



An examination of pre-service English language teachers' level of computer self-efficacy

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ABSTRACT

This study examines the level of computer self-efficacy among English language pre-service teachers at Umm Alqura University in Saudi Arabia. Data were collected through self-reported ratings on a 5-point Likert-type scale. "Computer Self Efficacy Scale and demographic information form were used as data collection tools. In the analysis of the data, descriptive statistics (means, standard deviations, and percentages), and independent t-test were used. The results of this study revealed that pre-service English teachers had a high level of computer self-efficacy with Mean score ($M=3.70$) and std. Deviation ($SD=0.35$). Also, the findings indicated that pre-service English teacher males' scores are significantly higher than that of the females. In order to increase the level of self-efficacy, training programs should be provided to English language pre-service teachers during their professional development.

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Introduction

Today, computer is pervasive in terms of information storage, productivity tools and telecommunications. In order to encourage the use technology tools in classrooms, it is important to understand what factors influence teacher and students. During the past decades, there is a little researches have been conducted on examining the role of self-efficacy on teachers level of computer use. It's common that teachers are expected to use computer applications in the processes of teaching and learning. Research studies have found that teachers are to integrate computer technology into their teaching (Alzaidiyeen, et. al 2011; Zhao & Frank 2003).

There are a number of reasons that why technologies should be integrated in schools: (1) Technology enables teachers to individualize instruction, which allows students to learn and develop at their own pace in a non-threatening environment; (2) Students need to be proficient at accessing, evaluating and communicating, and information; (3) Technology can increase the quantity and quality of students' thinking and writing through the use of word processors; (4) Technology can develop students' critical thinking and allowing them to organize, analyze, interpret, develop, and evaluate their own work; (5) Technology can encourage students' artistic expression; (6) Technology enables students to access resources outside the school; (7) Technology can bring new and exciting learning experiences to students; (8) Students need to feel comfortable using computer, since they will become an increasingly important part of students' world, and; (9) Technology creates opportunities for students to do meaningful work (Alzaidiyeen, 2011; Harry, 1987; Hasan, 2003). Murphy (1995) suggests five main learning outcomes that result from the use of computers in the processes of teaching and learning;

1. Social growth;
2. Problem solving;
3. Peer teaching;
4. Independent work, and;

5. Exploration.

Self-efficacy

With the emergence of the new information and communication technology (ICT) tools, the concept of self-efficacy has been widely used in the field of education. Recently there has been an increasing research effort in the area of self-efficacy and in particular computer self-efficacy (James & Mark, 2007). When examining technology acceptance from the perspective of the individual, research must focus on computer self-efficacy (Murphy et al, 1988). Harrison and Rainer (1992) point to three main causes effect the use of computer technology by learners, negative attitudes toward computers, anxiety toward computer use, and low computer self-efficacy.

Therefore, the information system researchers have recently devoted considerable attention to the concept of computer self-efficacy in order to understand computer user behavior and system use (Gholamreza et al, 2006), because, computer self-efficacy is an important motivational factor for using computers (Christian et al, 2008). Bandura (1977) proposed self-efficacy as a conceptual framework to explain and predict whether or not one will choose to engage in an activity, if engaged, how much effort will be expended, and how long one will persevere in the activity. In general, self-efficacy is defined as the personal judgments about one's capability to adopt certain behaviors' and actions in order to accomplish certain objectives and expected outcomes (e.g. Bandura, 1977; Pintrich & Schunk, 2002).

Martocchio and Dulebohn (1994) have demonstrated that individuals' with high computer/software efficacy beliefs performed better on declarative knowledge tests following computer training courses than did individuals with low efficacy beliefs. Thus, computer self- efficacy has a significant influence on individuals' expectations of the outcomes of using computers. James and Mark (2007) found that individual with higher self-efficacy believes they can successfully accomplish computing tasks in a variety of computing applications or environments.

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Thus, self-efficacy is an important determinant of an individual's decision to use computer technology.

Hill et.al (1987) conducted a study to investigate the relationship between computer self-efficacy and computer use. The total number of participants were 304 (147 males, 157 females) enrolled in an introductory psychology class, and they found that self-efficacy beliefs had an important effect on an individual's decision to learn about and use computers, irrespective of his or her beliefs about the value of doing so. For the domain of computer use, it has been shown repeatedly that higher levels of computer self-efficacy are correlated with higher levels of computer use, more efficient user strategies, more positive affect when using computers, and lower levels of computer anxiety (Shapka & Ferrari, 2003). Compeau and Higgins (1995) surveyed 1,020 Canadian managers and professionals on their self-efficacy beliefs. They found that individuals with high self-efficacy beliefs used computers more, enjoyed using them more, and experienced less computer anxiety.

In the other hand, Zhang and Espinoza (1998) stated that students' desirability for learning computing skills was predictable through their self-recognition of the usefulness of computers and their perceptions of advanced levels of computer technologies. Computer self-efficacy is based on the formed sense of self-efficacy and represents its fundamental elements applied in the fields of use and mastery of computers (Paraskeva et al, 2007). Researchers suggest that computer self-efficacy plays a significant role in an individual's decision to use computers and how comfortable users are in learning skills related to effective use (e.g. Marakas, Mun & Johnson, 1998; Ong & Wang, 2004).

Ying (2006) reports that the levels of computer self-efficacy are important in predicting computer use by an individual, and he found that individuals with high self-efficacy scores were found to be more likely to use a computer. Compeau and Higgins (1995) research showed self-efficacy as a mediator between environmental variables and outcome expectations as well as actual usage. Hence, a strong sense of computer self-efficacy of school teachers can affect the extent as well as the way technology can be used in everyday instructional practice, significantly changing both the teacher's and the student's roles.

Meanwhile, The Apple Classrooms of Tomorrow (2001) in their project has summarized the advantages of using technology in learning process as follows:

1. Test scores indicated that, despite time spent learning to use the technology, students were performing well and some were clearly performing better;
2. The students wrote more, more effectively, and with greater fluidity;
3. Some classes finished whole units of study far more quickly than in past years;
4. Access to technology actually encouraged them to collaborate more than in traditional classrooms;
5. Technology was becoming more interesting to students as they began using it for creating and communicating;
6. Students communicated effectively about complex processes;
7. Students became independent learners and self-starters, and;
8. Students worked well collaboratively.

Method

The aim of this study was to examine the perceptions of the pre-service English language teachers' level of computer self-efficacy. In this study, a survey was employed to collect data.

The study group consisted of 100 pre-service English language teachers' at a university, in Saudi Arabia.

Instrument

As mentioned before, data collection was done through a survey questionnaire developed by the researcher and the "Computer Self Efficacy" scale developed by Durndell, Haag, and Laithwaite (2000) research with slight modifications. Respondents were required to complete two parts of the survey. The first section of the survey required respondents to provide basic demographic information such as gender, and age. The second part of the instrument is composed of 30 items. The Likert scale was modified from a 5-point scale format (1 = strongly disagree to 5 = strongly agree) to five points (0 = not available, 1 = strongly disagree to 4 = strongly agree).

Data Collection and Analysis

Pre-service English language teachers' were required to complete "Computer Self Efficacy" questionnaire. Collected data were then compiled and analyzed using the SPSS statistical package (SPSS). Descriptive statistics such as means, standard deviations, and percentages were used to depict the demographic information of the participants and their responses to the items to determine their level of computer self-efficacy. To further analyses the data, an independent sample t-test was used to determine if there were any significant differences in pre-service English language teachers' level of computer self-efficacy according to their genders. ANOVA test was used to determine if there were any significant differences in pre-service English language teachers' level of computer self-efficacy according to their age groups.

Results

A total of 130 responded to the online questionnaire. However the data of 30 participants were excluded as they had not responded most of the questions. Among 100 participants % (n =35) were female while % (n =65) were male. The mean age of the respondents was 2.15 (SD= 0.92). Those aged between 21–23 years old form the largest group of all, (39.0%), followed by those between 18–20 years old (32.0%), those aged between 24-26 years old (25.0%) and those above 26 years old (4.0%).

Table 1: Demographic Information

Variable	Category	No. of Teachers	Percentage
Gender	Male	65	65.0%
	Female	35	35.0%
Age	18-20	32	32.0%
	21-23	39	39.0%
	24-26	25	25.0%
	Above 27	4	4.0%

English Language Students Level of Self-Efficacy According to Gender

T-test analysis was performed to investigate the differences between respondents' gender in their of computer self-efficacy. As mentioned in the earlier of this chapter, there were 100 respondents in this study out of which 35 (35.0%) were female teachers and 65 (65.0%) were male teachers. As shown in Table 2, the level of self-efficacy mean scores of male (2.32) students were higher than those of female students (2.24), ($t= 1.290$) with a significance level of .05. The results indicated that there was a statistically significant difference in the usefulness Means among the gender groups favoring males.

The level of computer self-efficacy among English language pre-service teachers

The participants were asked to report their level of agreement/disagreement on 30 Likert-scale items. Respondents' level of computer self-efficacy was measured on a 5- Likert-scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Higher mean scores indicated high level of computer self-efficacy while lower mean scores indicated low level of computer self-efficacy.

Table 2: T-test scores for English language pre-service teachers' level of Self-efficacy according to gender

Variable	Gender	N	M	SD	Levene's Test for Equality of Variances F Sig.	t-value	Sig. (2-tailed)
Level of Self-efficacy	Male	65	2.32	0.30	0.228 0.634	1.290	0.000**
	Female	35	2.24	0.30			

Items	SD	D	Un	A	SA	M	SD
1. Working on a personal computer.	1	1	2	43	53	4.48	0.81
2. Getting software up and running.	3	4	5	44	47	4.28	0.92
3. Using the users' guide when help is needed.	22	10	1	31	36	3.49	1.58
4. Entering and saving numbers or words into a file.	6	8	1	43	42	4.07	1.13
5. Using the computer to analyze numeric data	30	17	1	29	23	2.98	1.61
6. Retrieving a data file to view on the monitor screen.	13	14	2	36	35	3.66	1.41
7. Understanding terms relating to computer hardware.	20	20	5	29	26	3.11	1.59
8. Understanding terms relating to computer software.	23	16	2	30	29	3.24	1.58
9. Troubleshooting computer problems	39	19	3	17	22	2.64	1.64
10. Learning to use a variety of application software.	9	6	1	44	40	4.00	1.21
11. Using the computer to write a letter or essay	4	4	1	41	51	4.30	0.97
12. Copying a disk.	3	1	2	40	54	4.40	0.88
13. Copying an individual file	2	3	2	47	46	4.33	0.81
14. Installing software correctly.	31	19	1	24	25	2.93	1.64
15. Getting help for problems in the computer system	4	9	1	36	50	4.18	1.11
16. Exiting from the application software.	8	8	3	34	47	4.04	1.24
17. Adding and deleting information from a data file.	6	4	1	39	50	4.23	1.08
18. Moving the cursor around the monitor screen.	14	9	3	34	40	3.77	1.42
19. Writing simple programs for the computer.	11	10	2	34	43	3.88	1.35
20. Learning advanced skills within specific application.	24	15	3	27	31	3.26	1.60
21. Describing the function of computer hardware.	12	8	2	35	43	3.89	1.36
22. Understanding the stages of data processing.	16	15	1	31	37	3.58	1.5
23. Using a printer to print out my work.	6	8	1	38	47	4.12	1.15
24. Using computer applications (Photoshop, front page).	20	15	3	31	31	3.38	1.54
25. Explaining why application software runs on computer	41	32	1	16	10	2.22	1.38
26. Using the computer to organize information	6	9	1	37	47	4.10	1.17
27. Deleting files when they are no longer needed	13	13	2	34	38	3.71	1.42
28. Organizing and managing files	13	11	7	35	34	3.66	1.38
29. Handling removable storage devices correctly.	21	25	3	28	23	3.07	1.51
30. Making selections from an on-screen menu.	6	8	2	38	46	4.10	1.15

Examination of the percentages in Table 3 shows that the highest percentage of computer self-efficacy scores among the research participants were (combination of 'agree' and 'strongly agree') toward the statement number 1, "Working on a personal computer". About 95.0% of the participants reported that they "agree or strongly agree" with that statement with Mean score (M=4.48) and std. Deviation (SD=0.88). The second highest mean score is statement number 12, "Copying a disk". About 94.0% of the participants reported that they "agree or strongly agree" with that statement with Mean score (M=4.39) and std. Deviation (SD=0.81). And the third highest mean score is statement number 13, "Copying an individual file" with Mean score (M=4.33) and std. Deviation (SD=0.18). About 93.0% of the participants reported that they "agree or strongly agree".

Meanwhile, participants report less self-efficacy (combination of 'strongly disagree' and "disagree agree") in item number 25, "Explaining why application software runs on computer". (73.0% of the respondents answered that they either "strongly disagree or disagree" with this statement), with Mean score (M=2.22) and std. Deviation (SD=1.38), followed by item number 9, "Troubleshooting computer problems" (68.0% of the respondents answered that they either "strongly disagree or disagree with this statement), with Mean score (M=2.64) and std. Deviation (SD=1.64), and item number 14 "Installing software correctly" (50.% of the respondents answered that they either "strongly disagree or disagree with this statement) with Mean score (M=2.93) and std. Deviation (SD=1.64). The overall Mean score of the of respondents' responses on the computer self-efficacy was (M=3.70) with a Std. Deviation (SD=0.35). These results indicated that the majority of respondents reported that they had higher level of computer self-efficacy.

Discussion and Findings

In this study, computer self-efficacy is operationally defined as English language pre-service teachers' confidence in performing a range of computer use. Computer self-efficacy is an important personal trait that influences an individual's decision to use computers (Compeau & Higgins, 1995). A T-test analysis was used to find out the differences in the level of computer self-efficacy among English language pre-service teachers based on gender. The findings revealed that male teachers have high level of computer self-efficacy than the female teachers do.

The finding of the current research is similar with Carlson and Grabowski (1992) findings. They examined the relationship between self-efficacy and users gender, and found males have significantly higher computer self-efficacy than females. Some studies examined this issue and reported different findings (Durdell, Haag, & Laithwaite, 2002; Qutami & Abu-Jaber, 1997). They found males and females are not differing in their level of computer self-efficacy and both considered themselves to be knowledgeable and skilful in the use of technologies.

In terms of the level of computer self-efficacy among English language pre-service teachers, the findings showed that the summated mean for the level of English language pre-service teachers' computer self-efficacy was (M=3.70) with a Std. Deviation (SD=0.35), indicating that English language pre-service teachers' had a high level of computer self-efficacy. The findings revealed that, developing computer self-efficacy among English language pre-service teachers is an important factor on enhancing teachers' ability to use computer technology for educational purposes. It is likely that, English language pre-service teachers who have high general computer self-efficacy

will be willing to use these technologies for educational purposes.

In contrast, English language pre-service teachers who possess low computer self-efficacy will less likely use computer technology during English classes. For future research studies need to consider the in-depth qualitative studies such as in-depth interviews. Also, it is recommended that further research be conducted with other pre-service teachers. Moreover, training courses should be provided to English language pre-service during their professional development that related to computer use in the processes of teaching and learning.

Conclusion

This study examines the level of computer self-efficacy among English as a foreign language pre-service teachers. The current study has contributed to the research about the importance of pre-service teachers' computer self-efficacy. Computer self-efficacy has a significant influence on individuals' expectations of the outcomes of using computers. Previous researchers found that individuals with higher self-efficacy can successfully accomplish computing tasks in a variety of computing applications. Thus, self-efficacy is an important determinant of an individual's decision to use computer technology

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