



# International Journal of Sciences: Basic and Applied Research (IJSBAR)

ISSN 2307-4531  
(Print & Online)

<http://gssrr.org/index.php?journal=JournalOfBasicAndApplied>



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## Web Based Instruction in Education

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### Abstract

This study examined undergraduate students' attitudes (n=79) toward the Web Technology. Attention was given to the relationship between attitudes (anxiety, confidence, satisfaction, and usefulness) and age, gender, and college level. Age was not found to be significantly related to attitude toward Web Technology on any of the four scales. The findings revealed that female students had more positive attitudes toward the Web than male students. The results showed that there was small difference between students' attitudes and their collegiate classification. Senior students expressed more confidence toward the Web Technology than freshman, sophomore, and junior students. Students with wider experience with Web Technology significantly expressed more Positive attitudes toward the use of Web than those who were not receiving any type of experience from their peers.

**Keywords:** Web Technology.

### 1. Introduction

Studies context of discipline; there is a lack of study of Industrial Technology students' attitudes toward the Web Technology. Moreover, research was conducted with 224 students from two large universities and investigated the learning that occurred with students using the virtual labs either in a lab setting or as a supplement to hands-on labs versus a control group of students using the traditional hands-on labs only. Findings from both university settings showed the virtual labs to be as effective as the traditional hands-on physics labs [12] indicate that some students engage in and accept the use of Online Web Assisted Learning (OWAL) [5,7,13] to supplement their learning, if not at school, then at home.

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The data indicate that OWAL activities would aid in the learning process of students because students have positive attitudes towards the use of OWAL. One of the requirements for the success in any occupation is having a concrete track of research about its constituents [1]. According to [8,14] although educators have conducted various researches of student groups', and administrators' view within the Attitude is an internal state, which affects an individual's choice of action toward some object, person, or event [8,12] Anxiety, confidence, satisfaction, and usefulness are some affective variables that are studied and measured by some researchers when attempting to determine the level of attitude of an individual toward a subject [4,15]. If technology is to make an impact on educational growth, it is important to obtain a better understanding of not only how students put this educational improvement to work, but learning of technology must be made a positive experience for the learner as well [2,6,15]. To properly prepare future workers with the training and skills they need to be successful, education must focus on building a stronger and more competent work force by increasing student understanding of technology through technology-related courses [5,7]. Educators must prepare students with the skills to enter the work force for highly competitive technical positions that include an understanding of students' attitudes toward use of technology [10]. Educators should be knowledgeable of the factors that could cause students to exhibit behavioral characteristics (anxiety, confidence, satisfaction, usefulness) that affect learning [10]. Because Web Technology is on the leading edge of the almost every profession in today's job market; it is essential that the attitudes of students' toward the Web Technology be examined.

## **2. Study Design**

The purpose of this study was to examine higher education students' attitudes and perception toward web Technology. Each participant in this study was administered an instrument developed by the Industrial Technology faculty. This study examined the four types of attitudes (anxiety, confidence, satisfaction, and usefulness) toward web based technology as was defined by(4) and [10]. In this study attention was given to the following factors: age, gender, college and level, Age is often an indicator of general predisposition toward an area of study. Therefore, age was investigated because of the different development and socialization characteristics of various age groups that may play a vital role in receptivity toward a topic, age has been found to be significant factor in previous studies [9]. College level was given attention because, little research was found regarding possible college level classification effect on attitudes toward web based technology. A study done by [3] concluded that senior students had higher confidence in using web based technology, better sense of usefulness of the technology, than freshman, sophomore and junior students.

## **3. Methodology**

### **A. Instrumentation**

2016, selected faculty at a southeastern university decided to administer a survey to 79 undergraduate students. In order to obtain relevant information about the Web Technology, a survey was administered to undergraduates. A 20 four-point Likert type items (Strongly Agree, Slightly Agree, Slightly Disagree, and Strongly Disagree) with the following dimensions: Web Anxiety, Web Confidence, Web Satisfaction, and Web

Usefulness. Each subscale consists of five items and presents positively and negatively worded statements in such as “I like web technology courses”, or “I have no idea when using web technology”. The response for positively worded items were recorded so that strongly agree =4, slightly agree =3, slightly disagree = 2, strongly disagree = 1. For negative statements the scoring was reversed [11]. This scoring strategy resulted in higher scores on the web anxiety subscale corresponding to lower anxiety toward the web technology. Higher score on the web technology confidence, web technology satisfaction and web technology usefulness subscales corresponding to a higher degree of confidence, satisfaction, and perception of use respectively. The coefficient alpha reliability for the web technology anxiety, web technology, web technology, web technology and total scores were .69, .76, .66, .64, and .86 respectively.

### **B. Subject And Procedure**

This was descriptive study. This study investigated the relationship between the selected variables (age, gender, and college level,). The population for this study consisted of 79, (63) male, and 16 (female) at a southeastern university in USA.

### **C. Research Hypotheses**

1. There are statistically significant differences between students' attitudes toward Web Technology as measured by the Web Technology Attitude Scale for students of different ages.
2. There are statistically significant differences between students' attitudes toward Web Technology as measured by the Web Technology Attitude Scale for male and female students.
3. There are statistically significant differences between students' attitudes toward Web Technology as measured by the Web Technology Attitude Scale for students of different classification (freshman, sophomore, junior, and senior).
4. There are statistically significant differences between students' attitudes toward Web Technology as measured by the Web Technology Attitude Scale for students having internship and students having no internship.

### **D. Data Analysis**

Research hypotheses 1 through 4 were answered by conducting 4 separate multivariate analyses of variances (MANOVA). The dependent variables were anxiety, confidence, satisfaction, and usefulness. The independent variables were age, gender, college level, and internship. If for each independent variable, the overall MANOVA was significant, a one-way univariate analysis of variance was used. A post hoc comparison was conducted for the independent variable collegiate classification because it had more than two levels. The research questions were answered through three parts: (a) report of findings on multivariate analysis of variance; (b) report of findings on univariate analysis of variance; (c) report of findings on Tukey's multiple comparison technique for the variable collegiate classification. The level of significance chosen for this research was .05.

### **E. AGE**

There was no significant difference obtained on the overall MANOVA. Wilks' Criterion = .979, (F (4, 74) = .387, and p = .817). Results of the univariate analysis of variance for age indicated no significant differences on anxiety (F (1, 77) = .157; p = .693); confidence (F (1, 77) = .635; p = .428); satisfaction (F (1, 77) = .161; p = .690); and usefulness (F (1, 77) = .057; p = .813). However, older students reported higher positive attitudes toward the Web Technology (Table1)

**Table 1:** Means and Standard Deviations of Age

Age	Web Technology	N	Mean	SD
19 or less 20-25	Anxiety	7 72	14.86 15.28	2.71 2.56
19 or less 20-25	Confidence	7 72	16.70 17.57	2.76 2.76
19 or less 20-25	Satisfaction	7 72	16.14 16.52	3.53 2.30
19 or less 20-25	Usefulness	7 72	16.42 16.65	4.03 2.18

**F. Gender**

There was no significant difference on the overall MANOVA. Wilks' Criterion = .926, (F (4, 74) = 1.481, and p = .217). Results of the univariate analysis of variance for gender indicated no significant differences on all Web Technology scales. The values of F were: (F (1, 77) = 2.352; p = .129) for anxiety; (F (1, 77) = 1.641; p = .204) for confidence; (F (1, 77) = .128; p = .721) for satisfaction; and (F (1, 77) = 3.186; p = .078) for usefulness. However, female students had slightly higher positive attitudes toward Web Technology than male students (Table2).

**Table 2:** Means and Standard Deviations of gender

Gender	Web Technology	N	Mean	SD
Male Female	Anxiety	63 16	14.66 15.81	2.70 2.50
Male Female	Confidence	63 16	16.58 17.56	2.76 2.52
Male Female	Satisfaction	63 16	16.44 16.68	2.58 1.62
Male Female	Usefulness	63 16	16.39 17.56	2.39 2.03

**G. College Level**

There was no significant difference obtained on the overall MANOVA. Wilks' Criterion = .981, (F (60, 144) = .360, and p = .523). Results of univariate analysis of variance for anxiety (F (3, 75) = .218; p = .884); confidence (F (3, 75) = .382; p = .766), satisfaction (F (3, 75) = .569; p = .637); and usefulness (F (3, 75) = .222; p = .881) were not significant factors based on collegiate classification. Tukey's multiple comparison post hoc revealed no significant difference between collegiate classification and attitude indicators (anxiety, confidence, satisfaction, and usefulness). However, senior students scored slightly higher on Web Technology Confidence scale than freshman, sophomore and junior students (Table 3).

**Table 3:** Means and Standard Deviations of Collegiate Classification

<b>Collegiate Classification</b>	<b>Web Technology</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>
Freshman	Anxiety	5	15.40	2.70
Sophomore		22	15.16	2.51
Junior		35	14.85	2.47
Senior		17	14.52	3.44
Freshman	Confidence	5	15.32	2.82
Sophomore		22	15.85	2.53
Junior		35	16.20	2.77
Senior		17	17.93	2.99
Freshman	Satisfaction	5	15.20	1.30
Sophomore		22	16.77	2.22
Junior		35	16.48	2.47
Senior		17	16.52	2.78
Freshman	Usefulness	5	16.40	2.70
Sophomore		22	16.59	2.75
Junior		35	16.65	2.23
Senior		17	16.41	2.15

**4. Discussion**

Based on the results of this study, age did not significantly influence students' attitudes toward the Web Technology Results of this study showed that female students had lower anxiety, higher confidence, favored more, and found Web Technology program more useful than male students. Results revealed that students' collegiate classification had little influence on students' attitudes toward the Web Technology. Senior students showed higher degree of confidence toward the Web Technology than freshman, sophomore and junior students. These findings reinforced previous research that investigated changes in attitudes of students and perceptions before and after using Web Technology that reported clearly believe an experience has very high individual benefits and is value enhancing to their attitudes toward a subject. In terms of gender, a significant difference in the use of Web Technology was observed. According to results, female students view Web Technology more beneficial generally than male students. When average points of the all attitude scales are analyzed, it can be identified the female students are significantly more positive toward Web Technology than male students. Also, senior students expressed more confidence toward the Web Technology than freshman, sophomore, and junior students.

## **5. Suggestion For Further Research**

Similar to any other study, this study is not without its limitations: the study can be strengthened by increasing the sample size and including participant in other universities from different geographic areas. With the increased sample size, a more detailed analysis among the college students can be performed. It might be interesting to include students' relevant employment to their educational training as an independent variable to examine the corresponding effect on students' attitudes toward Web Technology.

## **References**

- [1]. BainConnie D. The Influence of Gender on Attitudes, Perceptions and Uses of Technology. Retrieved September 20, 2018 from <https://files.eric.ed.gov/fulltext/EJ768873.pdf>
- [2]. Bransford, J.D., Brown, A. L., & Cocking, R. R. (2000). How people learn: Brain, mind, experience, and school. Washington, DC: National Academy Press.
- [3]. Craker, D. E. (2006). Attitudes toward science of students enrolled in introductory Level science courses at UW-La Crosse. Retrieved January 15, 2007, from <http://www.uwlax.edu/URC/JUR-online/PDF/2006/craker.pdf>
- [4]. Croft, W.E. (2000), Attitude of electronics technology majors at Indiana Stat University toward mathematics. *Journal of Industrial Technology*, 16, 2-8.
- [5]. Delone, W. H., & Bates, G. E. (1991). Integration of computers and information Systems into the business school curriculum: a case study. *Journal of Education for Business*, 67, 111-115.
- [6]. Grogan, V. C., (1991). Computer attitudes of selected students and educators in Relationship to computer access and experience and gender. Unpublished doctoral dissertation, the University of Nebraska.
- [7]. Hayes, J. & Bybee, D. L. (1995). Defining the greatest need for Educational Technology. *Learning and Leading with Technology*, 23, 48-53.
- [8]. Gundlach, Richards, Nelson, & Bristol, (2015) A Comparison of Student Attitudes, Statistical Reasoning, Performance, and Perceptions for Web-Augmented Traditional, Fully Online, and Flipped Sections of a Statistical Literacy Class
- [9]. Njagi, K., Smith, R., & Isbell, C. (2003). Assessing students' attitudes toward web-based learning resources. Retrieved September 15, 2018, <http://www.unb.ca/naweb/proceedings/2003/posterNjagiIsbell.html>
- [10]. Levy, F., & Murnane, R. J. (2004). *The New Division of Labor*. Princeton University Press, Princeton, 2004.
- [11]. Loyd, B. H., & Loyd, D. E. (1985). The reliability and validity assessment of an instrument for the assessment of computer attitudes. *Educational and Psychological Measurements*, 45, 903-908.
- [12]. Marjorie D, Humbert R., & teal, (2014) Are Virtual Labs as Effective as Hands-on Labs for Undergraduate Physics? A Comparative Study at Two Major Universities.
- [13]. Paris P. (2004). Attitude towards the Uses of Internet. Retrieved September 18, 2018 from <https://www.researchgate.net>
- [14]. Taghavi, S.E., (2001). Evaluation of college students' attitudes toward computers before and after

taking a computer literacy course. Unpublished doctoral dissertation, Mississippi State University.

- [15]. Zieglar, I. (2014), "Reconceptualizing statistical literacy: Developing an assessment for the modern introductory statistics course." Unpublished doctoral dissertation. University of Minnesota.

### **Acknowledgement**

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