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Paripet	<b>ORIGINAL RESEARCH PAPER</b>	Education		
	EFFECTIVENESS OF COGNITIVE APPRENTICESHIP MODEL ON ACHIEVEMENT IN BIOLOGY OF SECONDARY SCHOOL STUDENTS.	<b>KEY WORDS:</b> Cognitive apprenticeship, constructivism, Domains of Blooms Taxonomy		
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The main purpose of the study to find out the effectiveness of cognitive apprenticeship model on achievement in biology ABSTRACT of secondary school students. The investigator compared the effectiveness of Cognitive apprenticeship model over existing constructivist method on achievement in Biology under the following categories of objectives such as Remembering, Comprehending, Applying, Creating,. Research design used for the study was pretest -posttest nonequivalent group design. The result shows that there exists a significant difference in the Pre-test and Post-test mean scores of Achievement in Biology taught through Cognitive apprenticeship model and Constructivist method with reference to the Dimensions such as Remembering, Comprehending, Applying, Creating.

### INTRODUCTION

Varghese

Education is absolutely beneficial for society on the whole. It is a lifelong process to each person that need to be reinforced throughout life. However, we need education system that may eradicate illiteracy and may provide the common man an access not only to basic education but also to higher and technical education. Attempt to improve teaching and learning have been hampered by lack of theory which could be to provide a coherent frame work. There has been a tendency to concentrate on improving instruction and this has led to stressing the importance to teaching skills. There has been little recognition that there is no means of a simple relationship between teaching and learning. what students come to understand is only impart dependent on direct teaching as they spend a great deal of this time in independent studying.

Cognitive apprenticeship is a process by which learners learn from a more experienced person by way of cognitive and metacognitive skills and processes. Effective teachers "involve" students in learning as apprentices: they work alongside students and/or set up situations that will cause students to begin to work on problems even before fully understanding them. In addition, teachers are encouraged to provide students with varying kinds of practice situations before moving on to more challenging tasks, allowing an understanding that surpasses the use of formulas. Applied instructional methods-those traditionally used in vocational education-provide the ideal vehicle for this shift to a more realistic context in the teaching of writing and other "academic" subjects. As applied methods are adapted for use in the academic domains, an integrated curriculum should emerge and possess the potential to enhance achievement for all students. This method incorporates the basic elements of a cognitive apprenticeship, using the method of modeling, coaching and fading and of encouraging student reflection on their own problem solving processes.

### NEED AND SIGNIFICANCE OF THE STUDY

In the last few years have witnessed a rapidly growing interest in the learner centered approach to education which aims at replacing passive lecture methods construction. In our educational system some students need to be explicitly taught how to strategically approach academic tasks in order to gain and use information effectively. In other words, they need to be taught effective study strategies, often referred to as study skills. Although effective study skills strategies are critical for academic success, for many reasons students are seldom taught them. Perhaps chief among these reasons is simply that teachers assume students already possess such skills, having picked them up in the earlier grades. For this reason, study skills instruction improves the academic outcomes of all students. Metacognitive skills are important organizers of all of the tasks that we perform. They enable

planning, setting goals, initiating work, sustaining futureoriented problem solving activities, monitoring and managing progress on tasks to detect and correct errors, and keeping track of the effect of one's behaviour on others .For the better academic achievement of the students it should need to introduce a good teaching strategy that is the method of cognitive apprenticeship model.

The aim of the study is to improve the academic achievement of secondary school students with the help of cognitive apprenticeship model..Cognitive apprenticeship model in a specific learning domain in a highly structured environment. This means that there is a fixed rule before and any examples are seen. Then by student got a clear idea about what is going to learn. The main purpose of this study is intended to focus students attention on the lesson. It creates a cognitive frame work for organizing the skills strategies or concept to follows. It have extended understanding and application of new learners. It can stimulate students interest and involvement in lesson. In order to full fill the above objectives to tackle the problem low achievement of students in Biology and make Biology is an enjoyable one.

### STATEMENT OF THE PROBLEM

In this study the investigator tried to find out effectiveness of cognitive apprenticeship model on Achievement in Biology of secondary school students.

# The study is entitled as - EFFECTIVENESS OF COGNITIVE APPRENTICESHIP MODEL ON ACHIEVEMENT IN **BIOLOGY OF SECONDARY SCHOOL STUDENTS**

### **OBJECTIVES OF THE STUDY**

In order to achieve the study, the following objectives were stated

- To find out the effectiveness of Cognitive apprenticeship model on achievement in Biology among secondary school students.
- To compare the effectiveness of Cognitive apprenticeship model over existing constructivist method on achievement in Biology among secondary school students.
- To compare the effectiveness of Cognitive apprenticeship model over existing constructivist method on achievement in Biology under the following categories of objectives.
  - Remembering
  - Comprehending
  - Applying
  - Creating

# HYPOTHESES OF THE STUDY

There exists a significant difference in the Pre-test and Post-test mean scores of Achievement in Biology of

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secondary school students taught through the Cognitive apprenticeship model.

- There exists a significant difference in the Post-test mean scores of Achievement in Biology taught through Cognitive apprenticeship model and Constructivist method.
- There exists a significant difference in the Pre-test and Post-test mean scores of Achievement in Biology taught through Cognitive apprenticeship model and Constructivist method with reference to the following Dimensions.
  - Remembering
  - Comprehending
  - Applying
  - Creating

# METHODOLOGY OF THE STUDY

# **Design of the study**

The investigator used pretest –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.

# DATA ANALYSIS AND INTERPRETATION

Objective 1 : To find out the effectiveness of Cognitive apprenticeship model on achievement in biology among secondary school students.

# TABLE-1

Data and result of significance of the difference between mean pre-test and post-test scores of the Experimental group on Achievement in Biology

<b>Experimental group</b>	Mean	<b>Standard deviation</b>	t-value
Pre-test	7.70	2.22	21.56**
Post-test	18.70	3.63	

**\*\*** 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 score of the experimental group is t (40) = 21.56, p = 0.01, which is greater than the table value 2.58, there fore the null hypotheses is rejected ( $H_0$ 1) at 0.01 level of significance. There exists significance difference between pre-test and post-test mean scores of Achievement in Biology taught through Cognitive apprenticeship model. Hence it can be concluded that the Cognitive apprenticeship model is effective in teaching Biology at ninth standard students.

# Objective 2: To compare the effectiveness of Cognitive apprenticeship model over existing constructivist method on achievement in Biology among secondary school students

# TABLE -2

### Post test scores of Experimental and Control group

GROUPS	Mean	Standard deviation	t-value	
EXPERIMENTAL	18.70	3.59	8.78	
CONTROL	13	2		

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)=8.78, 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 achievement in mathematics taught through Cognitive apprenticeship model. Hence it can be concluded that the cognitive apprenticeship model is effective in teaching mathematics at ninth standard students.

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Objective 3: To compare the effectiveness of Cognitive apprenticeship model over constructivist method on achievement in Biology with reference to following dimensions.

- Remembering
- Understanding
- Applying
- Creating

### TABLE -3

Data and result of significance of the difference between mean pre-test and post-test scores of Achievement in Biology of the Experimental and Control group under the following domains

		Experimental		Control		t-value	
Cognitive	Test	group		group			
process		Mean	S.D	Mean	S.D	Pre- test	Post -test
Bomomhoring	Pre- test	2.65	0.94	2.69	1.11	0.19 NS	4.28 **
Kentenibering	Post -test	4.63	0.58	3.85	0.99		
Undorstanding	Pre- test	1.78	0.90	2.43	0.84	0.18 NS	3.81 **
Understanding	Post -test	5.38	2.44	3.73	1.24		
Applying	Pre- test	1.97	0.72	1.66	0.53	1.31 NS	5.20 **
Apprying	Post -test	4.65	1.44	3.31	0.78		
Creating	Pre- test	2.09	0.65	2.03	0.87	0.32 NS	5.80 **
Greating	Post -test	3.98	0.16	3.17	0.90		

\*\* Significant at0.01 level of significance, NS- Non Significant

Table-3 shows that the value of independent sample t- test experimental group and control group for the post test scores of Remembering, Understanding, Applying and Creating dimensions are found to be t(80) = 4.28, p = 0.01, t(80) = 3.81, p = 0.01, t(80) = 5.20, p = 0.01 and t(80) = 5.80, 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 dimensions of cognitive processes. Hence the two group differ significantly with respect to final achievement at all dimensions of Remembering, Understanding, Applying and Creating.

## **EDUCATIONAL IMPLICATIONS**

The study reveals that cognitive apprenticeship model has significant effect on improving achievement in Biology among secondary school students. The major implications of the study are:

- Cognitive apprenticeship method is student centered active teaching method. It can encourage student-teacher interaction when they really create a map together through discussion.
- 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 doing difficult tasks.
- This model improve self learning method for the student's and also help them to do the problems actively.
- 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.

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### CONCLUSION

The present study is mainly aimed to find out whether there is any significance effect in the Achievement of pupils in Biology taught through Cognitive apprenticeship model and Constructivist method. The investigator foundout that there exists a significance difference is the achievement of pupils in Biology taught using Cognitive apprenticeship model and constructivist method.

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