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EFFECT OF WEB BASED INSTRUCTION ON ACHIEVEMENT IN COMPUTER EDUCATION

Education

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Abstract

The present study was conducted to investigate the effect of web based instruction, on achievement, in computer education of VIII graders. Experimental method was adopted employing Pre-Test Post-Test control group design. Sample of 125 students based on scores of intelligence test, was classified into high, average and low intelligence groups. The high and the low intelligence groups were ignored and only average intelligent students were further divided into control group and experimental group i.e. conventional teaching group and web based instruction group respectively, so as to equate both the groups on the parameters of intelligence. The investigator's self constructed website, in word press web hosting, was purchased to make the website accessible via the world wide web. Original text book content was transformed into online learning material. Main goal was to implement an easy way to use web based instruction package. The results were derived quantitatively. The results showed that there was a significant difference in the mean scores of achievement of students of both the groups due to difference in mode of instruction. Students of web based instruction group performed better than the conventional method group. Further, gender differences were also evident in the results. Boys were less attentive during the process, whereas girls were more enthusiastic towards the

experiments and were fully involved in the process. The results obtained from the application/evaluation of a set of educational activities have been quite encouraging, indicating that the simulation program and the context of the activities can effectively support and enhance the learning process.

With the establishment of National and State Technological Standards there is a growing trend towards working and learning in a technology rich environment. There is a continous need for teachers to promote effective learning by infusing the use of technology in the classroom. In the recent era, "conventional instruction" has been considered as a major cause of dysfunctional and even an obsolete educational system. The classroom now is no longer a place where the teacher pours knowledge into passive students, who wait like empty vessels to be filled. Conventional classrooms are space bound; learning occurs within a physical boundary in which the student has no scope to nurture its innate abilities and capacities. Conventional Classrooms environments tend to group up the students together in large number often making it difficult for instructors to isolate learning deficiencies and to provide the necessary close attention to any particular individual who may need it. The classroom setting neglects individual differences, problem solving, critical thinking, and higher order learning skills and encourages passive learning. The learning follows the pace which is dictated by the teacher and ignores the needs of the learner. The content involved in traditional method is always followed through the book and is always confined to it. Thus, The role of conventional classroom method today is quite questionable.

In the 21st century era, the students have an urge to involve actively in their own process of learning. The Internet access today is quite resourceful and speedy. This thus draws a large number of people towards it. The need of the hour is a learning environment which has been designed to ensure that the learning is focused entirely on the immediate needs of the learner. The Web is currently one of the most important and most prevalent technology.

World Wide Web (WWW) is an instructional technology that permits the display of information in any medium, on any subject, in any order, at any time, i.e. asynchronous learning,

independent of place. This is not possible with conventional teaching, where learners and educators go to a particular place, at a particular time, for a particular class on a particular topic. This type of communication allows a self-paced learning and reflection, which are advocated by the constructivist approach. Learning activities can be organized sequentially, because each component in a self-paced course has objectives that must be met before proceeding to the next component. Such means of teaching and learning have captured the interests of educators world-wide. Educators, from pre-school to graduate school, are rethinking the very nature of teaching, learning and educating, due to the existence of web-based learning environments. Through WWW the students do not have to limit themselves to resources supplied by their instructors, instead the students can themselves search for new materials in order to solve problems at hand and to develop their competencies continuously.

Thus, the study is undertaken as the investigator feels that the schools should develop a wider perspective towards how the technology can improve the teaching learning processes and make the pupils more informatics and develop their various skills and abilities. In the present study investigator developed the web based instructional package and utilized various e-links for teaching of computer at secondary level. Also the investigator recognised the huge lag between the theory of computer education and its actual practical aspect. As computer education is practical based subject, the implementation of computer education with the help of Web Based Instruction lead to a better understanding of the concept. The perusal of studies depicted that instructions provided by Web Based Instructions proved to be highly effective in comparison to conventional method. (Angulo and Bruce, 1999; Liao 1999; Erdogan, 2008). The present study aimed at finding the effect of Web Based Instruction on achievement in computer education at secondary level.

DELIMITATION OF THE PROBLEM

- The present study was confined to secondary schools of Amritsar city affiliated to CBSE.
- The study was limited to selected units of computer education at secondary level.

OBJECTIVES

- To develop a web based instructional package.
- To help the students to utilize the e-links provided in the web based instructional package.
- To study gender differences with respect to achievement in computer education on web based instruction.
- To compare the achievement in computer education, In the web based instruction method and conventional method.

HYPOTHESES

- There is no significant difference in achievement in computer education based on web based instruction and conventional method.
- There is no significant gender difference in achievement in computer education with web-based instruction.

DESIGN OF THE STUDY

The present study was experimental in nature. Experimental group was taught through web-based instruction and control group through conventional teaching.

VARIABLES USED IN THE STUDY

Independent Variable

Web Based Instruction and Traditional instructional strategies were independent or treatment variables.

Dependent Variable

Achievement in computer education was a dependent variable.

Control of Variables

Control is the essential ingredient of an experiment study. In a well-designed experiment, the various factors that influence the outcome of experiment must be controlled.

In present study the investigator tried to control all the possible extraneous variables that were likely to affect the outcome (achievement of the pupils) of the experiment as follows:

Intelligence

Intelligence was controlled by equating experimental and controlled group by using standard progressive matrices by J.C. Raven (1983).

Content Variable

Present study was carried out by using Web Based learning and conventional method. A list of topics was selected for teaching of computer education. The content was discussed with the experts and school teachers.

Table 1.1

Showing the name of chapters

Name of Chapters
Introduction To Computers
Introduction To Internet
Introduction To HTML

Teacher Variable

As teacher is assumed to be aquiring the most important place in teaching learning process so the investigator herself took the responsibility to teach both the groups.

Class Room Enviorment

Investigator tried to create similar type of classroom environment for both the groups of VIII grade. All the students were provided with comfortable seats. the Teacher tried to maintain calm and peaceful atmosphere in the classroom and was successful to some extent. Investigator wanted to observe the effect of web based instructions under natural conditions, so all sorts of artificialities like calling students to special room or a separate place etc were avoided in the experiment

Time Variable

On the first day of the experiment, the teacher taught experimental group in the morning and controlled group in the afternoon and on the second day, control group was taught in the morning and experimental group was taught at different times of the day.

SAMPLE

Initially purposive sampling was employed to select those schools, which have facilities of LAN and internet on each system and English as the medium of instruction. For this investigation, 100 students of class VIII were randomly taken from one school of Amritsar city i.e. Senior Study School.

Equating the groups

An intelligence test was administered to equate the group of students of VIII standard on the basis of intelligence test scores. The student sample of 125 was administered the intelligence test. On the basis of the scores of intelligence test, the students were distributed in three groups i.e. High Intelligence, Average Intelligence and Low Intelligence. High, Average and Low groups on intelligence were formed by using the cut points on means and S.D.. Further the Average Intelligence students were divided into two groups, namely Conventional Teaching Group and Web Based Instruction Group i.e. Control Group and Experimental Group

respectively.the high intelligence and the low intelligence groups were however neglected in the further proceedings of this study.

Table 1.2

The Structure of Sample According to Instructional Treatment

S.No.	Group Allocation	Total
1.	Web Based Instructions	50
2.	Conventional Teaching	50
	Total	**100**

RESEARCH TOOLS

1. Web Based Instructional Package prepared by the investigator.
2. Construction of Modules
   (a) Entry Behaviour Test prepared by the investigator.
   (b) Formative Test prepared by the investigator.
3. Achievement Test (Summative Test) as post-test prepared by the investigator.
4. Progressive Raven Matrices (administered to equate the students on the basis of intelligence test scores.)

STATISTICAL TECHNIQUES APPLIED

The data obtained was subjected to statistical analysis. To test the hypothesis mean, standard deviation and t-test was used.

ANALYSIS AND INTERPRETATION

Hypothesis I

"There is no difference in achievement in computer education based on web based instruction and conventional method".

Table 1.3

Showing 't' ratio of achievement scores of experimental and control group in Computer Education

Group	**N**	**Mean**	**SE_D**	**t-ratio**	**Inference**
Experimental Group	50	25.8	0.55	14.18	Significant at 0.01 level
Control Group	50	18			

The close examination of table 1.3 reveals that the mean score of achievement in computer education of the students taught by web based instruction are 25.8 and mean score of achievement test of student taught by conventional learning came out to be 18. The mean scores of experimental group are more than the mean scores of controlled group. The obtained t-value is 14.156 which are significant at 0.01 level. This implies that there is a significant difference in the achievement of students who were taught with the help of web based instructional material. Thus, hypothesis I that "There is no significant difference in achievement in computer education based on web based instruction and conventional method" stands not accepted.

Hypothesis II

"There is no significant gender difference in achievement in computer education with web based instruction".

Table 1.4

Showing 't' ratio of achievement scores of Boys and Girls in Computer Education of Experimental Group

Group	N	Mean	SE_D	t-ratio	Inference
Boys	25	25.02	1.58	2.09	Significant at 0.01 level
Girls	25	28.30			

The close examination of table 4.2 reveals that the mean score of achievement of the boy students taught with help of web based learning method was 25.52 and mean score of achievement test of girl students taught with help of web based learning method came out to be 26.08. The obtained t-value is 0.6443 which is insignificant at 0.01 level. This implies that there is a significant gender difference in the achievement in computer education of students who have learnt with the help of web based learning. Thus, hypothesis II that "There is no significant gender difference in achievement in computer education with web based instruction" stands not accepted.

DISCUSSION OF THE RESULTS

The result of the experiment shows that there is a difference in the mean scores of experimental group and control group. It indicates that the difference between the means is due to the difference in mode of instruction. Experimental group performed better, this hereby implies that the web based instruction is better than the conventional method. The Teaching Methods and intense course delivery via World Wide Web is more effective. Their effectiveness is highly impressive in regard to the achievement scores seen in the experiment. Also due the self-paced learning, it helped the students understand better and they even retained more when taught by web based learning. Also web based courses provide a better learning experience

because it allows the instructor to get the required feedback. The results obtained from the application/evaluation of a set of educational activities have been encouraging, indicating that the simulation program and the context of the activities can effectively support and enhance the learning process.

The result of the experiment showed a difference in mean scores of achievement scores in boys and girls. Gender differences were evident in the results. The low mean scores for boys was adequately explained by gender related differences in classroom behaviours with boys being more prone to disruptive and inattentive classroom behaviours that appeared to impede learning and lead to lower mean scores. Boys were more attracted towards the usage of social networking sites. Also boys paid very little attention during the instructional process. Whereas the girls on the other hand were more enthusiastic towards the experiment and were fully involved in the process.

EDUCATIONAL IMPLICATIONS

This study sheds light on development and utilization of web based learning in secondary computer education course. The findings of this study offer help to other researchers and developers in their development and utilization of web-based learning system. In web-based learning environment, web based instruction can enhance the learning environment in terms of time and place, flexibility and alternative mode of instruction. As for this experiment, it has been seen that the students can be benefited from the web sites. Due to the user friendliness of the web site, a non-computer user is also benefited from the web site. In this experiment, the easiness of the web site helped the user to move forth with the website with utmost ease. Even a non-computer user faced very little problem. So, providing instructions via World Wide Web is a new and innovative way. Web Based Learning should be incorporated in schools, as the students do not have to work in the time slot imposed on them. On the other hand, web based instruction frees the students from space and time. In such a setting the students are to follow the instructional content at their own learning pace and needs.

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