EFFECTIVENESS OF COGNITIVE APPRENTICESHIP MODEL OF TEACHING ON ACHIEVEMENT IN SOCIAL SCIENCE AMONG SECONDARY SCHOOL STUDENTS

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Abstract

Cognitive Apprenticeship Model (CAM) of teaching is a teaching method having Six steps of mastering the content area of study. Social Science is the content area of the present study. Social Science Education is life education. It is the study of mastery of living in the multifaceted world. Thus in the present scenario, the investigator intends to study the effectiveness of CAM of teaching on Social Science education. For the present study the investigator adopted quasi experimental method and selected two intact classrooms consists of 30 students in Experimental group and in Control group. Mean, Standard deviation, t test and Analysis of co-variance (ANCOVA) were the statistical techniques used for the study. The study revealed that CAM of teaching is the most appropriate method of teaching Social Science.

Key terms: Cognitive Apprenticeship Model (CAM), Achievement in Social Science

II. INTRODUCTION

Education gives insight into all affairs and enables realization of the true significance of life. It removes darkness and shatters illusion. Educational methods include storytelling, discussion, teaching, training and directed research. Education frequently takes place under the guidance of educators, but learners may also educate themselves. It can take place in formal or informal settings. Also, any experience that has a formative effect on the way one thinks, feels or acts may be considered educational.

In most regions, education is compulsory up to a certain age. An efficient system of education is an essential condition for the survival of an individual, society and nation in this age of high technology and competition. This is recognized by every nation and today most countries are investing heavily in education. The man power engaged in this huge endeavor is possibly the largest work force in every civilized country or society.

In ancient times, education in India occurred through the gurukul which was a type of residential school where pupils lived with or near the ‘guru’ (teacher or master). The shishya (student) would learn from the guru and help the guru in the day- to- day life activities. Teaching and learning were accomplished through this kind of continuous interaction. Children would learn how to grow crops, washing clothes, cooking, martial arts, meditation etc.
A new approach that incorporates the apprenticeship concept is the concept of cognitive apprenticeship. Cognitive apprenticeship is a theory of the Understanding where a master of a skill teaches that skill to an apprentice. Constructivist approaches to human learning have led to the development of a theory of cognitive apprenticeship. The concept of a cognitive apprenticeship is defined as “learning through guided experience on cognitive and metacognitive, rather than physical skills and Understanding” by Collins et al. (1989). One cannot engage in a cognitive apprenticeship alone, but rather it is dependent on expert demonstration (modelling) and guidance (coaching) in the initial phases of learning.

II. Need and Importance of the study

Social Science is a subject of study at the secondary school level which offers a systematic study of man in relation to his society. A country is great not by its number but by the character of its people. In a democratic country like India every citizen has to play a pivotal role in the upliftment of the nation. Therefore it is generally agreed that a citizen must be educated in such a way so that it would develop certain desirable skills, attitude and values in him for the manifestation of his own self as well as for the progress of the Nation. Hence, schools must prepare students for dealing with social controversies, cultural change and manifold problems in the society. In the attainment of this coveted aim of education, social science is quite important because it is an unending dialogue between past and present which would help the nation to mold a better future. In the present situation, there is a need for an alternative teaching method for social science teaching than that of the existing activity oriented study. The investigator finds that the CAM of teaching will be the most suited method of teaching for Social Science.

III. Statement of the Problem

The study is entitled as, “Effectiveness of Cognitive Apprenticeship Model of Teaching on Achievement in Social Science among Secondary School Students”

IV. Objectives of the Study

To find out the Effectiveness of Cognitive Apprenticeship Model on Achievement in Social Science of secondary school student.

V. Hypotheses of the Study

There exists a significant difference in the effectiveness of CAM on Achievement in Social Science than that of the prevailing Activity Oriented Approach in secondary school students.
VI. Methodology

In the present study the investigator aimed to find out the effectiveness of CAM on achievement in Social Science at secondary school level. The experimental method is found to be the most appropriate for the present study. The design selected was pre-post-test – non-equivalent group design. The study was conducted in two divisions of standard IX. For the collection of data, the present study made use of two intact classroom groups - One Experimental and one Control group. Each group consists of 30 students.

VII. Variables used for the Study

Independent variable is CAM and Dependent variable is Achievement in Social Science.

VIII. Tools used for the Study

- Lesson transcript according to cognitive apprenticeship model of instructional design.
- Lesson transcript according to activity oriented method.
- Standardized achievement test in Social Science based on specific categories of objectives (knowledge, Understanding, skill and application) developed by the investigator.

IX. Statistical techniques used

The investigator made use of the statistical techniques like Mean, Standard deviation, ANOVA, Analysis of co-variance (ANCOVA).

X. Analysis and Interpretation

Objective To study the Impact of CAM on Achievement in Social Science among secondary school students.

The data and results of the test of significance are given in the following table.

<table>
<thead>
<tr>
<th>Types of Test</th>
<th>Types of Group</th>
<th>N</th>
<th>M</th>
<th>S.D</th>
<th>C.R</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>Experimental</td>
<td>30</td>
<td>4</td>
<td>0.89</td>
<td>-0.78</td>
<td>P &gt; .05</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>30</td>
<td>4.17</td>
<td>0.79</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posttest</td>
<td>Experimental</td>
<td>30</td>
<td>24.6</td>
<td>2.42</td>
<td></td>
<td>P &lt; .01</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>30</td>
<td>17.97</td>
<td>2.27</td>
<td>10.95</td>
<td></td>
</tr>
<tr>
<td>Gain</td>
<td>Experimental</td>
<td>30</td>
<td>20.8</td>
<td>1.81</td>
<td></td>
<td>P &lt; .01</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>30</td>
<td>13.8</td>
<td>1.65</td>
<td>15.65</td>
<td></td>
</tr>
</tbody>
</table>
Table 1. Data and result of test of significance of Experimental and Control groups based on Pretest, Posttest and Gain scores on Achievement in Social Science.

The Mean value of Pretest scores of Experimental and Control group on Achievement in Social Science is 4 and 4.17 respectively. The critical ratio of the Pretest scores is -0.78 and is less than the table value 2 at .05 level. So the obtained value is not significant even at .05 level. From this it is clear that two groups are equal before the Experiment on Achievement in Social Science.

The critical ratio of the Posttest scores is 10.95 and is greater than the table value 2.66 at .01 level. So the obtained value is significant at .01 level. From this it is clear that two groups are different after the Experiment on Achievement in Social Science.

The gain Mean scores of the Experimental group (20.8) is greater than that of the Control group (13.8). The obtained critical ratio is 15.65 which is significant at .01 level. Since the gain Mean of Experimental group is greater than that of the Control group and the obtained critical ratio is significant at .01 level, it is inferred that Experimental group is better in performance than that of the Control group with regard to achievement in Social Science.

The scores obtained on Achievement in Social Science, both in Experimental and in Control group were subjected to statistical technique of ANCOVA, to determine the impact of CAM on Achievement in Social Science with that of Activity Oriented method. Before proceeding to ANCOVA, ANOVA was done. The summary of ANOVA was given in table 2.

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>df</th>
<th>SSx</th>
<th>Ssy</th>
<th>Mx</th>
<th>Syy</th>
<th>Fx</th>
<th>Fy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Among Mean</td>
<td>1</td>
<td>2.02</td>
<td>660.02</td>
<td>2.02</td>
<td>660.02</td>
<td>2.86</td>
<td>120.32</td>
</tr>
<tr>
<td>Within Group</td>
<td>58</td>
<td>40.97</td>
<td>318.17</td>
<td>0.71</td>
<td>5.49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>42.98</td>
<td>978.18</td>
<td>2.72</td>
<td>665.50</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Summary of ANOVA of Pretest and Posttest scores of Experimental and Control groups on Achievement in Social Science.

The obtained $F_x$ and $F_y$ ratios are tested for significance. The calculated value of $F_x$ is 2.86. It is not significant even at .05 level. It shows that the Mean of Pretest scores do not differ significantly on Achievement in Social Science. The obtained value of $F_y$ is 120.32. It is significant at .01 level. This indicates that there is significant difference for the Posttest scores on Achievement in Social Science between the pupils in Experimental and in Control group. The summary of analysis of co-variance were given in table 3.

<table>
<thead>
<tr>
<th>Source of Variations</th>
<th>df</th>
<th>SSx</th>
<th>Ssy</th>
<th>Sxy</th>
<th>Syy.x</th>
<th>Msy.x</th>
<th>SDy.x</th>
</tr>
</thead>
<tbody>
<tr>
<td>Among Mean</td>
<td>1</td>
<td>2.02</td>
<td>660.02</td>
<td>-36.48</td>
<td>796.38</td>
<td>796.38</td>
<td></td>
</tr>
<tr>
<td>Within Group</td>
<td>58</td>
<td>40.97</td>
<td>318.17</td>
<td>92.77</td>
<td>108.10</td>
<td>1.86</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>42.98</td>
<td>978.18</td>
<td>56.28</td>
<td>904.48</td>
<td>798.25</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: Summary of ANCOVA of Pretest and Posttest scores of students in Experimental and Control groups on Achievement in Social Science.

The obtained $F_{y.x}$ was tested for significance. The table value of $F$ ratio for df 1/58 is 4 at .05 level and 7.08 at .01 level. The obtained value of $F_{y.x}$ is 427.28. It is significant at .01 level. From this, it is clear that the Posttest Meanscores on Achievement in Social Science between Experimental and Control groups differ significantly after they have adjusted for differences in the Pretest.
Achievement in Social Science. The adjusted Mean for Posttest scores of pupils in Experimental and Control groups were computed using correlation and regression. The differences between the Adjusted Means of Posttest scores were tested for significance. The data and result is given in table 4.

<table>
<thead>
<tr>
<th>GROUPS</th>
<th>N</th>
<th>Mx</th>
<th>My</th>
<th>Myadjstd</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>30</td>
<td>4.17</td>
<td>17.97</td>
<td>17.55</td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td>30</td>
<td>3.8</td>
<td>24.6</td>
<td>25.02</td>
<td>21</td>
</tr>
<tr>
<td>General Mean</td>
<td>19.18</td>
<td>3.98</td>
<td>21.28</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4: Data for Adjusted Means of Posttest Scores of Students in Experimental and in Control groups on Achievement in Social Science.

The calculated $t$ value of adjusted Means is 21. The calculated value is significant at .01 level. It indicates that Experimental and Control groups differ significantly on Achievement in Social Science for the Posttest.

**XI. Findings of the study**

The analysis of Posttest scores and Posttest Mean gain scores on Achievement in Social Science by using the technique of test of significance of difference among students in two groups revealed that the $t$ value obtained ($t = 10.95; 15.65$) is significant at .01 level.

The analysis of the variance and the Covariance for Pretest and Posttest scores of students on Achievement in Social Science in Experimental and in Control Group showed that there was significant difference among students in the Mean scores for the posttest Achievement scores of the two groups ($F_{x} = 120.32; F_{y,x} = 427.28, P < .01$). The comparison of adjusted Mean of Posttest scores on achievement in Experimental group and in Control group show that the differences between them is statistically significant ($t = 21$). All these indicate that the impact of CAM on achievement in Social Science is higher than that of the prevailing Activity Oriented method.

**XII. Conclusion of the study**

CAM has more impact than the Activity Oriented Approach on Achievement in Social Science among Secondary School students.

**XIII. Educational implication**

1. The CAM is an accurate description of how learning occurs. It helps the children in personality development.
2. The instructional can be designed into more formal learning contexts with positive effect.
3. The study revealed that the effect of CAM of instructional design on achievement of students of the Secondary Schools.
4. This instructional design is applicable to all topics and all subjects.

XIV. Conclusion

Apprenticeship is an inherently social learning method with a long history of helping novices become experts in field. At the center of apprenticeship is the concept of more experienced people assisting less experienced one, providing structure and examples to support the attainment of goals. Social Science instruction is meant for socialization of the children. It is a study about how one can lead a healthy and happy social life. The present study reveals that CAM is best suited method of Social Science instruction.

References


