INTERNET-SAVVINESS OF IRAQI UNDERGRADUATE STUDENTS

Roger W. Geyer, PhD, MCSE
Associate Professor of C.S. and Business Administration
The American University of Iraq, Sulaimani (AUIS)
Sulaimani – Kirkuk Main Road, Raparin
Sulaimani Governorate
Kurdistan Region, Iraq
Email: roger.geyer@auis.edu.iq
Skype: rgeyer4917

Abstract. This exploratory study investigated the construct of *Internet-Savviness (IS)* exhibited by undergraduate Iraqi students at a four-year university in Iraq. *Internet-Savviness* is a new construct based on six dimensions: 1) social collaboration, 2) Internet fluency, 3) creative expression, 4) Internet self-efficacy, 5) information gathering, and 6) computer mediated communication. The *IS* scale, developed in 2007, was used to collect data from two hundred ninety six undergraduate students during the fall and spring semesters, 2008 through 2012. The instrument was re-evaluated and modified slightly to accommodate the new population of Iraqi undergraduate students. A subset of the results showed that although there were significant differences between males and females regarding Internet self-efficacy and self-report assessments of their own expertise in using the Internet, females' overall scores on the *Internet-Savviness* scale was comparable to males'.

Keywords: Internet-Savviness, educational technology, instructional technology, Internet, internet self efficacy, computer mediated communication, Internet fluency, Iraq, Kurds.

1 INTRODUCTION

Using the Internet as a source for learning is rapidly transforming how we work and live. Globally, young people are actively engaged in this new activity. Iraqi youth, despite the challenges of war and social strife, are also embracing these technologies, particularly through mobile platforms. A better understanding of these students' attitudes, beliefs, and behaviors will help guide education ministries in making the necessary pedagogical changes to meet 21st century social, cultural, and economic change.

1.1 Internet-Savviness

Internet-Savviness, developed in 2007 by the author, is a new construct made up of six dimensions: 1) computer mediated communication, 2) creative expression, 3) information gathering, 4) Internet fluency, 5) Internet-self efficacy, and 6) social collaboration (Geyer, 2009). These dimensions underpin successful academic and career paths of individuals using technology today. This study investigated the construct of *Internet-Savviness* exhibited by undergraduate Iraqi students at a four-year university in Iraq and examined the relationships of gender and Internet use.

Working and playing in a distributed, connected environment have been embraced by individuals and multinational corporations alike, across political, social and economic cultures (Friedman, 2005). Connecting to the Internet is the norm for Internet-savvy youth

(Lenhart and Madden, 2005). These technologically elite students arrive at school with certain attitudes, beliefs, and behaviors and frequently with considerable experience and knowledge about the Internet. Previous studies (Lenhart, Madden & Hitlin, 2005; Geyer, 2009) indicate that about one in three youth exhibit distinctly different attitudes and behaviors in how they use the Internet. These differences are described as *Internet-Savviness* by the author. The dimensions that make up *Internet-Savviness* considered in this study have emerged from a wide range of sources, including articles, studies, and reports, from both private and educational sectors. This approach was taken as a way to triangulate and show convergence on important new learning characteristics that address 21st century digital activities and learning needs. All of these constructs, however, are firmly grounded in the educational learning theories of social constructivism and distributed intelligence.

2 RESEARCH DESIGN AND METHODOLOGY

2.1 Overview

In 2007, the author created and validated an instrument to measure *Internet-Savviness* and explore its relationship to certain attitudes, beliefs and other variables of interest exhibited by young people who use the Internet. Survey methodology within a mixed-method research framework was used for the original study. Major goals for this study was to assess the efficacy of the *IS* instrument using a population of undergraduate, Iraqi youth attending a new, American style university in Iraq.
Beginning in 2008, the *Internet-Savviness* scale was given online during an introductory computer course normally taken by first year undergraduate students. The survey was administered in class during the first week of the semester. The purpose of this survey was explained to the students during class and at the beginning of the online survey. All students had the option of opting out of taking the survey.

Microsoft's Excel and IBM's SPSS Statistics, v. 20 were used to code and analyze the numeric data. Missing data analysis as well as issues of outliers, data normality and homogeneity were addressed. Since the IS scale was validated with a different age group of younger students in the United States, item analysis of inter-correlations across each construct's items was conducted. Weak items were identified and dismissed from the analysis. Reliability analysis applied Cronbach's alpha coefficient as the index to test for internal consistency of each measure.

Part I of the survey consisted of the *Internet-Savviness* scale and its sub-scales. Each measure in the scale consisted of five to seven Likert-type items for a total of 35 items overall scale. Item responses consisted of *strongly disagree*, *disagree*, *agree* and *strongly agree*. Affirmation bias was controlled by wording half of the items in a negative manner so that a strongly disagree\disagree response was needed to add positively to the composite score. An overall high score indicates high *Internet-Savviness*. A minimum score on the *Internet-savvy* scale was 35 with a maximum score of 150. The respondents were asked to rate themselves as an *Advanced*, *Intermediate*, or *Beginner* Internet users to establish a separate and independent benchmark for validation purposes and to gain better statistical insight into the construct of *Internet-Savviness.*

2.2 Limitations

The survey was completed by Iraqi undergraduate students from a non-experimental, convenience group. Consequently, the degree of *Internet-Savviness* may emerge differently in this group compared to other groups including the original, validating group of American, gifted and talented, middle school students.

- Although first-year Iraqi students must have an equivalency to a TOEFEL 550 score, they still have difficulty with English phrasing, sentence structure and word meaning. This may affect the survey results in terms of error and incompleteness.
- Self-reports are required in survey methodology and many variables can affect results. Some of these variables include recall strategies, instructions, mood, time of day and response formats (Stone, Turkan, Bachrach, Jobe, Kurtzman, Cain, Eds., 2000, p. 26).

2.3 Procedures for Data Analysis

Descriptive statistics, primarily means, standard deviations and numbers of participants, were collected for the demographic data and all other variables of interest in the study. Data were examined for outliers, normality, and homogeneity. Visual inspection of the entire inter-item correlation was made for anomalous results, and inter-correlations within each construct were examined for weak correlation. Reliability analysis used Cronbach's alpha coefficient as the index to test for internal consistency of each measure and the overall Internet-savvy scale. *ANOVA* analytical techniques were used to test for significant differences between the variables of interest.

3 PRESENTATION OF RESULTS

3.1 Demographics - Age and Gender

A breakdown of respondents by age and gender is shown in the following table. Participants were allowed to skip any question they felt uncomfortable about answering. Consequently, numbers (*N*) of participants may vary depending on the variable and statistical analysis. Cases with incomplete answers were dropped from the analyses.

The average age for all participants was 20.88 years (*SD*=2.518, *N*=256). Females (*M*=19.85, *SD*=1.353, *N*=80) were younger than males (*M*=21.37, *SD*=2.796, *N*=176).

Females	Males	Grand Total
M=19.85	M=21.37	M=20.88
SD = 1.353	SD = 2.796	SD = 2.518
N=80	N = 176	N=256

Table 1: Age Distribution – Females and Males

3.2 Data Inspection

A total of 296 undergraduates were presented with the survey. After a careful examination of the data, 40 records were deleted from the sample frame. Reasons for this include students opting out of the exercise (logon with immediate logoff), significant incompleteness and duplicate cases from re-starts due to Internet disruption or computer error.

Although not excessive, there were missing values in evidence. Survey data may be missing for a number of reasons including human and computer error (Dillman, 2000). Further, in response to questions during the survey, respondents were advised that they could skip a question that made them uncomfortable. Cases with missing values were excluded from all analyses by default.

3.3 Item Analysis and Reliability

Since this scale was originally validated with a younger, American population consisting of gifted and talented students, item and internal consistency analyses were conducted. An item analysis is necessary to determine whether to retain or remove an item from a scale intended to measure a specific construct (Green, Salkind & Akey, 2000). Items may be removed or replaced based on their correlation and suitability with other items in their respective domains (Krathwohl, 1998). Thirty-eight items were initially developed for the instrument with the expectation that weaker and redundant items would be identified and dropped. Cronbach's Alpha Coefficient was applied to establish item reliability and consistency within each domain and for the overall Internet-savvy scale. Internal consistency of the revised 35-item scale, measured by Cronbach's Alpha was moderately high for the overall scale (α=.852) and for sub-scales (α range .592 - .689).

Measures		**All sessions, N=215**		
	items	*M*	*SD*	*α*
Information Gathering	6	18.60	2.42	.592
CMC	6	18.07	2.57	.610
Internet Self Efficacy	5	14.45	2.28	.650
Creative Expression	5	13.95	2.40	.646
Internet Fluency	7	18.28	3.23	.689
Social Collaboration	6	16.67	2.45	.559
Internet Savvy Scale	**35**	**104.65**	**10.14**	**.852**

Table 2: Internet Savviness – Cronbach's Alpha Coefficients

***Internet-Savviness* scores**

An analysis of *IS* scores across all student showed M = 100.14, SD = 10.212, N=249. Females scored slightly lower, M=98.96, SD = 10.549, N = 76 than Males, M= 100.76, SD = 9.975, N=172. No statistically significant difference existed between group means.

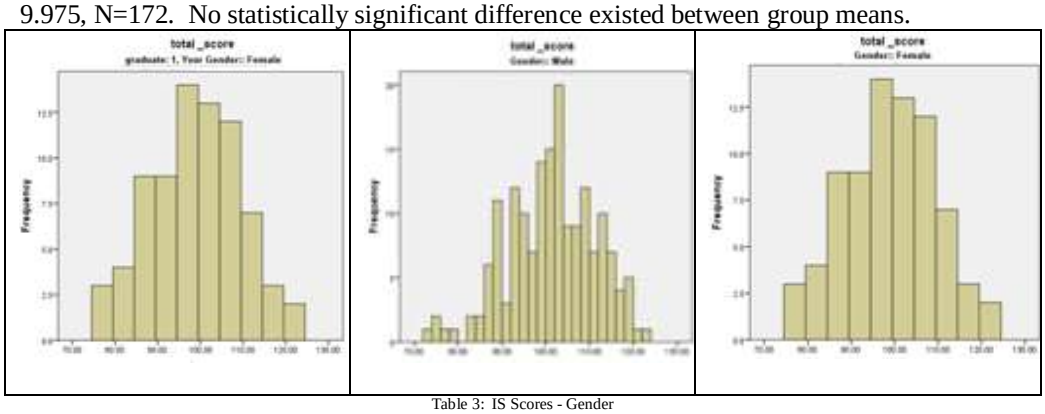


Table 3: IS Scores - Gender

How did the Iraqi students view themselves in terms of their use of the Internet? Students were asked to identify themselves as a 1) Beginner, 2) Intermediate, 3) Advanced Internet user. The results are as follows:

Compared to my peers, I am a (an):		
	Frequency	Percent
Beginning Internet User	45	18.0
Intermediate Internet User	149	59.6
Advanced Internet User	56	22.4
Total	**250**	**100**

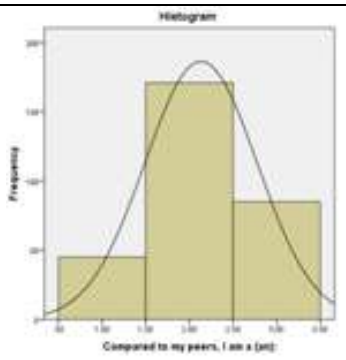
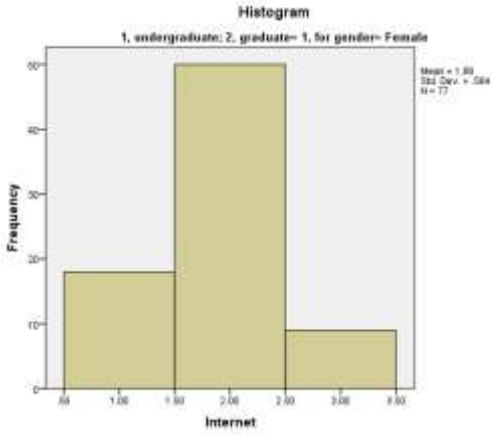


Table 4: Beginner to Advanced Internet Use

A breakdown by gender is shown below.

Compared to my peers, I am a (an):			
Your Gender:		**Frequency**	**Percent**
Female	**Beginning Internet User**	18	23.4
	Intermediate Internet User	50	64.9
	Advanced Internet User	9	11.7
	Total	**77**	**100.0**
Male	**Beginning Internet User**	26	15.1
	Intermediate Internet User	99	57.6
	Advanced Internet User	47	27.3
	Total	**172**	**100.0**

Table 5: Beginner to Advanced Internet Use - Gender



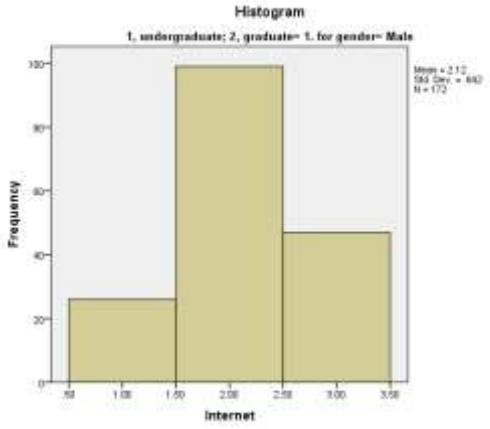


Table 6: Beginner to Advanced Internet Use - Histograms

4 DISCUSSION OF RESULTS

With minor modification to the original instrument, the *Internet-Savviness* scale properties appear to be suitable when used with undergraduate Iraqi students. Inter-item, within-dimension and overall internal consistency coefficients were moderately high and acceptable. Females have demonstrated an attitude of "I can, but I don't want to" (American Association of University Women, 2000) regarding activities related to technology which have traditionally been male dominated. Based on informal observations of female Iraqi students in and outside of the classroom, this attitude still seems to apply. However, there was no significant difference between males and females in their overall *Internet-Savviness* score even though females rated themselves significantly lower as advanced users as a percentage of their total group (11.7% for females vs. 27.3% for males). A closer examination of the dimension scores that make up *Internet-Savviness* revealed significant differences on Internet self-efficacy between males and females ($F=4.637$, $p = .032$) with no significant difference across the other dimensions. This seems to indicate that although female Iraqi students may not have the same level of confidence as males, their capabilities are basically equivalent. More research is needed to better understand the attitudes, beliefs and behaviors of Iraqi youth towards the Internet and the instruments used to measure these variables. A future study planned for fall, 2012, will examine the relationship between *Internet-Savviness* and academic performance as measured by grade point average (GPA).

REFERENCES

American Association of University Women. (2000). Tech-Savvy: Educating girls in the new computer age. Washington, DC: American Association of University Women Educational Foundation.

Dillman, D. (2000). *Mail and Internet surveys. The tailored design method.* New York: Wiley & Sons, Inc.

Friedman, T. (2005a). *The world is flat*, New York: Farrar, Straus, and Giroux.

Geyer, R. (2009). *Internet-Savvy Youth: What the kids have to tell us about using the Internet,* Berlin: VDM

Green, S., Salkind, N., & Akey, T. (2000). *Using SPSS for Windows: Analyzing and understanding data* (2nd ed.). Upper Saddle River: Prentice Hall.

Lenhart, A., & Madden, M., (2005). *Teen content creators and consumers*. Retrieved October 12, 2007, from the Pew Internet & American Life Project Web site: http://www.pewinternet.org/pdfs/PIP_Teens_Content_Creation.pdf

Lenhart, A., Madden, M., & Hitlin, P. (2005). *Teens and technology: Youth are leading the transition to a fully wired and mobile nation*. Retrieved October 12, 2007, from the Pew Internet and American Life Web site: http://www.pewinternet.org/pdfs/PIP_Teens_Tech_July2005web.pdf

Stone, A., Turkan, J., Bachrach, C., Jobe, J., Kurtzman, H., & Cain, V. (Eds.). (2000). *The science of self-report: Implications for research and practice.* Mahwah: NJ: Lawrence Erlbaum Associates.