An Effectiveness of CBPL in Teaching Mathematics Subject for Students of Standard VIII in context of Scholastic Achievement

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ABSTRACT
The present teaching techniques needs revised thinking to make learning more effective for students. In fact the teaching methodology should be such by which the students can be involved in reading, thinking, problem solving and then learning by their own efforts. For this purpose self-learning material is a very useful technique. There are several Self Learning Techniques in which learner can learn by their own pace. In present study researcher made CBPL with the help of computer programme MS Power point. Students of Std-VIII of Gujarati medium School of Gujarat were selected for the purpose of research. Purposive sampling was used for smooth work of experiment. After giving treatment to experimental group data was collected with the help of post test and t-test was applied for data analysis. Can the subject “Mathematics” be made easier by using CBPL? Is the CBPL similarly effective for students having high and low educational achievement? The investigator has thought about all such crucial questions for undertaking this research. Findings show the effectiveness of CBPL.

Keywords: CBPL, Mathematics, Self Learning Material, Standard-VIII, Scholastic Achievement

1. Introduction
One of the important agents in teaching-learning process is student and in fact the whole teaching-learning process should revolve around this agent called 'Student'. It is important to keep children at central place in the teaching-learning process in order to achieve the auspicious all of 'Overall development of child'. In the present situation we are witnessing a scenario of knowledge explosion. All the nations of the world have realized the importance of education for national development. In the process of education also the stage of higher secondary level is very crucial because at this stage all the students are in a dilemma regarding the selection of their professional career. There are several limitations also in the present system of the education which are hindering in the overall development of children. Today the students are most of the time maid to listen the lectures and learn which very momentary style of learning is. There are various techniques of self-learning, one of which is 'Programmed Learning Method'. In this method the students can learn and proceed ahead at their own pace with or without the teacher's assistance. Standard VIII of higher secondary level is the first year of the study in the stream which is selected by the students by themselves. Therefore considering this aspect in mind, the present study is under taken to prepare CBPL for certain unit of Mathematics subject in Standard VIII and assess its effectiveness on the achievement of students in this subject.

2. Statement of the Problem
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3. Objectives
The researcher decided the following objectives for the present study.
1) To assess the effectiveness of CBPL.
2) To assess the effectiveness of CBPL in the context of Scholastic Achievement.
3) To Study the retention of CBPL.

4. Hypotheses
The following hypotheses were prepared for the present study.
H₀₁- There will be no significant difference in the mean score achieved in the post-test of Experimental Group and Control Group students.
H₀₂- There will be no significant difference in the mean score achieved in the post-test of students having high Scholastic Achievement of Experimental Group and Control Group.
H₀₁ - There will be no significant difference in the mean score achieved in the post-test of students having low Scholastic Achievement of Experimental Group and Control Group.

H₀₂ - There will be no significant difference in the mean score achieved in the post-test of students having high and low Scholastic Achievement of Experimental Group.

H₀₃ - There will be no significant difference in the mean score achieved in the post-test and Retention test of students of Experimental Group.

5. Limitation and Delimitation
- In the present study the frames of CBPL and post-test are constructed by the investigator so their limitations also remain as the limitation of the present study.
- The findings in the present study were found on the basis of the responses of the students so this also remains as a limitation of the study.
- The present study was delimited to Gujarati medium higher secondary school of Gandhinagar district only.
- The present study is limited to the some selected units of Mathematics subject.

6. Definition of Key-words
CBPL:
CBPL is such a process in which small parts of subject matter are arranged in a symmetrical pattern which is logically associated with each other. Thus, such literature which is carefully prepared for self-learning purpose for the students is called CBPL.

Educational Achievement:
In the present study scores achieved by the students in their Post-test will be considered as educational achievement.

7. Variable
The following are the variables included in the present study.
- **Independent Variable:**
  - Method
    - CBPL (Experiment Group)
    - Traditional Method (Control Group)
- **Dependent Variable:** Educational Achievement
  (Score obtain by Students in post-test)
- **Moderate Variable: (Sub-Independent Variable)**
  - Scholastic Achievement: High (A1), Low (A2)
- **Control Variable:**
  - Subject: Mathematics
  - Medium: Gujarati
  - Area: Gandhinagar

8. Population and Sample
All the students studying in the Standard VIII Gujarati medium schools of Gandhinagar are included in the population of the present research. As a sample Premdhara Shishu vihar / High School was selected purposively. By lottery method two classes were selected among three classes. All students of selected class were included in a sample of study by cluster method. For the smooth conduct of the experiment, it was conducted on the whole class. But for the analysis the 72 (34 + 38) regularly coming students were selected as a sample.

- **Method**
  - CBPL (Experimental Group)
  - Traditional Method (Control Group)

<table>
<thead>
<tr>
<th>Scholastic Achievement</th>
<th>CBPL (Experimental Group)</th>
<th>Traditional Method (Control Group)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>16</td>
<td>18</td>
</tr>
<tr>
<td>Low</td>
<td>18</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>38</td>
</tr>
</tbody>
</table>

9. Research Method and Research Design:
Experiment Method is a way to check the effectiveness of independent variables on dependent variables. Experimental Method of Research was used for the present study. The experiment of the present research was to check the effectiveness of CBPL for some selected units of subject Mathematics. The complete
Two groups were made: Group E (CBPL) and Group C (Traditional). The experimental design of this present research is ‘Two group only post test design’. The figurative description of which can be made as given below.

<table>
<thead>
<tr>
<th>Group</th>
<th>Treatment</th>
<th>Post Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>$X_1$ (CBPL)</td>
<td>$T_2$</td>
</tr>
<tr>
<td>C</td>
<td>$X_2$ (Traditional)</td>
<td>$T_2$</td>
</tr>
</tbody>
</table>

10. Treatment:
Researcher made CBPL with the help of Computer Programme MS PowerPoint. Researcher studied content for making frames. In every frame there is some content followed by a question. Every question has three options hyperlinked. By clicking the wrong option student was derived to a slide which shows that he gave wrong answer. In the slide showing the result of question has a link named BACK; by clicking it students come back to the slide which he/she studied. By clicking right answer one derived to the slide which shows that he/she has given right answer, in which there was a link named NEXT; after clicking on NEXT learner can move forward to next frame. By this students can learn by their own pace.

11. Tools for Data Collection
For Data Collection researcher Constructed teacher made Post test on the basis of blue print. In which 30 Questions were asked. Equal mark (1) was given to each question. The post test was of multiple choice questions type.

12. Data Analysis
- To check the ‘equability of groups’ t-value was found between the scores of scholastic test.
- To access the effectiveness of CBPL t-value was found.
- For rejection or acceptation of hypothesis t-value was found Hypothesis wise.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Group</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>SEd</th>
<th>t-value</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check Equability of group</td>
<td>Control Group</td>
<td>34</td>
<td>33.82</td>
<td>7.25</td>
<td>1.64</td>
<td>1.24</td>
<td>NS</td>
</tr>
<tr>
<td></td>
<td>Experimental Group</td>
<td>38</td>
<td>31.79</td>
<td>7.09</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H01</td>
<td>Control Group</td>
<td>38</td>
<td>16.03</td>
<td>3.89</td>
<td>0.25</td>
<td>3.31</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>Experimental Group</td>
<td>34</td>
<td>16.85</td>
<td>3.66</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H02</td>
<td>Students having High Scholastic Achievement of Con. Group</td>
<td>18</td>
<td>15.89</td>
<td>3.45</td>
<td>0.63</td>
<td>1.27</td>
<td>NS</td>
</tr>
<tr>
<td></td>
<td>Students having High Scholastic Achievement of Exp. Group</td>
<td>16</td>
<td>16.69</td>
<td>3.82</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H03</td>
<td>Students having Low Scholastic Achievement of Con. Group</td>
<td>20</td>
<td>16.15</td>
<td>4.33</td>
<td>0.80</td>
<td>1.06</td>
<td>NS</td>
</tr>
<tr>
<td></td>
<td>Students having Low Scholastic Achievement of Exp. Group</td>
<td>18</td>
<td>17.00</td>
<td>3.61</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H04</td>
<td>Students having High Scholastic Achievement of Exp. Group</td>
<td>16</td>
<td>16.69</td>
<td>3.82</td>
<td>0.69</td>
<td>0.45</td>
<td>NS</td>
</tr>
<tr>
<td></td>
<td>Students having Low Scholastic Achievement of Exp. Group</td>
<td>18</td>
<td>17.00</td>
<td>3.61</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H05</td>
<td>Post Test</td>
<td>34</td>
<td>16.85</td>
<td>3.66</td>
<td>0.27</td>
<td>1.54</td>
<td>NS</td>
</tr>
<tr>
<td></td>
<td>Retention Test</td>
<td>34</td>
<td>17.26</td>
<td>3.81</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

13. Findings
- The effect of CBPL was found on the whole group of Students.
- In the context of students having High Scholastic Achievement, there isn’t significant effect of CBPL. This means that there is no significant effect of the CBPL on the students having High Scholastic Achievement students of Experiment Group.
- In the context of students having Low Scholastic Achievement there isn’t significant effect of CBPL. This means that there is no significant effect of the CBPL on the students having Low Scholastic Achievement of Experiment Group.
- In the context Scholastic Achievement there is no significant effect of CBPL. This means that there is no significant difference in the effect of CBPL on the both students having High and Low Scholastic Achievement group of Experiment Group.
- There is no significant difference found between the mean scores of Post test and Retention test of experimental group students, so it can be said that the effect of CBPL is retained on the students.
14. Educational Implication
The educational implications of the present research are as mentioned below.

- CBPL was prepared for students could be used in Secondary Schools.
- On the basis of the scores achieved in the post test, it can be said that the teaching should be provided with the help of CBPL rather than the traditional methods of teaching.
- By the use of CBPL the students were found to be interested in the learning of Mathematics subject. And so it can be said that the learning was effective.

15. Conclusion
From the Conclusion and finding obtain from study we can say that CBPL is far effective than traditional method. Hence such a new innovative experiments should be go on in future. There are several more self Learning Technique which involve to students in Teaching Learning Process with interest.

16. References