

## Investigating Students' Understanding about Mathematical Concept through Concept Map

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**Abstract :** The main purpose of studying lies in improving students' understanding. Teachers usually use written test to measure students' understanding about learning material especially mathematical learning material. This common method actually has a lack point, such that in mathematics content, written test only show procedural steps to solve mathematical problems. Therefore, teachers unable to see whether students actually understand about mathematical concepts and the relation between concepts or not. One of the best tools to observe students' understanding about the mathematical concepts is concept map. The goal of this research is to describe junior high school students understanding about mathematical concepts through Concept Maps based on the difference of mathematical ability. There were three steps in this research; the first step was choosing the research subjects by giving mathematical ability test to students. The subjects of this research are three students with difference mathematical ability, high, intermediate and low mathematical ability. The second step was giving concept mapping training to the chosen subjects. The last step was giving concept mapping task about the function to the subjects. Nodes which are the representation of concepts of function were provided in concept mapping task. The subjects had to use the nodes in concept mapping. Based on data analysis, the result of this research shows that subject with high mathematical ability has formal understanding, due to that subject could see the connection between concepts of function and arranged the concepts become concept map with valid hierarchy. Subject with intermediate mathematical ability has relational understanding, because subject could arranged all the given concepts and gave appropriate label between concepts though it did not represent the connection specifically yet. Whereas subject with low mathematical ability has poor understanding about function, it can be seen from the concept map which is only used few of the given concepts because subject could not see the connection between concepts. All subjects have instrumental understanding for the relation between linear function concept, quadratic function concept and domain, co domain, range.

**Keywords :** concept map, concept mapping, mathematical concepts, understanding

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