**Original Research Paper** 



EFFECTIVENESS OF COGNITIVE APPRENTICESHIP MODEL ON METACOGNITIVE SKILLS OF SECONDARY SCHOOL STUDENTS IN KERALA.

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ABSTRACT The main purpose of the study is to find out the effectiveness of cognitive apprenticeship model on metacognitive skills of secondary school students of kerala state. The investigator compared the effectiveness of Cognitive apprenticeship model over existing constructivist method on Metacognitive skills of secondary school students under the components such as Procedural knowledge, Declarative knowledge, Conditional knowledge, Planning ,Monitoring and Evaluation .Research design used for the study was pretest –posttest nonequivalent group design. The analysis of the pre test mean scores of the experimental group and control group showed no significant difference in their initial academic abilities and metacognitive skills. After using cognitive apprenticeship model for experimental group and constructivist method for the control group, it is found that the experimental group was better in performance than control group. It is found that cognitive apprenticeship model, had a significant effect on the metacognitive skills.

**KEYWORDS**: Metacognitive skills, Cognitive apprenticeship model , Procedural knowledge, Declarative knowledge, Conditional knowledge.

# INTRODUCTION

Metacognitive skills are tools that empower the learner. Pupils very often fail to see learning as cycle that involves revisiting previous work to see where it can improved, acknowledging the value of mistakes, and planning improvements on this basis. Instead, research shows that they are inclined to attribute successes to good luck and failures to lack of ability. Such faulty beliefs serve to make some students helpless, believing that there is little they can do, affect the outcome of the "lottery" of good grades. By showing a learner that they can be in control of how they study, how they organise their work, and how they reflect upon it, we encourage them to take responsibility for learning and demonstrate that it is an active process. Pupils with good metacognitive skills are flexible in their approaches to learning. They possess a number of strategies to best cope with the information they need to interact with, and can assess which ones to use at the most appropriate times.

Engagement with metacognitive learning techniques encourages pupils to see learning as a process, and one in which they can have input. The learner is at the centre of the activity, directing it, rather than standing on the sidelines. Ideally in this way, pupils begin to see how they can take control of their own learning and be agents of their own success. Answering questions that stimulate higher-order thinking are all activities that may help to move students beyond this helplessness to see themselves as agents in their own learning.

Metacognitive skills are "the regulatory activities associated with solving problems" (Brown, 1978). They involve planning, monitoring, and evaluation components of metacognition. It is also called as 'Regulation of cognition' which refers to the activities and actions undertaken by individuals to control their own cognition

In this study metacognitive skills, concern the procedural knowledge that is required for the actual regulation of, and control over one's learning activities. Planning, monitoring, checking, and recapitulation are manifestations of such skills.

### STATEMENT OF THE PROBLEM

In this study the investigator tried to find out Effectiveness of cognitive apprenticeship model on metacognitive skills of secondary school students.

# **OBJECTIVES OF THE STUDY**

To find out the effectiveness of cognitive apprenticeship

model on metacognitive skills of secondary school students.

Education

- To compare the effectiveness of Cognitive apprenticeship model over existing constructivist method on Metacognitive skills of secondary school students.
- To compare the effectiveness of cognitive apprenticeship model on Metacognitive skills of secondary school students under the following components.
- Procedural knowledge
- Declarative knowledge
- Conditional knowledge
- Planning
- MonitoringEvaluation
- Evaluation

# HYPOTHESES OF THE STUDY

- There exists a significant difference in the Pre-test and Post-test mean scores of metacognitive skills of secondary school students taught through cognitive apprenticeship model.
- There exists a significant difference in the post test mean scores of metacognitive skills of secondary school students taught through cognitive apprenticeship model and constructivist method.
- There exists a significant difference in the pre test and post test scores of metacognitive skills of secondary school students taught through cognitive apprenticeship model with reference to the following components.
- Procedural knowledge
- Declarative knowledge
- Conditional knowledge
- Planning
- Monitoring

# METHODOLOGY OF THE STUDY Design of the study

The investigator uses pre test –post test non equivalent group design.

**Population of the study**- This study is conducted on the population of secondary school students in kerala.

Sample of the study- The present study will be conducted on the representative sample of 80 students of  $9^{th}$  standard of Thrissur district.

Objective- 1: To find out the effectiveness of Cognitive apprenticeship model on Metacognitive skills of secondary school students.

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### TABLE -1

Data and result of significance of the difference between mean pre-test and post-test scores of Metacognitive skills of the Experimental group

Experimental group	Mean	Standard deviation	t-value
Pre-test	16.97	5.56	13.623**
Post-test	36.75	6.52	

\*\* Significant at 0.01 level of significance

Table -1 shows that the value of paired sample t-test for the pre-test and post-test mean scores of the experimental group is t (40) = 13.62, p = 0.01, which is greater than the table value 2.58, there the null hypothesis is rejected at 0.01 level of significance. There exists significant difference between pre test and post test mean scores of Metacogniyive skills taught through cognitive apprenticeship model. Hence it can be concluded that the cognitive apprenticeship model is effective in developing metacognitive skills among at ninth standard students.

# Objective -2 To compare the effectiveness of Cognitive apprenticeship model over existing constructivist method on Metacognitive skills of secondary school students.

#### TABLE -2

Data and result of significance of the difference between mean post -test scores of Metacognitive skills in the Experimental and Control group

Groups	Mean	Standard deviation	t-value
Experimental Group	36.75	6.44	10.18**
Control Group	22.10	6.43	

\*\* Significant at 0.01 level of significance

Table -2 shows that the value of independent sample t test for the post test mean scores of the experimental and control groups is t(80) = 10.18, p = 0.05, therefore the null hypotheses is rejected at 0.01 level of significance. There exists a significance difference between post-test mean scores of metacognitive skills taught through Cognitive apprenticeship and constructivist model model. Hence it can be concluded that the cognitive apprenticeship model is effective in metacognitive skills among ninth standard students.

# Objective -3 To compare the effectiveness of cognitive apprenticeship model on metacognitive skills of secondary school students under the following components.

- Procedural knowledge
- Declarative knowledge
- Conditional knowledge
- Planning
- Monitoring
- Evaluation

### TABLE -3

Data and result of significance of the difference between mean pre-test and post-test scores of metacognitive skills of secondary students under the following components.

Meta	Test	Experimental		Control		t-value	
cognitive		group		group			
skills		Mean	S.D	Mean	S.D	Pre-	Post-
						test	test
Procedural	Pre-	2.93	1.08	2.83	0.89	20.45	9.62**
Knowledge	test					NS	
	Post -	7.33	1.69	4.13	1.25		
	test						
Declarative	Pre-	2.83	0.95	2.70	0.89	0.62	8.23**
Knowledge	test					NS	
	Post -	6.45	1.38	4.03	1.25		
	test						

Conditional	Pre-	2.90	0.83	2.78	0.91	0.64	8.85**
Miowiedge	Post -	6.20	1.14	3.90	1.14	IND .	
<b>D</b> 1 .	test	0.05	0.00	0.50	0.05	0.71	0.00**
Planning	Pre- test	2.85	0.89	2.70	0.95	0.71 NS	9.29^^
	Post - test	5.83	1.07	3.33	1.01		
Monitoring	Pre- test	2.74	0.87	2.75	0.95	0.03 NS	9.98**
	Post - test	5.20	0.87	3.15	0.96		
Evaluation	Post - test	2.90	1.03	2.97	1.09	0.32 NS	8.46**
	Pre- test	5.95	0.89	4.03	1.13		

\*\* Significant at 0.01 level of significance, NS-Non Significant

Table -3 shows that the value of independent sample t- test of experimental and control groups for the pre test scores of procedural knowledge, declarative knowledge, conditional knowledge, planning, monitoring, evaluating, components are found to be t(80)=0.45, p=0.05, t(80)=0.62, p=0.05, t(80)=0.64, p=0.05 and t(80)=0.71, p=0.05, t(80)=0.03, t(80)=0.32 respectively which is less than the table value 1.96 at 0.05 level of significance therefore there is no significant difference between the pre test mean scores of experimental and control groups of all the dimensions of metacognitive skills. Hence the two groups do not differ significantly with respect to initial scores at all dimensions of Procedural knowledge, Declarative knowledge, Conditional knowledge, Planning, Monitoring, Evaluating

Table -3 shows that the value of independent sample t- test experimental group and control group for the post test scores of Procedural knowledge, Declarative knowledge, Conditional knowledge, Planning, Monitoring, Evaluating imensions are found to be t(80) = 9.62, p = 0.01, t(80) = 8.23, p = 0.01, t(80) = 8.85, p = 0.01, t(80) = 9.29, p = 0.01, t(80) = 9.88, p = 0.01, and t(80) = 8.46, p = 0.01 respectively which is greater than the table value 2.58 at 0.01 level of significance therefore there exist significant difference between the post test mean score of experimental group and control group of all components of metacognitive skills. Hence the two group differ significantly with respect to the metacognitive skills at all components of Procedural knowledge, Declarative knowledge, Conditional knowledge, Planning, Monitoring, Evaluating.

### EDUCATIONAL IMPLICATIONS

The study reveals that cognitive apprenticeship model has significant effect on improving metacognitive skills among secondary school students. Cognitive apprenticeship method is student centered active teaching method. It can encourage student- teacher interaction when they really create a map together through discussion. After learning this technique students get used to establish links between Metacognitive skills rather than recalling cognitive apprenticeship model separately. This model gives importance to group activities. Cognitive apprenticeship model helps to improve interpersonal relationship of the students.Cognitive apprenticeship model helps to reduce tension and boredom that pupils face while learning, This model make use of different media for the presentation of the activities in the class can be given a chance to the learners to comment, compare, and think about various ideas that they come up with and create a dynamic interaction among them.

### CONCLUSION

The analysis of the pre test mean scores of the experimental group and control group showed no significant difference in

# VOLUME - 10, ISSUE - 04, APRIL - 2021 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

their initial academic abilities and metacognitive skills. After using cognitive apprenticeship model for experimental group and constructivist method for the control group, it is found that the experimental group was better in performance than control group. It is found that cognitive apprenticeship model, had a significance effect on the metacognitive skills.

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