



# The Effectiveness of Science-Based Learning towards Students' Understanding of Complex Analysis Courses

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## ABSTRACT

### Keywords:

Scientific; Drill;  
 Experimental;  
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The purpose of this study is to describe the effectiveness of science-based learning drill towards students' understanding of complex analysis courses. This research employed experimental procedure with one group posttest design. The experimental group consisted of 20 sixth semester students taking complex analysis courses. They were treated with drills on science-based learning procedure followed with a post test that is composed of seven questions. To measure the effectiveness of the procedure, t-test was applied. With a standard value of 70 (value = 70), the computation using SPSS 16 program showed the t test results at a significant level of 5% was 1.78, t table 1.327, and degrees of freedom (dk = 20-1). Because t arithmetic is greater than t table, the alternative hypothesis (Ha) is accepted. It can be concluded from the statistical analysis that science-based learning drills are effective to influence students' understanding of materials in complex analysis courses.



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## A. INTRODUCTION

Students are agents of change that need to be equipped with various knowledge and skills through the learning process. Students as well as prospective teachers are expected to be able to apply the knowledge they have acquired well. Complex analysis course is one of compulsory subjects for students of study program at STKIP Taman Siswa Bima, the purpose of this course is that students are expected to be able to master learning materials, creative and critical thinking so that later can apply science to solve various problems in daily life-day. According to Farhan and Retnawati (2004) mathematical learning plays a very important and essential role for the development of science and technology.

To achieve these goals, of course the various efforts that need to be done by a lecturer pengampu one of them is to use teaching methods that vary according to the characteristics of the material and students. Three years trakhir in every semester even, researchers always mengasok complex analysis courses and find out exactly the problems faced by students ranging from the understanding of student materials that vary, motivation and interest in learning is relatively less that encourages me to try the lessons that researchers have never done before using a self-directed scientific study. The scientific approach is believed to be the golden tool for the development and development of students' attitudes, skills, and knowledge. Scientific-based learning approaches are more effective than traditional learning (Budiyanto, Waluyo & Mokhtar,

2016). Scientific approach makes learning more active and not boring, students can construct their knowledge and skills through the facts found in field investigations for learning. In addition, with this scientific-based learning approach, students are encouraged to be more capable in observing, asking, reasoning, and communicating or presenting the learned things of natural phenomena or direct experience (Kemendikbud, 2013: 203,212).

The scientific approach consists of five basic learning experiences: observing, questioning, gathering information/experiments, associating/processing information, and communicating. According to (Mariamah&Syarifudin, 2017, p 510) that drills are a repetitive exercise of the matter presented. In this research, the drill is the giving of practice questions continuously and giving the students an opportunity to answer the practice questions in front of the class. It can be concluded that scientific learning based on drill is a learning that is carried out based on the syntax of the scientific own that begins with giving the questions of the exercises.

**B. METHOD**

The type of this research is experimental research with one group posttest design. The study was conducted in the sixth semester which is in charge of complex analysis course which only one class with 20 students. After doing treatments by applying scientific learning based on drills given posttest. The instrument used to measure the mastery of student materials using the test instrument shaped essay as much as 7 questions. Data analysis to know the effectiveness of science-based scientific learning against the understanding of the material using the t-test with a standard value of 70 (value = 70).

**C. RESULT AND DISCUSSION**

Based on the results of data analysis using the program spss.16 obtained the following results:

**Table 1. One-Sample Test**

Test Value = 70						
	t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
NILA I	2.517	19	.021	5.00000	.8416	9.1584

The results showed that the t test results using the SPSS program. 16 at a significant level of 5% obtained results of 2.517 and t table of 1.327 on degrees of freedom (dk = 20-1). Because t arithmetic greater than t table feeding hypothesis accepted is alternative hypothesis (Ha). From the results of the analysis can be concluded that scientific learning based on drill effectively reviewed from the understanding of student materials in complex analysis courses. The results of this study support the results of previous studies. (Budiyanto, Waluyo&Mokhtar, 2016, p.46) states that traditional learning, acquisition of understanding by 25 percent. In scientific-based learning, the acquisition of understanding becomes 50-70%. The drill method is one of the most suitable methods to apply to counting matter. The more often students complete the practice questions, the more familiar with the material being taught. So the application of science-based learning drill is effectively applied in learning to improve students' understanding of teaching materials.

In the opinion of Endrayansyah (2014), Hosnan (2014), and Daryanto (2013) process

learning by using approach Scientific is much different from learning conventions in which the teacher is the source of information and students and teachers are always actively explaining, guide students until students understand. In a way this is the time required in the student process from do not understand being understood takes time the old, so less efficient. In the scientific approach of the teacher's problem always based on the phenomenon that has been occurs in the lives of the students, then the students try looking for answers to a given problem independent.

#### D. CONCLUSION AND SUGGESTIONS

Scientific learning based on drill effectively reviewed from the understanding of student materials in the subjects of complex analysis with the value of  $t$  arithmetic of 2.517 and  $t$  table 1.327 at a significant level of 5%.

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