

Undergraduate Chemistry Students' awareness towards Web Based Instruction (WBI) in Chemistry

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Abstract- Web-Based Instruction (WBI) brings a number of benefits to individuals requiring a combination of specific learning patterns and program structure. Using Web-based learning to enhance student's marketing education is inevitable nowadays. Technological development provides many opportunities for ethics education to be interesting, stimulating and effective. It is vital that academics make the time and commitment to prepare meaningful course material and accounting departments need to support such initiatives through appropriate resources. Online learning pedagogy may be superior in its overall effect on student performance. Student interest, in online, web-based courses, may also be improved by providing direct video training modules featuring students who have taken online, web-based courses. Web-based instruction is in high demand, from both corporations using it for employee training and educational institutions interested in meeting student needs. There are many different methods utilized to deliver web-based instruction, there are also many different theories and purposes for designing the methods. As a result of the advantages and easy learning process of WBI through technology designed programmes. In web based instruction, students' interests and needs vary greatly when compared with the traditional learning approaches. This paper attempts to find out the undergraduate chemistry students' awareness towards web based instruction (wbi) in chemistry. Survey method was adopted in this study. The sample consists of 74 students; of which 34 were from government college and 40 were from Private college. A tool on questionnaire was used to collect data. The findings of the study served to generate recommendation to help undergraduate students in ariyalur district to optimise WBI method practices and enhance the educational quality and outcomes. Overall this study affirms that WBI has the potential to offer excellent learning and learning ability increases for the physical, organic and inorganic chemistry among undergraduate students.

Index Terms- Awareness, web- based instruction, chemistry, underdraduate students.

I. INTRODUCTION

The World Wide Web has become a widely available platform for educational application. Web based applications can provide an interactive learning environment where students build up their own knowledge. However, web is often limited in guidance, navigation support and application of instructional strategies (Fethi Ahmet Inan & et al.,2004).Nowadays many educational institutions have embraced online education to cater for flexible and student-centered learning. Through online

education, students have an opportunity to gain an education at their own convenience, in terms of time and place (Crystal Chun Yun Lau, 2008).Technology has provided opportunities for online assessment to be more learner-centred to promote self-directed learning, and to increase learner autonomy (Liang Xin & et al., 2004). Initiative is to sustain the evolution from traditional teaching to active learning and to better integrate the increasing number of educational resources available online (Denis Gillet & et al., 2005). The development of Web-based instructional programs, with the final goal being to create programs that can be tailored to the preferences associated with each cognitive style (Sherry Y. Chen & et al., 2004). WBI offers students opportunities for interaction leading to engagement and active learning experiences. These strategies support and improve performance. The access to, availability of, and interaction in WBI encourages students to be more interested in learning (Mohammed Saleh Albalawi, 2007). Improvement among students learning online exceeded that of students learning face to face (John M. Wiecha, 2006). Student-centered online learning nor restructured into modules to create flexibility (Elmarie Engelbrecht, 2005).Web-based instruction are addressed, by identifying teaching and learning strategies that support differential treatment of learners in terms of content and process (Jonathan Foster & et al., 2003). The web-based learning have an approach in helping the learner not just get the right answer but understand the path to that answer through self discovery and the taking advantage of the web's resources (Valentina Terzieva, & et al., 2004). Online interaction can be used to enhance learning, especially for students who tend to be reserved in the classroom setting. In developing online courses, we should realize that some courses may be more challenging to students who persist in the online environment (Anna Ya Ni, 2003). The purpose of this study therefore was to investigate the undergraduate chemistry students' awareness towards web based instruction (wbi) in chemistry in order to proffer useful suggestions.

Rationale of the study

According to Norman Mathew & et al., (2000) WBI can be used to meet the needs of a more diverse student group. Typical classes consist of students with varying abilities and previous knowledge, and WBI can help a teacher address these differences. WBI also allows students to work on this own pace that is more comfortable - some students work faster than their peers while others may wish to take longer. In addition, the use of WBI provides the opportunity for multiple grade levels to be accommodated in the same classroom at the same time.

Web-based Instruction is in its infancy. There is much research to be done, both in terms of our knowledge of learning and in Web-based Instruction. Using Web-Based instruction

(WBI) is all of these things, but it is also pedagogically sound because it allows teachers to spend more time working with students in small groups and individually. WBI can begin to offer a variety of paths through the curriculum and offers students a self-paced learning environment, thus providing students with a sense of control over their learning. In addition, Web-Based Instruction facilitates multiple levels of instruction in one room with a single teacher. If implemented on the World Wide Web, students can have access to instructional materials at home. Because the instructional materials are stored and distributed electronically, Web-Based Instruction is also environmentally friendly, and there are not the management issues associated with paper-based instruction such as duplicating, revising, filing, and picking up after students. Students who miss school are also able to go to a Web site and find instructional materials they missed during their absence.

The widespread growing ubiquity of media technology has heightened the remarkable changes in higher education over a period of time. Successful technology-mediated teaching-learning has already created new trends and impact on students' learning motivation and on emerging new models of pedagogy. Technology in education has accelerated and promoted students' 21st century literacy skills related to workplace needs (Hussain Ahmed Liton, 2015).

Objectives of the study

The following are the objectives of this study

1. To assess the level of undergraduate chemistry students' awareness towards WBI in chemistry.

2. To find out the difference, if any in the awareness on WBI among the tertiary level students with respect to the factors like gender and locality.
3. To find out whether there exists any significant difference between use of WBI method among undergraduate students with respect to their
 - (i) access the computer and
 - (ii) e-mail usage Research Questions

Research Questions

- (i) Is there any relationship between the locality and the awareness of WBI among undergraduate students?
- (ii) Is gender plays any role in the awareness of WBI?
- (iii) Do the students who use e-mails for their communication performed better in WBI?
- (iv) Do computer accessibility have any impact on WBI?

II. METHODS AND MATERIALS

Survey method was adopted in this study in order to find out the awareness of WBI in chemistry. The sample of the study were 74 final year chemistry under graduate students in Ariyalur District, in the Academic Year 2013-2014. In this sample, 34 Chemistry students were from government college, and 40 Chemistry students were from a private college. Questionnaire was developed by the investigator with 20 questions to assess the awareness of WBI.

S.No	ITEMS
1.	Do you use Internet daily?
2.	Do you think web based instruction is effective for learning physical chemistry?
3.	Do you think web based instruction is effective for learning organic chemistry?
4.	Do you think web based instruction is effective for learning inorganic subject?
5.	Do you think web based instruction is effective for learning analytical chemistry?
6.	Do you feel comfortable while browsing in the web?
7.	Are you interacted to learn your subject through the web?
8.	Do you think web based tool enhances your computer skills?
9.	Do you believe web based instruction useful?
10.	Does your college have infrastructure to use web based instruction?
11.	Do your professors to teach through web based in their classroom practice?
12.	Does web based instruction help to improve your learning skills?
13.	Do you like to learn through web?
14.	Are you satisfied with the information provided in the web?
15.	Do you navigate easily through the websites related to chemistry?
16.	Do you think you can get more knowledge through web?
17.	Does web based instruction enhance students motivation in learning chemistry?
18.	Do you think web based instruction provide instructional resource throughout the world?
19.	Do you learn all the contents from the web?
20.	Are you choose different contents based on their web?

Research question.1

Is there any relationship between the locality and the awareness of WBI among undergraduate students?

Table.1 Undergraduate chemistry students' awareness of WBI by urban and rural area of male and female students

Urban(34)						Rural(40)					
Male(10)			Female(24)			Male(11)			Female(29)		
Yes	To Some Extent	No	Yes	To Some Extent	No	Yes	To Some Extent	No	Yes	To Some Extent	No
52	40	8	54	40	6	64	30	6	54	32	14

Table no.1 shows that as many as 52% male students and 54% of female students reported yes, 40% of male and 40% of female students to some extent, 8% of male and 6% of female students expressed no in urban area. But 55% of male and 52% of female students said yes in rural area, 36% of male 38% of female students to some extent, 9% of male and 10% of female students expressed no in rural area.

Research question.2

Is gender plays any role in the awareness of WBI?

Table.2 Awareness of WBI by male and female undergraduate chemistry students

Sample	% of use of WBI by gender					
	Male(21)			Female(53)		
	Yes	To Some Extent	No	Yes	To Some Extent	No
74	58	34	8	52	36	12

Table no.2 shows that as many as 58% of male and 52% of female students said yes, 34% of male and 36% of female students to some extent towards the access of computer. While 8% of male and 12% of female students revealed that they did not have awareness on WBI.

Research question.3

Do the students who use e-mails for their communication performed better in WBI?

Table.3 Use of e-mails by undergraduate chemistry students

Sample	Use of e-mails in %			
	Male(21)		Female(53)	
	Yes	No	Yes	No
74	100	-	98	2

It can be seen from the table.3 that as many as 100% of male and 98% of female students responded that they use e-mails for their communication .While 2% of female students revealed that they did not use e-mails for communication.

Research question.4

Do computer accessibility have any impact on WBI?

Table.4 Computer access by undergraduate chemistry students

Sample	Computer accessibility in %			
	Male (21)		Female (53)	
	Home	College	Home	College
74	90	10	85	15

Table no.4 shows that 90% of male and 85% of female students have access to the computer at home. While 10% of male and 15% of female students revealed that they access the computer in college.

III. MAJOR FINDINGS OF THE STUDY

The following are the major findings of the study,

- Male tertiary level students outperformed the female students in terms of their awareness in WBI in chemistry.
- Female students have less computer access than the male students.
- It is also observed that male tertiary level students performed better than the female students in terms of using e-mails.
- Rural area male and female students were better than urban area male and female students in terms of their awareness of WBI in chemistry.

IV. DISCUSSION

Vehbi Turel (2013), Margarete Imhof & et al., (2007) studies showed the participants have high computer self-efficacy perceptions, their level in certain programs is good, and they often use computers for a wide range of purposes. The present investigation also access of computer in chemistry learners is high.

Margarete Imhof & et al., (2007) revealed that the male students were better than the female students in the use of e-mails. Present study also go in line with these result.

V. RECOMMENDATIONS FOR POLICY MAKING

The main focus of the study was to evaluate the level of undergraduate chemistry students' awareness towards WBI in chemistry.

- Workshops should be organized on WBI to create awareness among students..
- Tertiary level teachers should undergo training programme, to update their knowledge on WBI.
- Students also be trained to use the WBI for effective learning.

VI. CONCLUSION

Due to advancement of technology, usage of websites is inseparable an unavoidable in everyone's life especially for college students. So topic taken create awareness about WBI among UG students, which are helpful for mastery learning and research purpose.

A central issue in chemistry education is the relation between the macroscopic or real world and the molecular or nanoscopic world. New students could better understand chemistry and apply their chemistry understanding to solve problems if they were able to make deeper connections between these worlds. Animations can be used in chemical education so that students get a better knowledge of molecular processes by making better relations between the macroscopic and the nanoscopic world (Han Vermaat & et al., 2003).

Hence this study created awareness on WBI which may helpful for them to update the knowledge, skills and learning ability of undergraduate chemistry students.

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