Rahadiyan Bayu Hananto. 2018. **Experimentation of Problem Based Learning (PBL) and Discovery Learning (DL) based on Assessment for Learning (AfL) through Peer Assessment on Flat Side Room Material Subject Viewed from 8th Grade Students Learning Styles of Junior High School Karanganyar Regency in Academic Year 2016/2017**. Thesis. Consultant: Prof. Drs. Tri Atmojo K, M.Sc., Ph.D. Co-Consultant: Dr. Riyadi, M.Si. Mathematics Education Program, Faculty of Teacher Training and Education, Sebelas Maret University, Surakarta.

**ABSTRACT**

The purposes of this research are to find out 1) Which learning model which gives better learning achievement of mathematics among Problem Based Learning (PBL) model based on Assessment for Learning through peer assessment and Discovery Learning based Assessment for Learning through peer assessment or direct learning model. (2) Which learning achievements are better, students with visual type learning, auditorial type or kinesthetic type. (3) In each learning model, which provides better learning achievement among students with visual type learning, auditorial type or kinesthetic type. (4) In each learning style, which gives better learning achievement of Problem Based Learning (PBL) based on Assessment for Learning through peer assessment and Discovery Learning based Assessment for Learning through peer assessment or direct learning model.

This research is a quasi experimental research with $3 \times 3$ factorial design. The population of this study is all students of class VIII State Junior High School in Karanganyar District in the academic year 2016/2017. This study used stratified cluster random sampling. The sample used in this study are 9 classes with 261 students. Instruments used to collect data is a test of mathematics learning achievement and student learning style questionnaire. The test of the instrument includes content validity, difficulty level, discrimination power and reliability. Discrimination power test and internal consistency questionnaire using the moment product correlation formula from Karl Pearson. The prerequisite test includes the normality test using the Lilliefors test method and the homogeneity test using the Bartlett method. The balance test uses the one-way Anava test with unequal cells. Technique Data analysis using test of variance analysis of two way with unequal cell and continued by double comparison test by using Scheffe method.

Results of the study it can be summarized as follows 1) Students who are subject to learning model Discovery Learning (DL) based on Assessment for Learning (AfL) through peer Assessment has better mathematics learning achievement than the model of Problem Based Learning (PBL) based on Assessment for Learning (AfL) through peer Assessment and direct learning model, and PBL based on AfL through peer assessment has better learning achievement than direct learning model. (2) Students who have visual learning styles have better learning achievements than auditorial learning styles and kinesthetic learning styles, as well as auditorial learning styles have similar learning achievements as well as kinesthetic learning styles. (3) In the PBL based on AfL through Peer Assessment, students with visual learning styles, auditorial
learning styles, and kinesthetic learning styles have as good as learning achievements. In the DL-based AfL through Peer Assessment, students with visual learning styles and auditorial learning styles have as good as learning achievements. Auditorial learning styles and kinesthetic learning styles have equally good learning achievements. While the learning style of visual learning style has better learning achievement than kinesthetic learning style. In direct learning models, students with visual learning styles, auditorial learning styles, and kinesthetic learning styles have as good as learning achievements. (4) In students with visual learning styles, learning achievement in PBL-based AfL through peer assessment and DL-AfL-based peer assessment results equally well. PBL-based AfL through peer assessment and direct learning resulted in as good as learning achievement. DL-based AfL through Peer Assessment mathematics learning achievement is better than students who are direct learning model. In students with auditorial learning styles, learning achievement in PBL-based AfL through peer assessment, DL-based AfL through peer Assessment and direct learning models produces equally well. In students with kinesthetic learning styles, learning achievement in PBL-based AfL through peer assessment, DL-based AfL through peer Assessment and direct learning models produces equally well.

**Keywords**: PBL, DL, AfL, Peer Assessment, Direct Learning, Learning Style, Learning Achievements