STUDENT’S GEOMETRIC THINKING IN MATHEMATICAL CLASSROOM BASED ON OPEN APPROACH

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Research in mathematics education emphasis on developing successively higher thought levels appears to signal direction and potential for improving the teaching of mathematics (Fuys, Geddes & Tischler, 1988). For example, research by van Hiele developed an instructional model to be implemented in an effort to raise students’ thought levels (Clement, 2004). Consequently, in research perspective, we needed to closely investigate the students’ descriptors in order to access their intensive understanding as quality of thinking as well as difficulty in learning by not only judged their right or wrong answer (Fuys & Liebov, 1993). But an empirical description of the van Hiele levels (Fuys, Geddes & Tischler, 1985; Fuys, Geddes & Tischler, 1988; Joong Kwoen, 2008) are not accurate definitions in Thai mathematics classroom context. This study aims to describe students’ geometric thinking in mathematics classroom based on Open Approach. Teaching by Open Approach intends to open up the hearts of students toward mathematics (Nohda, 2000; Inprasitha, 2007) and it can improve student’s geometric thinking in mathematics classroom (Noparit, 2005; Jeerapong, 2005; Inprasitha, 2006). In addition, the teaching approach can change traditional classroom from lecture and design worksheet to stimulate open-ended question to students for reflect student ideas in problem solving activity (Inprasitha, 2006, 2010). The data were collected by participatory classroom observation and recording scenario of teaching by Open Approach in a mathematics classroom and session of reflection of teachers and classroom observers. Moreover, Analysis of data from the video classroom video recordings and students’ written work were analyzed. Then, the researcher made descriptors of student’s geometric thinking. The results showed that 1st grade student’s geometric thinking expressed on level 0 (Visualization) - student identify prototypes of basic geometric figures (circles, rectangles, squares) and 4th grade student’s geometric thinking expressed on level 2 (Abstraction) – student can reason with simple arguments about geometric figures and students use geometry to infer how they compare to the multiplier (students draw a table and then count the number of tables, students measure the length of the figures). According to this studies, the descriptors of geometric thinking level from Van Hiele’s model would be obtained for using in describing the students’ example and responses regarding to the existed geometric thinking in the present and connect to make draft descriptors of geometric thinking level for 1-6 grade student.

Keywords: Student’s geometric thinking, Mathematical Classroom based on Open Approach

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