

# The Effect of PMII Strategy Towards RRT in Concept Mastery and Students Critical Thinking Ability

Ariesta Wulandari Ciptaningtyas\*

Teknik Elektro  
Sekolah Tinggi Teknik Malang  
Malang, Indonesia  
\*ariestawulandari88@gmail.com

Akhmad Sidiq

Teknik Arsitektur  
Sekolah Tinggi Teknik Malang  
Malang, Indonesia  
akhmad4javier@gmail.com

Chandra Sundaygara

Fakultas Sains dan Teknologi  
Universitas PGRI Kanjuruhan Malang  
Malang, Indonesia  
chandrakirana@unikama.ac.id

**Abstract**—The aims of this research is to know the effect of reverse role tutoring (RRT) peer mediated instruction and intervention (PMII) strategy on the collage students 'conceptual mastery and students' critical thinking skills. The research method used a Quasi-experimental research design using a post-test only control groups design. The subjects of this study were 60 students from the fifth semester majoring in electrical engineering, that were selected using purposive sampling technique. The research instrument was a matter of conceptual mastery and about critical thinking skills. Data analysis using T-test. The results of data analysis show that there are differences in concept mastery and critical thinking skills in the experimental class and the control class. The t-test of concept mastery shows  $t_{count} > t_{table}$  ( $4.906 > 2.000$ ), and t-test of critical thinking ability  $t_{count} > t_{table}$  ( $3.486 > 2.000$ ). The results of this study indicate that there is a significant effect of the reverse role tutoring (RRT) type of peer mediated instruction and intervention (PMII) strategy on students' mastery of concepts and critical thinking skills.

**Keywords**—Peer Mediated Instruction and Intervention (PMII), Reverse Role Tutoring (RRT), concept mastery, critical thinking ability

## I. INTRODUCTION

The learning process that can activate students is a learning process that is interactive, collaborative, and student-centered [1]. One of the interactive, collaborative, and student-centered learning models is peer-mediated instruction and intervention (PMII) reverse role tutoring (RRT) [2]. Based on the results of observations in the field, it states that the learning carried out refers to the teacher center or focuses on the lecturers. It can be

seen that most of the students do not understand the concept of the courses being taught. The application of peer tutor learning to students has not been done so often in the field. Therefore, this study wants to apply the PMII type RRT learning strategy to students.

PMII has been proven to be effective in improving learning outcomes [3-5]. In addition, PMII is also able to increase metacognitive awareness and academic abilities [6,7]. The PMII meta-analysis conducted by Johnson [7] reported that more than 900 social studies were found and interdependent.

Mastery of concepts is a person's ability to understand what is being taught, capture the meaning of what is learned, utilize the content of the material being studied, and solve problems related to the material being studied. Inquiry learning strategies and peer tutors in mathematic learning are able to develop self-efficacy and mastery of concepts from the students [8].

One of the skills that expected to be an output in the ongoing learning process is critical thinking skills [9,10]. In line with learning in the 21st century which requires students to have competencies in the form of problem solving, communicative, collaborative and critical thinking skills [11]. Critical thinking processes to solve problems can be trained by giving problems about complex cognitive activities [12]. Ability to think critically has a very high increase in the application of peer tutor learning in mathematics learning [13].

## II. METHODS

The design used in this study was a quasi-experimental, the research design used a post-test only control group design. Learning using 2 groups, namely the experimental group and

the control group. Based on table 1 the experimental group is the group that using the Peer Mediated Instruction and Intervention (PMII) learning strategy of the Reverse Role Tutoring (RRT) type, while the control group is the group that uses conventional learning, namely the Teacher Center.

TABLE I. EXPERIMENT DESIGN

Groups	Treatment	Post - Treatment	
		PB	KBK
Experiment	X	√	√

TABLE II. T-TEST CONCEPT MASTERY

		Independent Samples Test									
		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
										Lower	Upper
KBK	Equal variances assumed	2.113	.151	3.486	58	.001	4.167	1.195	1.774	6.559	
	Equal variances not assumed			3.486	53.443	.001	4.167	1.195	1.770	6.563	

Based on the results of the T test, the concept mastery data shows that the significance value, which is 0.000 <compared to the significance level of 0.05 with the t table value of 4.906> the t value of 2,000, so it can be concluded that there is a significant difference in the concept mastery data between the experimental class and the control class. The effect of concept mastery on the results of this study also supports the results of

Control	-	√	√
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III. RESULTS AND DISCUSSION

A. Concept Mastery Data

The following is the T-Test results of concept mastery data presented in table 2.

previous studies which state that peer tutoe learning can improve students' mastery of concepts [8].

B. Critical Thinking Ability Data

The Following T-Test results data on critical thinking skills are presented in table 3.

TABLE III. T-TEST FOR CRITICAL THINKING ABILITY

		Independent Samples Test									
		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
										Lower	Upper
KBK	Equal variances assumed	2.113	.151	3.486	58	.001	4.167	1.195	1.774	6.559	
	Equal variances not assumed			3.486	53.443	.001	4.167	1.195	1.770	6.563	

Based on the results of the T test, the critical thinking ability data shows that the significance value is 0.001 <compared to the significance level of 0.05 with a T table value of 3.486> the T value of 2,000, so it can be concluded that there is a significant difference in the critical thinking ability data between the experimental class and the control class.

The influence of critical thinking skills on the results of this study also supports the results of previous studies which state that peer tutoring or PMII type RRT can improve students' critical thinking skills. The critical thinking process to solve problems can be trained by giving problems [12]. About complex cognitive activities. The ability to think critically has a very high increase in the application of peer tutoring learning [13].

IV. CONCLUSION

In this study, it can be concluded that the RRT type PMII learning strategy can improve students' mastery of concepts and critical thinking skills.

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