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**EFFECT OF WEB BASED TEACHING ON ACHIEVEMENT IN CHEMISTRY
OF SECONDARY SCHOOL STUDENTS IN RELATION TO THEIR LEARNING
STRATEGIES**

Education subject

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Abstract

In this age of technology, there is a paradigm shift in our schools from traditional methods of teaching to the innovative techniques of teaching. Web Based Instruction has the potential to cope with the needs of individualized learning, co-operative learning and constructive approaches. In the Traditional, Web Based Instruction offers more flexibility in presentation and better management of instructional techniques. Web Based courses engage students in meaningful interactive dialogue and promotes conceptual learning and clarity. Thus, the study is being done as the investigator feels that the schools should develop a vision of how technology can improve teaching learning process and make the pupils more informative and develop the various skills and abilities. In the present study investigator will use the Web Based Teaching using websites, for teaching of Chemistry at secondary level.

Introduction

The most important development of last few years in the world is the rapid growth spread of information technology in numerous areas. It is generally accepted that information technology increases computed and moral value, and is widely used in the areas of education, economy, health agriculture, social life, and entertainment. It dominates all the aspects of life in our society test never earlier was the impact of technology as profound as it. New innovations in computer and technology have brought



remarkable changes at different levels of education and have resulted in better teaching learning process.

Education aims at preservation and transfer of culture from one generation to other. The traditional method of teaching could not keep up pace with changing needs of society. The traditional method of teaching is effective in transfer of simple knowledge to the learner but is not so effective for more complete learning. The major drawback can be overcome by using new innovative methods of teaching. Several educational and general objectives could be fulfilled if children are given opportunity to learn with new innovative method. One of the innovative method is Web Based Instruction.

Today, the Web Based Instruction is on the way of being an important learning environment which provides students with a new and rich style of learning. The web is able to offer a worldwide democratic learning content to students, who are from different cultures, speak different languages without gender discrimination. In this century a new brand of knowledge known as computer emerged. The WBI has grown as a unique space and become one of the major channels of information and communication. The web provides a wealth of information to an incredibly diverse user population and designers face the constant challenge of developing Web Based Instruction that need to meet diverse user need.

Web Based Teaching

Web based instruction (WBI) is a hypermedia based instruction program which utilizes the attributes and resources of the world wide web to create a meaningful learning environment where learning is fostered and supported. WBI program is discussed in terms of various components and features that can be conducive to learning environment. Components are integral part of WBI system i.e. content development,



multimedia component, internet tools, computer and storage devices, connection and service providers, authoring programmes, servers, browsers and applications.

Web based learning is often called online learning or e-learning because it includes online course content. Today the web is on the way of being an important learning environment which provides students with a new and rich style of learning (Relan and Gillani, 1997). In addition to the face-to-face mode of instruction students now receive instruction through teleconferencing currently taking place via telecommunications technologies (Bennetty Mims and Mckenzie, 2002; Hooper, 2001).

Web based instruction refers to providing a learning environment that is mediated and supported via the internet and connected to a computer with hyperlinks to resources outside the instructional domain. Web- based instruction is teaching and learning supported by the attributes and resources of the Internet (Khan, 1997; Relan and Gillami, 1997).

One aspect of web based instruction is the incidental learning that frequently occurs while in a traditional instructional environment, learning is intentional. Web based instruction provides students with a wide variety of teaching/learning alternative that expand the educational process beyond the traditional classroom. Web based instruction offers a new sensibility and a means of social interaction engineered towards learning. In web based instruction the nature of content becomes dynamic a compared to the static texts that are published on certain date.

Objectives:

1. To compare the mean gain scores of achievement in Chemistry of Group taught through Web Based Teaching and Traditional Teaching.



2. To compare the mean gain scores of achievement in Chemistry group taught through Web Based Teaching with respect to gender.
3. To compare the mean gain scores of Achievement in Chemistry group taught through Web Based Teaching with different learning strategies.

Hypotheses:

1. There is no significant difference in the mean gain scores of achievement in Chemistry of group taught through Web Based Teaching and Traditional teaching.
2. There is no significant gender difference in the mean gain scores of achievement in Chemistry of group taught through Web Based Teaching.
3. There is no significant difference in the mean gain scores of achievement in Chemistry group taught through Web Based Teaching with different learning strategies.

Sample:

In this investigation, 200 students of class 9th were randomly taken from two schools of Amritsar city.

Method and Procedure

Pre test post test control group design was followed in the present investigation. Suitable descriptive statistics such as mean, standard deviation and t-ratios were worked out to ascertain the nature of distribution of scores on the variable of achievement. ANOVA was also employed to study interactional effect. The procedure of experimental study involved different phases given below.



Table 1.1

Showing diagrammatic layout of the procedure

Phase	Group A Web based instruction	Group B conventional instruction
Phase I	Matching and pretesting on achievement in chemistry	Matching and pretesting on achievement in chemistry
Phase II	Web based Teaching	Traditional Teaching
Phase III	Post test on achievement in chemistry and learning strategies towards web based course scale was administered	Post test on achievement in chemistry

Analysis and Interpretation of Results:

Hypothesis – I “There is no significant difference in the mean gain scores of achievement in Chemistry of group taught through Web Based Teaching and Traditional Teaching”

Table 1.2 Showing ‘t’ ratio of achievement scores of experimental and control group

Group	N	Mean	S.D.	df	t-value	Significance level
EXPERIMENTAL	100	9.60	3.522	198	14.077**	Significant at 0.01 level of confidence
CONTROL	100	3.65	2.337			

**** Significant at 0.01 level of confidence**

Table 1.2 reveals that obtained ‘t’ value 14.077 is significant at 0.01 level which shows that there exist significant difference in mean gain scores of achievement in Chemistry of experimental and control group. Thus Hypothesis 1 “There is no significant



difference in the mean gain scores of achievement in Chemistry of group taught through Web Based Teaching and Traditional Teaching.” is not accepted.

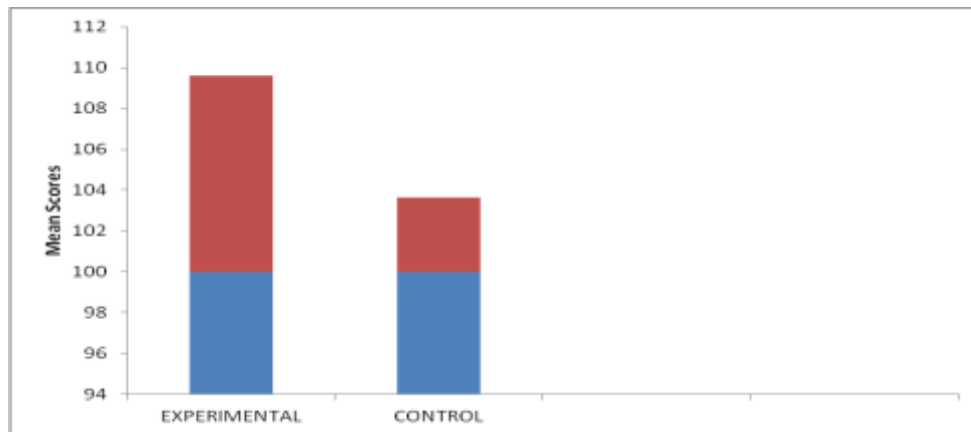


Fig. 1.2: Mean scores of Experimental group and Control Group

From the above figure 1.2, it is clear the students of experimental group achieved higher as compared to traditional group.

Hypothesis-2 “There is no significant gender difference in the mean gain scores of achievement in Chemistry of group taught through Web Based Teaching.”

Table 1.3 Showing ‘t’ ratio of achievement scores of experimental and control group

Group	N	Mean	S.D.	df	t-value	Significance level
BOYS	50	9.96	3.446	198	1.022	Not significant
GIRLS	50	9.24	3.595			



Table 1.3 reveals that the obtained 't' value is 1.022 which is less than table value. Thus Hypothesis 2 "There is no significant gender difference in the mean gain scores of achievement in Chemistry of group taught through Web Based Teaching" is not rejected.

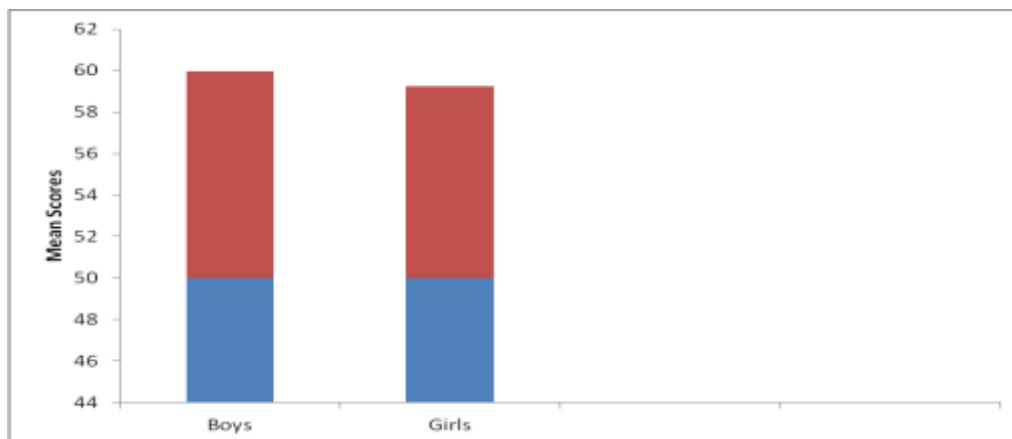


Fig. 1.3: Mean scores of Boys and Girls of achievement

Hypothesis-3 "There is no significant difference in the mean gain scores of achievement in Chemistry group taught through Web Based Teaching with different learning strategies"

Table 1.4 Showing 't' ratio of different dimensions of learning strategies

Variables	EXPERIMENTAL GROUP						't' ratio	Level of significance
	BOYS			GIRLS				
	N	Mean	SD	N	Mean	SD		
1.Rehearsal	50	16.34	6.66	50	16.64	6.874	0.222	Not Significant
2.Elaboration	50	24.22	9.47	50	24.74	10.17	0.265	
3.Organisation	50	16.26	7.09	50	16.54	7.51	0.192	

4.Critical Thinking	50	20.86	7.97	50	21.42	8.86	0.332	
5.Metacognitive Self Regulation	50	62.98	5.67	50	63.52	6.90	0.427	

Table 1.4 reveals that the obtained ‘t’ values of Rehearsal, Elaboration, Organisation, Critical Thinking and Metacognitive Self Regulation are 0.222, 0.265, 0.192, 0.332 and 0.427 which are not significant at 0.01 level. Thus Hypothesis 3 “There is no significant difference in the mean gain scores of achievement in Chemistry group taught through Web Based Teaching with different learning strategies” is not rejected.

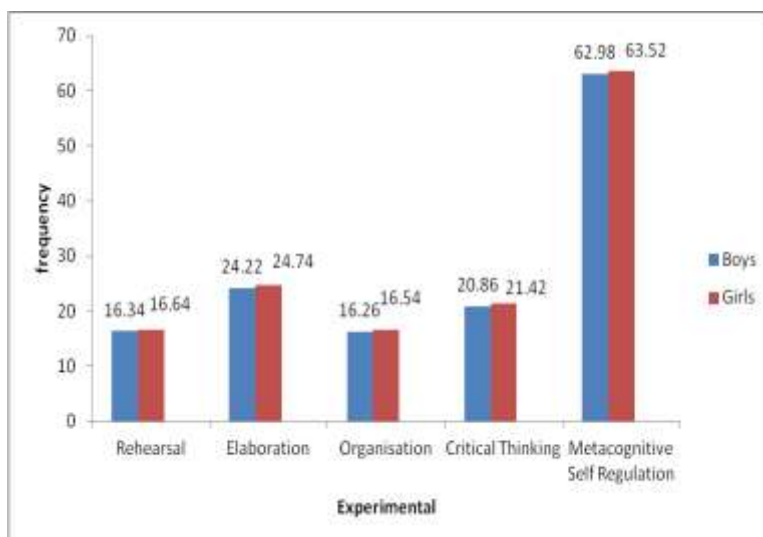


Fig. 4.4: Mean scores of different learning strategies on achievement

Hypothesis-4 “There is no significant interaction effect of learning strategies and gender on achievement in Chemistry student taught through Web Based Teaching”

Table showing F ratio and other descriptive statistics is given below:



Table 1.5: Summary of Analysis of Variance (2×2) factorial design

Dependent Variable	Source of Variation	Sum of Squares	Df	Mean of Sum of Squares	F-ratio
Achievement in Chemistry	Levels of learning strategies (A)	12.960	1	12.960	1.042**
	Gender(B)	12.960	1	12.960	1.042**
	A × B	7.840	1	7.840	0.630
	Error Term	1194.240	96	12.440	

** Not Significant at 0.01 level

FINDINGS AND CONCLUSIONS

1. There is significant difference in the mean gain scores of achievement in Chemistry of group taught through Web Based Instruction and Traditional Teaching. Mean gain scores of experimental group taught with web based teaching is higher than traditional teaching.
2. There is no significant difference in the mean gain scores of achievement in Chemistry of boys and girls taught through Web Based Teaching
3. There is no significant difference in the mean gain scores of achievement in Chemistry group taught through Web Based Teaching with different learning strategies.

Bibliography

- Angulo, A.J., and Bruce, M. (1999). *Student perceptions of supplemental web-based instruction. Innovative Higher Education*, 24,105-123
- Bennett, E, Mimms, N, & Mckenzie, B. (2002) Assessing distributed learning : Student perceptions and future directions. *Society for information Technology and Teacher Education, International Conference Papers*, 2002 (1), 2379-2382



Chesapeake, VA:AACE (Association for the Advancement of Computing in Education)

Dewald, N.H. (1999b). Web-based library instruction : What is good pedagogy ? (Using the World Wide Web for education) *Information Technology and Libraries*, 18(1), 26-31

Ferguson, R.F. (1990). *Racial patterns on how school and teacher quality affect achievement and earnings*. Dallas: Meadows Foundation.

Hooper, K.B. (2001). Is the Internet a classroom? *Tech Trends*, 45(5), 35-43

Johnson, D., Johnson, R (1990). *Cooperative learning and achievement*. In S. Sharon (Ed.) *Cooperative learning theory and research* (pp. 22-37). New York: Praeger

Lebec, M.T. (2003) *An analysis of learning in an online Biology course for teachers and teacher conditions: A mixed methods approach (abstract)*. *Dissertation Abstracts, International*, 64(05), 1607 A, 181

Liao, Y.K.C. (1999) Effects of hypermedia on student achievement. *A meta analysis journal of educational multimedia and hypermedia* 8, 255-277

Maki, R.H. Maki, W.S., Patterson, M., and Whittaker, P.D.(2000). Evaluation of a web based introductory psychology course 1, Learning and Satisfaction in one line versus lecture course behavior. *Research Methods, instruments and computer*, 32, 230-239

Moore, M.G., & Kearsley, G (1996) Distance education. A system view Belmont CA: Wadsworth. In Bayram, S., Deniz. L. and Erdogan, Y.(2008). The role of personality traits in web based education. *The Turkish online journal of educational technology-TOJET*7(2). Retrieved on October 23,2011, from <http://www.tojet.net/articles/v7i2/725.pdf>



- Purpura, J., 1999. Learner characteristics. In R. L. Oxford (Ed.), *Language Learning Strategies in the Context of Autonomy, Synthesis of Findings from the International Invitational Conference on Learning Strategy Research* 61-63, Teachers College, Columbia University, New York, NY.
- Ryan, M, Carlton, K.H., and Ali, N.S. (1999). Evaluation traditional classroom teaching method verses course delivery via the World Wide Web, *Journal of Nursing Education*, 38, 272-277
- Scarcella, R. & Oxford, R., 1992: *The Tapestry of Language Learning: The Individual in the Communicative Classroom*. Boston: Heinle & Heinle.
- Smith, L., M. & Hudgins, B., B. (1964). *Educational psychology: an application of social and behavioral theory*, New York: Alfred A. Knopf.
- Summary, R and Summary, L. (1998). The effectiveness of the world wide web as an instructional tool. *Paper presented at the 3rd Annual Mid-South Instructional Technology Conference*. Murfreesboro, Tennessee.
- Sangur, S. & Tekkaya, C (2006) Effects of problem based learning and traditional instruction on self regulated learning. *The Journal of educational research*, 98(5). 307-317
- Thiele, J.E., Allen, C., & Stucky, M.(1999). Effects of web-based instruction on learning behavior of undergraduate and graduate students (Abstract). *Nursing and Health care Perspectives*, 20 (4), 199-203
- Wideman, H., & Owston, R.D. (1999). Internet-based courses at Atkinson College: An initial assessment.99-1, Retrieved April 13, 2011, from http://www.edu.yorku.ca/csce/tech_99-1.html
- Yukselturk, E. & Bulut, S. (2007) Predictors for student success in an online course. *Educational technology and society* 10(2), 71-83.