heterogeneous groups (Web, Baxter, & Thompson, 1997). However, opposite effects of heterogeneous grouping and homogeneous grouping are reported (Roh et al. 1998). Low-achievement learners' way of perceiving achievement is 규정되다 by others and high-achievement learners' dogmatic participation might be problematic (Cohen, 1994). Heterogeneity of group is an obstacle to form affiliation because members consider they are different each other. (O'Reiley, Caldwell, & Barnett, 1989)

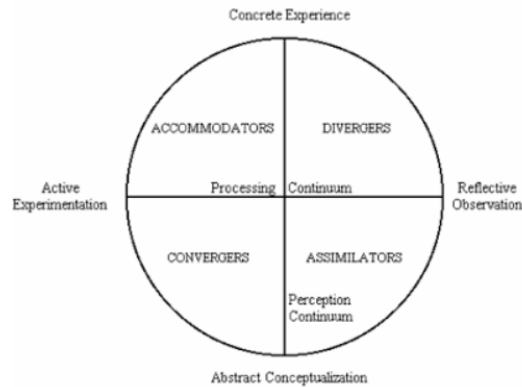
3.2. Learning Style

Studies on learning styles are based on empiricism and emphasis on learners' active role (Ayersman, 1993). In empiricism, every learner has his or her own way of learning because he or she has own strength and weakness to deal with during learning. (Kang, Kwon, 2000)

Perception and process of information is a base of understanding of effect of learning styles to learning performance. (Kang, Kwon, 2000). Learning style also preference of majors, teaching styles, and satisfaction of cyber learning (Yoo, 2011; Oh, 2004)

3.3. Kolb's Learning Style Index

Kolb(1994) categorize the process that learners understand and internalize their experiences with the Experiential Learning Theory to four learning styles. He suggests that active and reflective in the aspects of information process, and concrete and abstract in the aspects of information perception. The Integration of the factors - concrete experience(CE), reflective observation(RO), abstract conceptualization(AC), and active experience(AC) - are suggested as component of learning. The four styles form a cycle of learning that happens not only in a specific phase also every phase. (Koh, 2002)



4. Method

100 students are randomly selected in a technical high school in Seoul. After learning style test, they are divided into five groups.

Using Cmap Tools, they represent their knowledge and use online messengers to communicate.

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