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 to 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

<table>
<thead>
<tr>
<th>Phase</th>
<th>Group A Web based instruction</th>
<th>Group B conventional instruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase I</td>
<td>Matching and pretesting on achievement in chemistry</td>
<td>Matching and pretesting on achievement in chemistry</td>
</tr>
<tr>
<td>Phase II</td>
<td>Web based Teaching</td>
<td>Traditional Teaching</td>
</tr>
<tr>
<td>Phase III</td>
<td>Post test on achievement in chemistry and learning strategies towards web based course scale was administered</td>
<td>Post test on achievement in chemistry</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>df</th>
<th>t-value</th>
<th>Significance level</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXPERIMENTAL</td>
<td>100</td>
<td>9.60</td>
<td>3.522</td>
<td></td>
<td>14.077**</td>
<td>Significant at 0.01 level of confidence</td>
</tr>
<tr>
<td>CONTROL</td>
<td>100</td>
<td>3.65</td>
<td>2.337</td>
<td>198</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** 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**

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>df</th>
<th>t-value</th>
<th>Significance level</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOYS</td>
<td>50</td>
<td>9.96</td>
<td>3.446</td>
<td>198</td>
<td>1.022</td>
<td>Not significant</td>
</tr>
<tr>
<td>GIRLS</td>
<td>50</td>
<td>9.24</td>
<td>3.595</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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](image)

**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**

<table>
<thead>
<tr>
<th>Variables</th>
<th>EXPERIMENTAL GROUP</th>
<th>‘t’ ratio</th>
<th>Level of significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BOYS</td>
<td>GIRLS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N       Mean   SD</td>
<td>N       Mean   SD</td>
<td></td>
</tr>
<tr>
<td>1.Rehearsal</td>
<td>50       16.34  6.66</td>
<td>50       16.64  6.874</td>
<td>0.222</td>
</tr>
<tr>
<td>2.Elaboration</td>
<td>50       24.22  9.47</td>
<td>50       24.74  10.17</td>
<td>0.265</td>
</tr>
<tr>
<td>3.Organisation</td>
<td>50      16.26  7.09</td>
<td>50       16.54  7.51</td>
<td>0.192</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean of Sum of Squares</th>
<th>F-ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achievement in Chemistry</td>
<td>Levels of learning strategies (A)</td>
<td>12.960</td>
<td>1</td>
<td>12.960</td>
<td>1.042**</td>
</tr>
<tr>
<td></td>
<td>Gender (B)</td>
<td>12.960</td>
<td>1</td>
<td>12.960</td>
<td>1.042**</td>
</tr>
<tr>
<td></td>
<td>A × B</td>
<td>7.840</td>
<td>1</td>
<td>7.840</td>
<td>0.630</td>
</tr>
<tr>
<td></td>
<td>Error Term</td>
<td>1194.240</td>
<td>96</td>
<td>12.440</td>
<td></td>
</tr>
</tbody>
</table>

** 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**


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


