EFFECT OF COMPUTER ASSISTED INSTRUCTION PACKAGE COOPERATIVE LEARNING STRATEGIES IN BOTANY

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Abstract
The subject of biological science is valued the most for its practical application in the day to day life of the human beings. Conventional method of teaching and learning is limited to text only. Using diagrams, charts, blackboard, models, aids, techniques and repeated drilling and others makes the students have rote memory to achieve more marks. In Botany syllabus the chapters of Cell biology and genetics are taken by the researcher to develop software package and to enhance learning for the concept at higher secondary level. The researcher developed Computer Assisted Instruction package (CAI) on Cell biology and genetics in botany at higher secondary level. A good rapport was established between the researcher and the students of control and experimental groups. Two hundred and forty students are divided into four groups. Each group consists of sixty students. Pre-test was administered to all the groups with an achievement test. After three months, experimental groups are given with proper instructions. Treatments are given only to the experimental groups in parallel forms. For the control group also the conventional teaching method was followed during the parallel sessions. Then post-test has been administered for all the four groups. The pre and post-test achievement scores are used for data analysis. The achievement scores reveals that CAI seems to be more useful to students in private schools than students in Government aided schools in learning botany during their post-test. Students in the private schools are more familiar with computers than the students of government aided schools. So, students are ready to accept the changes in their learning styles, but their teachers are feeling feared that computers are complicated to handle, if they are used in education for teaching and learning purpose and computer must substantiate the traditional teachers. Students as groups participate and feels comfortable because they can discuss among their peers, they develop competitive spirit, encourages learning with understanding than rote learning and memory. Hence, this new generation package offers learners the opportunity of obtaining information which are related to each other. So the learners can utilize this rich content of information thereby enhancing their learning experience.

INTRODUCTION
The knowledge of biological science should prepare an individual to lead a complete life. The involvement of varied physical senses may provide improved access to written material for deaf and hard of hearing students. Interactive video disc systems provide a multimedia environment that combines television and computer based instruction. This technology integrates text, audio, graphics, still images and moving pictures into a single topic presentation (Sang et al., 2001, Chaudhari, P. 2013). It offers students a chance to acquire information through both video and audio, and at the same time interact with the computer (Abdul Muis 2014, Alhassan Dokochi 2013, Ritten house 1997, Trisha Greenhalgh 2001).

In India, the field of education is still in emerging stage. Identification and assessment procedures of teachers with better teaching competencies are of importance in educational system. The student of biological science should develop the appropriate attitudes like open mindedness, appreciation of nature, problem solving skills and non- belief of superstitions. These attributes will help an individual technically competent to face the challenges of the modern world. A botany student should be able to recognize the importance of the environment. The student community should understand the need for conserving nature and other living organisms. Creating awareness about the interrelationship among the environment and life, study of plants is necessary.Self-instructional package holds great potential for individual as well as group learning if properly and systematically developed in accordance with the needs of the learners. By such package one can learn at his own pace with immediate personalized feedback and knowledge of progress Kumar (1998), Abdul Muis 2014, De Westelinck et al (2005), Clark & Feldon (2005), Jereb et al (2006), Viswanathan & Arulchelvan (2006), Zheng and Zhou (2006) and Gong et al (2007). Implementation of computer assisted instructional (CAI) materials into science curricula can enhance the learning experience. According to Roblyer et al (1997) and Alhassan Dokochi 2013 the goals of education begins to change to reflect new social and educational needs, teaching strategies also change, consequently do strategies for integrating technology into teaching and learning.

IMPORTANCE/SCOPE OF THE STUDY
The knowledge of botany also helps in understanding the biochemical processes and the metabolic reactions occurring in the living cells. It throws light on the genetic material the DNA, RNA and their role in hereditary and reproduction. In depth

understanding of cell biology and genetics leads to solve a lot of life problems especially in the case of chromosome which determine the sex and not the individual parental who decides. Thus study of botany envisages critical thinking and scientific enquiry. It also develops the field of agriculture by scientifically produced seeds, hybrid vigour and improves the country like India. Even in the field of medicine, medicinal plants and its products improve the value and life span of human life. As on today botany is not taught as a theoretical subject or as a research discipline but as a medium, which helps in developing the complete potentialities of the learner and in making him a useful and efficient citizen of the modern society.

NEED FOR THE STUDY
In salem educational district, some schools have co-education system and few schools exclusively for boys and girls. So boys and girls are taken to compare the effectiveness of their utility of the multimedia package with that of other methods. Salem district schools lay both in urban and rural area. Hence the study also includes comparing the usage of the multimedia package with that of other methods among the students of urban as well as rural area. So the present study is an attempt in this direction. If the content of botany is delivered through the multimedia technology, learning botany is much easier in the understanding level of students. In the present scenario, multimedia dominates its position and the researcher feels that very few studies are on the topic cell biology and genetics. Hence learning botany through multimedia package stresses the effectiveness.

OBJECTIVES OF THE STUDY
1. To prepare and validate computer assisted instruction package for learning Botany at higher secondary level.
2. To find out if there is any significant difference between their pre and post test achievement scores of students who learn botany through Conventional teaching and Computer Assisted Instruction (CAI).
3. To find out if there is any significant difference in conventional teaching methods between government aided and private school students, boy and girl students, rural and urban area students.
4. To find out if there is any significant difference between the students who studied botany through CAI among, government aided and private schools, boys and girls, rural and urban areas.

HYPOTHESES FORMULATED
- There is a significant difference between their pre and post-test achievement scores of students who learn botany through, Conventional teaching and Computer Assisted Instruction (CAI).
- There is a significant difference between and among the groups of various strategies of Conventional teaching and Computer Assisted Instruction (CAI).
- There is no significant difference in the post test of conventional teaching methods between Government aided and private school students, boys and girl students, rural and urban area students.
- There is no significant difference in the post test between the students who studied botany through CAI among, Government aided and private schools, boys and girls rural and urban areas.

SAMPLE OF THE STUDY
240 students studied in XII Std under the pattern (10+2+3) of state board syllabus from four different schools of government aided and private in Salem educational district of Tamilnadu in India. The sample includes both boys and girls in rural and urban areas.

INSTRUMENTATION
CAI developed by the researcher and achievement test consists of pre and post to assess the performance of all the control and experimental group.

APPLICATION OF CAI PACKAGE
The researcher has chosen the topic of cell biology and genetics in this chapter. CAI package contains three volumes. The learning package of CAI is user friendly. All the volumes are written in simple sentences with an easy understanding. Based on the needs of the learner, the content is arranged in the form of simple to complex.

STRUCTURE OF CAI
The chapters are divided into many meaningful lessons, according to the context of botany subject in the form of volumes. The chapter "Cell biology and genetics" is divided into a number of sub-concepts. Some of the sub-concepts are further divided into small concepts. Each small concept is arranged by the researcher in the form of frames. Every frame is added

with necessary and suitable pictures. Navigated test button with questions and three multiple answers are given in the frames. This package has three volumes. While learning the concept, it's like formative evaluation, the learner themselves evaluate her or him to check the mastery level of the concepts. This gives self-confident and creates interest to the learner. In the second volume the learning starts from the sub topic "Chromosome" to the subtopic "RNA". All the subtopics and subheadings are covered in the unit cell biology and genetics in Volume-I and II.

STRUCTURE OF VOLUME III
Volume III has some topics given to the learner's choice to evaluate by themselves. FAQs – frequently Asked Questions: Questions are asked at the back of the text book which follow the State Government of Tamilnadu and also from public examination question papers conducted every year by the Government under the department of education. Necessary diagrams related to the questions also given along with answers. Each page of the question bears the button with home picture and is used to move on to the index page of Volume-III. MCQ's – Multiple Choice Questions: In volume-I multiple choice questions are given to each and every sub topic. In volume-II each and every sub headings from the sub topic is given with multiple choice questions. In volume-III, both multiple choice questions of volume I and II are combined and given continuously to the learner to take a test. There are one hundred and sixty three MCQ's in volume-III to check the mastery level of the learner by themselves. This enhances learning and increases their memory and retention level of the concept.

SYSTEM REQUIREMENTS FOR CAI
   a. **Software:** Adobe Flash CS5 is used for developing the Multimedia package. Flash player is used for running the project hence it should be installed in the user computer.
   b. **Hardware:** System with Pentium IV or above processors, 512MB of RAM and a color display. The folder contains swf file which can be played using flash player 8.0 or above.
   c. **Flash Shockwave file:** The folder contains swf file which can be played used flash player 8.0 or above.

VALIDATION OF CAI PACKAGE
After the development of the CAI package, it is given to the subject experts, computer professionals. The package is given to a small group of thirty XII standard higher secondary school students for pre-validation. The average time taken to complete the package has been noted and it has taken ninety minutes. Students are asked to give suggestions for improvement of the CAI package. After the refinements the package is now ready for experimentation. Sixty of XII standard higher secondary students are taken for experimentation and instructions are given regarding the CAI package along with their school science teachers. In the first day the researcher explained about the package and its navigation. Then the students are allowed to use the package. The second and third day, Students go through the package with the help of the computer and asked to give frame wise suggestions over the package along with their science teachers. Thus the validity and reliability of the CAI package has been established for this study.

ACHIEVEMENT TEST FOR THE STUDENTS
Realizing the major objective of the present study it was decided to have separate tool to measure the achievement level of the students. The researcher constructed the self-made achievement test to measure the achievement level of the learners through CAI treatment for both control and experimental group. Hundred and twelve objective type question items covering the package on "Cell biology and Genetics" are structured for this purpose.

VALIDITY OF THE ACHIEVEMENT TEST
The Constructed achievement test question paper was given by the researcher to forty XI and XII standard teachers for validation. Questions selected in the test are related to the concept in the study. After their validation is over, all the changes in the achievement test question paper are consolidated and made by the researcher. Except 4 questions, all the questions are in the test has validity. At the beginning it was one hundred and twelve questions, the subheadings like "cell type and cell components" has 6 and it was reduced to 4 questions, "nucleus" contains 6 questions and reduced into four questions. After refinement the no of questions in the subheadings are reduced and finally it was 108 questions.

RELIABILITY OF THE ACHIEVEMENT TEST
The Achievement test was given over two sets of thirty students each. These students were selected in such a way that they were not part of either in the control or experimental groups. Based on the exercise, the item scores 21% to 79% was selected for final use. Thus the item carries that 20% and below and 80% percent and above was removed. Finally eight items was removed from the pilot study test. Among the thirty items in true or false, five items has been removed. Finally twenty five

items are in true or false. As the twenty three items in complete the sentence, three items were removed, so finally twenty items are in complete the sentence. Initially the achievement test question paper consists of one hundred and eight items and finally eight items were removed. The final form of the achievement test consists of hundred items. The final test form which is used for achievement test consists of five sections and the first section is with alternate choice questions which consists of twenty five numbers, second section has twenty five true or false type, third one complete the sentence, fourth section, twenty match the following type and the last one select the exact option type consists of ten questions and in total there are hundred questions. The same question paper was used for both pre and post tests to evaluate the students learning level. The program may be a set of instructional materials distributed nationally, the instructional activities of a single school, or the educational experiences of a single pupil…Course improvement: deciding what instructional materials and methods are satisfactory and where change is needed" teachers for validation as per Cronbach (1963).

SAMPLING
The researcher followed purposive sampling technique. The sample included two forty XII-standard students from Government, Government aided, and matriculation higher secondary schools in Salem district of Tamilnadu state, in India. Salem educational district has Government and Government aided English medium schools and also matriculation schools in urban areas. The researcher has chosen samples from matriculation schools both in urban and rural areas. The total samples selected are one hundred and twenty. After selecting samples for the study, the researcher personally visited the schools and a good rapport has been established before administering the software. The researcher has collected their achievements score.

DATA COLLECTION BY ADMINISTERING THE ACHIEVEMENT TEST
Data are collected from the samples included two forty XII-standard students from Government, Government aided and Matriculation higher secondary schools in Salem District of Tamilnadu, India. Data's were collected by administering the achievement test before the treatment as pre-test and after the treatment as post-test for both control and experimental groups.

STATISTICAL TECHNIQUES USED
To study the effect of CAI package with reference to gender, type of school and location of the school, mean and standard deviation have been calculated. Based on mean and standard deviation, 't'-test and F-test have been worked out. Whenever two groups are involved in a variable, t'-test has been used to know the significant differences between these groups. When more than two groups are involved in a variable, F-test has been worked out to know the significant differences among these groups. Test for mean score analysis (ANOVA) is used to compare mean scores of more than two groups.

RESULTS
Distribution of Mean and SD of pre and post-test analysis of achievement test scores for the conventional teaching (control) group.
Table- 1.1, The mean scores and SD of pre and post-test achievement scores for the control group, with regard to type of institutions, gender and area.

		Group	N	Mean	Std. Deviation
Type of Institutions	Pre Test	Government aided	20	51.80	6.833
		Private	40	55.48	7.390
	Post Test	Government aided	20	53.65	6.418
		Private	40	56.50	7.278
Gender	Pre Test	Boys	30	51.97	7.020
		Girls	30	55.37	6.589
	Post Test	Boys	30	53.53	6.996
		Girls	30	58.20	5.275
Area	Pre Test	Urban	40	53.58	7.089
		Rural	20	55.60	7.890
	Post Test	Urban	40	55.08	6.941
		Rural	20	56.50	7.437

The table 1.1 explains that, the mean and SD of pre and post-test achievement scores for the control group with regard to Government aided and private schools. In Government aided (N=20), during pre-test, the mean and SD of the achievement scores are 51.80 and 6.833, in the case of post-test the mean and SD are 53.65 and 6.418. Likewise in control group (N=40) among the private schools, the students achievement scores of mean and SD of the pre-test are 55.48 and 7.390. During the post test the mean and SD are 56.50 and 7.278. During the pre-test the mean and Standard Deviation of the control group, in the pre-test the mean and SD are 51.97 and 7.020 among the boys (N=30). Among the girls (N=30) they are 55.37 and 6.589. Likewise the mean and standard deviation of the control group during the post-test are 53.53 and 6.996 among the boys; they are 58.20 and 5.275 among the girls. In urban area (N=40), during pre-test, the mean and SD of the achievement scores are 53.58 and 7.089. In the case of post-test the mean and SD are 55.08 and 6.941. Likewise in rural area (N=20), the pre-test scores of mean and SD are 55.60 and 7.890. During the post test the mean and SD are 56.50 and 7.437. The descriptive statistics shows the sample size, mean and SD of the pre and post-test achievement scores of students in utilizing the methods conventional teaching (control group) with regard to type of institutions, gender and area.

Table- 1.2: The mean scores and SD of pre and post-test achievement scores for the CAI group, with regard to type of institutions, gender and area.

		Group	N	Mean	Std. Deviation
Type of Institutions	Pre Test	Government aided	20	51.65	7.176
		Private	40	56.48	5.291
	Post Test	Government aided	20	58.00	5.477
		Private	40	64.48	6.401
Gender	Pre Test	Boys	30	53.37	6.250
		Girls	30	56.37	6.195
	Post Test	Boys	30	60.87	6.442
		Girls	30	63.77	6.942
Area	Pre Test	Urban	40	54.33	6.689
		Rural	20	55.95	5.624
	Post Test	Urban	40	60.88	6.350
		Rural	20	65.20	6.902

The table 1.2 describes the sample size, mean and SD of the pre-test achievement scores among the students of CAI group in Government aided and private schools. During pre-test the students achievement test scores of mean and SD are 51.65 and 7.176 in Government aided schools (N=20), they are 56.48 and 5.291 in private schools (N=40). Likewise the mean and SD of the post-test among students in Government aided schools are 58.00 and 5.477 and in the case of private they are 64.48 and 6.401. During the pre-test the mean and Standard Deviation of the CAI group in learning Botany at higher secondary schools, are 53.37 and 6.250 among the boys (N=30). Among the girls (N=30) they are 56.37 and 6.195. Likewise the mean and standard deviation of the CAI group during the post-test are 60.87 and 6.442 in boys; they are 63.77 and 6.942 in girls.

Further the table 1.2 describes the pre-test achievement scores among the students of CAI group in urban (N=40) are 54.33 and 6.689, they are 55.95 and 5.624 in rural area (N=20). Likewise the mean and SD of the post-test among students in urban

are 60.88 and 6.350, they are 65.20 and 6.902 in rural area. The differential statistics shows the sample size, mean, SD, Standard error of mean, 't' value and P value of the post-test achievement test scores of students in utilizing the methods of control group with regard to types of institutions, gender and area.

Table - 1.3, Differential analysis of post-test achievement scores of control group students in types of institutions, gender and area.

		Group	N	Mean	Std. Deviation	Std. Error Mean	t	P
Type of Institutions	Post Test	Government aided	20	53.65	6.418	1.435	1.485	0.143
		Private	40	56.50	7.278	1.151		
Gender	Post Test	Boys	30	53.53	6.996	1.277	2.284	0.026
		Girls	30	57.57	6.678	1.219		
Area	Post Test	Urban	40	55.08	6.941	1.097	0.732	0.467
		Rural	20	56.50	7.437	1.663		

**significant at 0.05% level ('t' value 2.00).

The obtained 't' value is 1.485 and it is less than the table value (2.00). Hence the null hypothesis is accepted. There is no significant difference between the post test scores of students in Government aided and Private higher secondary schools in the control group. The table 1.3 explains that, the standard error of mean of the post test scores of boys is 1.277 and for girls is 1.219 among the Control group. The calculated 't' value is 2.284. The 't' value is significant at 0.05 level. Hence the null hypothesis was rejected. There is a significant difference between the post-test mean scores of boys and girls in using the conventional teaching as a method among higher secondary schools in learning Botany. The obtained 't' value is 0.732 is less than the tabulated value (2.00). So there is no significant difference between the post test scores of students in urban and rural areas in the control group. Hence the null hypothesis is accepted. From this it is indicated that the performance of the students in rural and urban areas shows no difference when the usual conventional teaching method has been used.

Table- 1. 4, Differential analysis of post-test achievement scores of CAI group students in types of institutions, gender and area.

		Group	N	Mean	Std. Deviation	Std. Error Mean	t	P
Type of Institutions	Post Test	Government aided	20	58.00	5.477	1.225	3.867	0.00**
		Private	40	64.48	6.401	1.012		
Gender	Post Test	Boys	30	60.87	6.442	1.176	1.677	0.099
		Girls	30	63.77	6.942	1.267		
Area	Post Test	Urban	40	60.88	6.350	1.004	2.416	0.019
		Rural	20	65.20	6.902	1.543		

**significant at 0.05% level ('t' value 2.00).

The calculated 't' value is 3.867 which is more than the table value (2.00). Hence there is a significant difference between the post test scores of students in Government aided schools and private schools in the CAI group. The framed null hypothesis is rejected. From this it is inferred that the performance of the students in Government aided schools is lower than that of

private schools. The table 1.4 explains that, the standard error of mean of the post test scores of boys is 1.176 and for girls is 1.267 among CAI group. The calculated 't' value is 1.677. Since the 't' value is less than the table value (2.00), there is no significant difference in the post test mean scores of boys and girls students in experimental group (CAI) with regard to learning Botany. So we accept the null hypothesis. The obtained 't' value is 2.416 which is more than the tabulated value, (P>0.019). Hence the null hypothesis is not accepted. So there is no significant difference between the post test scores of students in urban and rural area in the CAI group (experimental group). From this it is indicated that the performance of the students in urban schools is at a higher level than that of students in rural schools.

Table -1.5, Differential analysis of mean and SD and 't' test for the pre and post-test achievement scores for the control and CAI group.

Group		N	Mean	Std. Deviation	Std. Error Mean	t	P
Control	Pre Test	60	54.25	7.361	0.950	3.965	0.00**
	Post Test	60	55.55	7.079	0.914		
CAI	Pre Test	60	54.87	6.353	0.820	15.196	0.00**
	Post Test	60	62.32	6.799	0.878		

**significant at 0.05% level ('t'value2.00)

The table 1.5 displays the statistics of the sample size, mean, standard deviation and standard error and the 't' value of the control group. The 't' value of pre and post test scores of the control group is 3.965 and the table value is (2.00). This shows that the calculated value is greater than the tabulated value in the control group; hence the hypothesis is accepted. There is a significant difference occurred in the pre and post-test mean scores. During the pre-test the SD is 6.353 whereas in the post test is 6.799. The difference of the SD is 0.446. The 't' value of pre and post test scores of the CAI group was 15.196. This shows that the calculated value is greater than the tabulated value (2.00). Hence the framed hypothesis is accepted and there is a significant difference occurred while using the CAI as a teaching method (experimental method) in learning Botany at higher secondary schools.

FINDINGS OF THE PRESENT STUDY
There is a significant difference found between the pre and post test scores of students in the control group in learning Botany among higher secondary schools ('t' value 3.965, vide table 1.5). There is no significant difference between the students of private and Government aided schools in using conventional teaching as the teaching method in learning Botany during the post test , ('t'value 1.485, vide table 1.3). Girls performed better than boys students in the control group while learning Botany in the post test ('t' value 2.284, vide table 1.3). There is no difference found during the post test in urban and rural area students in learning Botany among the control group, ('t' value 0.732, vide table 1.3). There is a significant difference found in the CAI group between the pre and post test scores in learning Botany among higher secondary schools, ('t' value 15.196, vide table 1.5). CAI seems to be more useful to students in private schools than students in Government aided schools in learning Botany during their post-test, ('t' value 3.867, vide table 1.4). Among girls and boys in the post test mean scores, there is no significant difference found in using the teaching methods of the CAI group, ('t' value CAI-1.677, vide table 1.4). Rural students performed better than urban students in CAI group in the post test. CAI seems to be more advantageous to rural students than urban students in learning Botany, ('t' value CAI - 2.416, vide table 1.4).

The achievement scores of the post-test are higher than the pre-test among all the groups such as conventional teaching, CAI shows that the effectiveness of teaching methods in higher secondary school students. This may be due to change in their method of study than the monotonous style of teaching, parental care, study habits, retention rate and self-regulatory skills. Government aided and private school students not differed in their post-test mean scores of the control group. This is because the same conventional teaching method was followed in the educational system of India as well as Tamilnadu in the case of private or government schools.

Girls performed better than boys' students in the control group while learning Botany in the post test. Every year the state government of Tamilnadu is conducting common examinations for higher secondary school students based on the common higher secondary school syllabus. The past history of the results proved that girls are out performed than boys in their achievement test. In this study also the findings coincides the above fact. In Indian style of living boys are more exposed to

outside activities than girls and reading time are some of the reasons. There is no significant difference between the students of urban and rural area in utilizing the conventional teaching methods in learning Botany during the post test. Teachers appointed by the government of Tamilnadu are qualified with sufficient subject knowledge. So teaching methods, drill and practice, motivation are common in both urban and rural area.

CAI seems to be more useful to students in private schools than students in Government aided schools in learning Botany during their post-test. Students in the private schools are more familiar with computers than the students of government aided schools. Among girls and boys in the post test, there is no difference found in using the learning methods of the CAI group. It shows that both boys and girls have the same attitude and interest towards the self-learning package. The result of the study was supported by Barad 2010**.** In learning Botany, rural students performed better than urban students in CAI group in the post test. Urban students have more exposure of computers whereas rural students are not so. In country like India especially in the state of Tamilnadu, rural area has been lagging behind the basic facilities and sources. But in private schools have more number of computers even though the school lies in rural area. So automatically the students will get the exposure of computers in schools. When the package was introduced to them, the students are highly motivated. Many research studies on various subjects substantiates the academic achievement due to the CAI package by Abdul Muis 2014, Alhassan Dokochi 2013, Palaniappan (1996), Anjali (1999), Sanjna (2001), Jimoyiannis and Komis (2001), Christmann et al (2003), Banerjee et al(2005), Malmskold (2007), Camnalbur et al (2008), Zucker et al (2009) Slavin et al (2008) and Vadiraj et al (2010).

EDUCATIONAL IMPLICATIONS
Students in groups participate and feels comfortable because they can discuss among their peers, they develop competitive spirit, encourages learning with understanding than rote learning and memory. Students used up with their self regulatory skills like reading habits made them encouraging and increases creative thinking (Moreno & Valdez (2005), Chan & Black (2006), Deimann & Keller (2006), Killi (2006), Abdul Muis 2014, Finkelstein et al (2006) and Mayer (2008), Alhassan Dokochi 2013). An interaction process between the learner and the contents, the learner and the teacher, the learner and other learners, the learner and the community and the learner and home are the various aspects of the learner. So teacher has to play the role of a creator, evaluator and facilitator for teaching and learning process (Gupta 1995) and Richard Mayer (2001). Students are ready to accept the changes in their learning styles, but their teachers are feeling feared that computers are complicated to handle, if they are used in education for teaching and learning purpose and computer must substantiate the traditional teachers.

National Council for Teacher Education (NCTE), has taken a decision to make Information and Communication Technology literacy a compulsory part of pre service course at secondary level. The main objective of this course shall be to enable each pre service student of B. Ed., M. Ed., B. P.Ed and M. P. Ed courses competent in using multimedia for preparing lesson plans, document creation, accessing online and off line resources on teacher education. Innovational instructional media are being widely adopted and have become an integral part of teaching in educational system. In State Government of Tamilnadu has launched an e-smart classroom at a government higher secondary school on July 2010 onwards. In an e-smart classroom the teacher has an interactive electronic board, supported by a computer to teach subjects with the help of 3D (Dimensional) images and animations. The animations would help students learn subjects; especially science, social science and mathematics with additional information on the subjects derived from the internet (The Hindu, 30.07.2010).

Some concepts cannot be explained in a traditional way. If in such cases the learning packages support the teachers in addition with the textual information, then the teaching learning process must be effective. So curriculum developers can keep this in mind while developing a curriculum along with their textual matter can suggest the government to provide educational CD's. Appropriate software's in regional languages should be developed. Multimedia packages on science will enhance motivation; develop innovative materials, increases curiosity, scientific attitude towards the subject science. The technological aids cannot replace the teacher; instead make the teacher more effective in her teaching. Self-learning packages can reduce the workload of the teachers among intelligent students, so more individual attention given to slow learners is possible. Software's should be developed in regional languages.

SUMMARY AND CONCLUSION
Learning typically includes the notion of a process that brings about a relatively stable change in an individual or group. A significant difference occurred while using the CAI as a teaching method (experimental method) in learning botany at higher secondary schools. Here we clearly emphasize that technology can play an active role in intentional as well as in incidental learning. Regardless of whether the learning is intended, incidental or whether it involves changes, if there is a claim that

learning has occurred then it is reasonable to expect that the associated change(s) are relatively stable and persistent and that there is evidence that such change(s) in fact occurred. When the package (CAI) was introduced to them, the students are highly motivated.

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