Effectiveness of Caim in Teaching of Zoology at Higher Secondary Level

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Educational Technology:

If we want to improve the quality of education in our country and to cope with the challenges posed in recent years by the problems in education, we should pay proper attention to the changing strategy of instruction and efforts should be made to introduce new methods and evolve new techniques of instruction suitable for our nation needs. A great revolutionary development in the field of education has been taking place in developed countries like USA, UK and Japan. A study conducted in India and abroad reveals that the wise use of educational technology is one of the most important factors which can improve the quality of instruction. Already in advanced countries, a vast array of educational technology media and methods are being developed and utilized successfully to improve the quality of teaching learning process and extend its coverage. Computer-assisted-instruction, multi-media approach to teaching, programmed-instruction, video-assisted instruction, team teaching, co-operative learning etc are some of new strategies employed in improving the quality of classroom instruction. This becomes especially pertinent in India, in view of the National Policy on Education (1986) and the New Educational Policy (1992) and its programmes of action which envisage a dynamic use communication and educational technology for enhancing the institutional and learning inputs formal and non-formal educational arrangements.

Communication technologies have influenced all walks of life i.e., recreation, business production, warfare, politics and education. Today technological and social changes are coming fast that they demand radical adjustments in the field of education. There is a serious move integrating Information and Communication Technologies as a major priority in many countries, these can enhance the possibilities of instruction and learning of all pupils at all levels of schooling.
Considering the above aspects and problems in science teaching-learning process, the self-learning (individualized instruction) has been one of the important areas of educational innovations in recent years which needs a thorough investigation as a supportive (reinforcement) strategy in classroom teaching. Therefore, the investigator has selected the present study on Computer Assisted Instruction as an enforcement strategy in learning Zoology. The investigator has identified Computer Assisted Instructional Method (CAIM) as a self-instructional technique which could be used as reinforcement strategy in the present study.

**Self Learning Material**

One of the means of individualizing instruction that has been receiving a great deal of attention in recent years is Computer-Assisted-Instruction. Computer Assisted Instruction is one example where programmed instruction has been combined with powerful media produce impressive learning systems. Computer Assisted Instruction is based on the same basic principles of Programmed Instruction but students work from computer terminals (Vedanayagam, 1989). Computer Assisted Instruction refers to a learning situation in which the students interact with and are guided by a computer through a course of study aimed at achieving certain instructional goals (Soni, 1991). The Computer Assisted Instruction software were designed to duplicate the behavior of the teacher with the difference that they have high degree of efficiency for providing sequence of information as well as for recording errors of pupils for future diagnosis and correction. The main objective of Computer Assisted Instruction is to provide the needed flexibility for individualizing the educational process. It meets the specific needs of the student in a way in which it is almost impossible to do so in a face-to-face classroom teaching. The idea behind Computer Assisted Instruction is to use the computer as a tutor to present information, give students practice, assess their level of understanding and provide additional instruction if needed. In theory, a well designed Computer Assisted Instruction program is nearly perfect at providing appropriate levels of instruction, as it can analyze student responses immediately to determine whether to spend more time on a particular topic or skill. The computer can be quite effective in presenting ideas, using pictures or diagrams to reinforce concepts. Finally for most students, the computer seems to have a motivating quality of its own, so that they work longer and harder when using it than they would on comparable paper-pencil tasks (Slavin, 1986). With Computer Assisted Instruction, the students interact directly with instructional materials. The computer evaluates the responses and directs the student to further study materials. The merits of Computers and Computer Assisted Instruction include.

The immediate feedback provided by inter-active terminals keeps students interacting and eager to keep trying.

When computers are used, students tend to learn the materials in less time.

Computers are helpful in reviewing the previously learned material.
The graphics and animation features of Computer Assisted Instruction are powerful aids in enhancing intuition, especially in giving insight, into mathematical formulae.

Large volumes of data can be handled with accuracy and at high speed which is impossible for a human teacher.

Because Computer Assisted Instruction is a computer based system, it never gets tired, angry or impatient. The computer will wait patiently for an answer and will not express annoyance with wrong responses. The drill and practice type of Computer Assisted Instruction are most useful with lower ability students.

Through the use of time-sharing, Computer Assisted Instruction can accommodate many students each of whom appears to have exclusive use of the computer.

Computer Assisted Instruction can perform its functions with less error and more speed than a human instructor can.

Computer Assisted Instruction can use the storage facilities of the computer to assess individual progress and to initiate and monitor remedial work, as it is needed.

The most effective use of computer is when they are used to supplement other forms of instruction.

Computer Assisted Instruction in simulation mode can supplement laboratory and other practical work, especially in Science subjects.

Computer-Assisted-Instruction provides for individualized instruction, motivates students to go through a unit or course through its varied presentation modes and by instant feedback and encourages learners to proceed with the lesson. There is a tremendous saving of student’s and teacher’s time (Vedanayagam, 1989). Preparing Computer Assisted Instruction becomes primarily a matter of designing all the possible frames of information which might be required and anticipating all the branches between frames in which student needs might be dictated. The frequently used Computer Assisted Instruction programmes in setting are Tutorial, Drill & Practice and Simulation. Drill and Practice programme are used to provide practice on skills and knowledge, so that students can remember and use what they have been taught. The Simulation mode is used to teach facts, promote problem solving, develop and understanding a particular situation and motivate interest in a subject.

**Problem Restated**

To what extent is the CAI effective upon teaching Zoology to the students of standard XI.

**Objectives of the study**

1. To study the effectiveness of CAIM approach on teaching Zoology.
2. To find out the extent of achievement in Zoology of the students of standard XI.
Hypothesis

The following hypotheses were framed for the study.
1. There will be no significant difference in the mean scores for achievement in Zoology in the pre-test between control group and experimental group.
2. There will be no significant difference in the mean scores in achievement in Zoology between the pre-test and Post-test for the control group.
3. There will be no significant difference in the mean scores Achievement in Zoology between the pre-test and Post-test for the experimental group.
4. There will be no significant difference in the mean scores in Achievement in Zoology for the Post-test between control group and experimental group.

Content

Three units in Zoology for standard XI were considered for developing System approach with the objectives of developing knowledge in the chosen unit.

Sampling design

The sample consisted of 100 students for the final study. The sample was constituted by student studying in Std XI Control group and experimental group were formed. The two groups were first matched before the treatment.

Instrumentation

For the purpose of evaluating students’ performance in this study the following tools were developed and validated.

1. Computer Assisted Instruction
2. Achievement Test in Zoology
3. ...

The content and the items of the above tools were subject to validation. Experts established the content validity.

Table 1: Mean and SD of achievement in Zoology

<table>
<thead>
<tr>
<th>Group</th>
<th>Pre test scores</th>
<th>Level of significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Control Group</td>
<td>26.50</td>
<td>7.07</td>
</tr>
<tr>
<td>Experimental Group</td>
<td>25.16</td>
<td>7.53</td>
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Table 2: Mean and SD of achievement in Zoology

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<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Pretest</td>
<td>26.50</td>
<td>7.07</td>
</tr>
<tr>
<td>Post test</td>
<td>29.86</td>
<td>8.16</td>
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Table 3: Mean and SD of achievement in Zoology

<table>
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<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Pretest</td>
<td>25.16</td>
<td>7.53</td>
</tr>
<tr>
<td>Post test</td>
<td>37.17</td>
<td>6.63</td>
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Table 4: Mean and SD of achievement in Zoology

<table>
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<th>Group</th>
<th>Post test scores</th>
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<td>6.33</td>
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</table>

Findings

There was no significant difference in the performance of the control group and experiment group in the pre test. This confirms that the control group and experimental group were matched.

There was a significant difference in the post test performance of both the the experimental group. This is due to the effectiveness of the reinforcement by way of conducting the tests and exposure to the students the question pattern and awakening of awareness.

There was a significant difference between the performance of the control group and the experimental group in the post test. This is in evidence of the effectiveness of System approach.

Conclusion

It could be observed through experimentation that Self Learning Package was an advantageous point over the traditional method in teaching Zoology effectively Self Learning Package may be built in for developing appropriate knowledge for the rest of the units. The students evinced a lot of interest in learning Zoology through Self Learning Package. The students who had their personal computer system showed keen interest in learning Zoology.
They found the materials quite useful with respect to objective questions and concepts. Computer Assisted Instruction was of great use. Those students who did not have mastery in operating computer were assisted by the students who had a thorough knowledge of operating the system. This indirectly helped peer group learning. The students who could operate the system felt elated and very proud. This, in turn motivated the students to learn Zoology. Concerning the mathematical aspects students’ knowledge could not be improved overnight.

Most of the students wanted to have Computer Assisted Instruction covering all the units prescribed for the X1 standard in Zoology. Owing to paucity of time the investigator could not comply with the request of the students.

The investigator suggested the students that they should prepare Self Learning Package by themselves, if they possess sufficient knowledge in programming the material.

When diagrams with labels were projected on the screen it served the purpose of reinforcement. The diagram was explained. The investigator concentrated more or less on the concepts for presenting the materials.

On the whole it could be observed that the Self Learning Package was effective in enhancing the achievement in Zoology of the students of X1 standard.

References