

*Full Length Research Paper*

# Egyptian industrial education teachers' perceived computer self efficacy

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The aim of this study is to investigate the relation between the Egyptian Industrial Education Teachers' demographic characteristics and their perceived computer self-efficacy. The target population of the study was in-service teachers at Industrial Secondary Schools. Thus, participants consisted of 66 in-service teachers (architecture specialists) in Desouk and Foh industrial secondary schools (Kafir El-Sheikh Governorate), and Badr Industrial Schools (Assiut Governorate), Egypt. The "Perceived Computer Self-Efficacy" scale developed by Askar and Umay (DTAE) was used for collecting data. To accomplish the research objectives, standard deviation, average, ANOVA, and Post-Hoc Tukey HSD tests were used in data analysis. The statistical significance level was accepted as .05 in the study. Results show that there is a significant difference in teachers' age, computer experience level, computer training level and graduation college according to the perceived computer self-efficacy. Also, there is no significant difference among those in-service teachers' perceived computer self-efficacy according to their major.

**Key words:** Perceived computer self-efficacy, industrial education teachers.

## INTRODUCTION

Technological advances related to computer knowledge, skills, and abilities have been of paramount importance in our society today. Computer Technology has become a very influential tool in communicating information to society. Such technology plays an important role in helping teachers to deliver instructional content to students (Buntat et al., 2010, p.645)

Currently, there is a general belief that computer self-efficacy can be used as an indicator of the likelihood of teachers' integration of technology into their teaching. If there does not exist a strong correlation between high levels of computer self-efficacy (which can be achieved through computer courses and usage) and the

implementation of computers into the classroom, then schools should be identifying other variables that may be responsible for teachers not implementing computers into their classroom teaching.

Integration of technology can be divided into at least two categories: technology used for instructional purposes (e.g. word processing exams or using spreadsheets for recording student marks) and technology used in classroom teaching (such as UltraKey for learning keyboarding, or using browser software to conduct research on the Internet, or using statistics software to work out statistical problems). In public education, the aim of the integration of computers in education seems to

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be more associated with the latter, yet most authors have failed to make this distinction between teachers using computers for instructional purposes, and teachers using them for their classroom teaching (Beaudin, 1989, p. 5)

Perceived self-efficacy is a concept that fits in within social learning theory, which identifies it as the most basic motivating structure behind the individuals' behavior. The societies of nowadays require individuals who possess life-long learning talents (Adalier, 2012, p.192).

This concept is considered as related to effort, insistence, and success. In this respect, a general perception of self-efficacy cannot be established. Self-efficacy is viewed differently in different situations, and is affected by many variables, which might affect the person both positively and negatively. Thus, the matter of whether the person is familiar with a technology utilized in a certain learning activity may be an example of this type of an influence (Horzum and Cakır, 2010, p.1346).

In currently classrooms practices, there is many difficulties among industrial education teachers for using technology in teaching because a fear and negatively feelings from using computer technology in their teaching in secondary industrial schools.

Therefore, this study aimed to investigate the relationship between Egyptian Industrial Education Teachers' demographic characteristics and their perceived computer self-efficacy.

### **Computer self-efficacy**

Bandura (1986) defines self-efficacy as one's judgments of their capabilities to organize and execute courses of action in alignment with the desired goals. The focus is not on the skills one has got, but on the judgments that one might form on what s/he can do with whatever skills s/he possesses. Bandura also affirmed that self-efficacy beliefs develop in response to four sources of information. Self-efficacy beliefs can be used to explain technology usage behaviours (Teo, 2009, p.8).

Self-efficacy theory suggests that individuals base their self-efficacy beliefs on four sources of information: (1) personal experience of the skill; (2) vicarious experience –seeing similar people performing the skill; (3) verbal persuasion; and (4) somatic and emotional states, such as fear, stress, and fatigue (Askar and Davenport, 2009, p.1).

Computer self-efficacy is a specific type of self-efficacy, which can be defined as belief in one's ability to "mobilize the motivation, cognitive resources, and courses of action needed to meet given situational demands (Barbeite and Weiss, 2004, p.3).

Several studies have demonstrated the effect of computer self-efficacy on computer-related behaviors (Baraskeva et al., 2008; Chou et al., 2010; Simsek, 2011). Computer self-efficacy has been shown to be positively related to performance during computer training. Baraskeva et al. (2008) argue that Teacher

training in technology as an educational tool can change teachers' attitudes toward and confidence with technology and can also provide them with skills that they did not previously have. Teachers could acquire many technological skills and use them specifically to support their current teaching practices.

Simsek (2011) in his study examined the relationship between computer anxiety and computer self-efficacy of students and teachers in elementary and secondary schools. The sample included a total of 845 subjects from two private school systems in Turkey. The results show that the correlation between the variables of computer anxiety and computer self-efficacy was moderate, negative, and significant.

Chou et al. (2010) argue that there is a high correlation (N=335) among technological and vocational school teachers' perceived organizational innovative climate, computer self-efficacy, and continuous use of e-teaching in Taiwan.

Teo and Koh (2010) examine the computer self-efficacy among pre-service teachers (N=708) at a teacher training institute in Singapore. This study found that Singapore pre-service teachers had high computer self-efficacy with respect to Basic Computer Skills (M=6.26). They also had fairly high computer self-efficacy with respect to their Web-Based Skills (M=5.52).

Topkaya (2010) in his study aimed to investigate pre-service English language teachers' perceptions of computer self-efficacy in relation to different variables. Secondly, the study also explored the relationship between pre-service English language teachers' perceptions of computer self-efficacy and their perceptions of general self-efficacy.

Sam et al. (2005) aimed to examine differences in computer anxiety, computer self-efficacy, attitudes toward the Internet and reported use of the Internet for undergraduates with different demographic variables. The findings suggest that the undergraduates had moderate computer anxiousness, medium attitudes toward the Internet, and high computer self-efficacy and used the Internet extensively for educational purposes such as doing research, downloading electronic resources and e-mail communications.

Khorrami-Arani (2001) developed a scale for computer self-efficacy. This scale was applied to obtain baseline data at the start of a course on Information Technology (IT), and to describe the IT course for Year 8 in one secondary school.

The current study aims at investigating the relationship between the Egyptian Industrial Education Teachers' demographic characteristics and their perceived computer self-efficacy.

### **Purpose of the study**

The current study aims at investigating the relationship between the Egyptian industrial education teachers'

demographic characteristics and their perceived computer self-efficacy.

Specifically, the study is supposed to:

1. Identify the level of the Egyptian Industrial Education Teachers' perceived computer self-efficacy.
2. Identify the relationship between the Egyptian industrial education teachers' perceived computer self-efficacy and Majority.
3. Identify the relationship between the Egyptian industrial education teachers' perceived computer self-efficacy and age.
4. Identify the relationship between the Egyptian industrial education teachers' perceived computer self-efficacy and computer experience level.
5. Identify the relationship between the Egyptian industrial education teachers' perceived computer self-efficacy and computer training.
6. Identify the relationship between the Egyptian industrial education teachers' perceived computer self-efficacy and graduation college.

### The questions of the study

- 1) What is the level of the Egyptian industrial education teachers' perceived computer self-efficacy?
- 2) Does the Egyptian industrial education teachers' perceived computer self-efficacy differ according to majority?
- 3) Does the Egyptian industrial education teachers' perceived computer self-efficacy differ according to age?
- 4) Does the Egyptian industrial education teachers' perceived computer self-efficacy differ according to computer experience level?
- 5) Does the Egyptian industrial education teachers' perceived computer self-efficacy differ according to computer training?
- 6) Does the Egyptian industrial education teachers' perceived computer self-efficacy differ according to graduation college?

## METHODOLOGY

### Method

In this study survey methodology design was used to describe the Egyptian industrial education teachers' perceived computer self-efficacy.

### Population and sample

Population of the study is the Egyptian in-service secondary industrial education teachers. The study sample consisted of 66 a teacher from of in-service secondary industrial education teachers are architecture specialists in Desouk and Foh industrial secondary schools in Kafr El-Sheikh, Assiut and Badr Industrial Secondary Schools, Assiut , Arab Republic of Egypt.

## Instrument

### Computer self-efficacy belief scale

The study adopted the cross sectional survey method. Computer Self-Efficacy Belief Scale which was developed by Askar and Umay (2001) to determine computer self-efficacy belief of the Egyptian Industrial Education Teacher was used in the study. There are 18 articles which 7 of them were scored in there serve direction in the scale. It was designed as a 5-point Likert scale with response categories of: always, usually, sometimes, rarely, and never. Nine experts validated the instrument after translation. Four lecturers from the University of king Saud, in the Kingdom of Saudi Arabia, while five lecturers and experts validated the instrument in the College of Education, Assiut University, Assiut, Egypt.

Cronbach's alpha was calculated as 0.71 by Askar and Umay (2001) who surveyed the scale on the university students. All the data collected at the end of the analysis were analyzed using SPSS package.

Finally, in order to derive personal information about the participants as well as their experience in the use of computers and training, a survey questionnaire was given.

### The analysis of the data

The data obtained via the research tools were analyzed with the use of SPSS 16. Descriptive analysis, standard division, average, ANOVA, Post Hoc Tukey HSD test were conducted to investigate the research questions.

While interpreting the mean values, boundaries of each response in the 5- point Likert scales from 1 to 5 were calculated by dividing the serial width 4 by the number of responses 5 and found to be 0.8. Depending on this calculation, the accepted boundaries for each response are presented below:

$$\begin{aligned}
 1 &= 1 + 0.8 = 1.8 \\
 2 &= 1.8 + 0.8 = 2.6 \\
 3 &= 2.6 + 0.8 = \mathbf{3.4} \\
 4 &= 3.4 + 0.8 = 4.2 \\
 5 &= 4.2 + 0.8 = 5
 \end{aligned}$$

A score of 3.4 and above on the scales was taken as the indicator of moderate efficacy perception while 4.2 and above a high one. Any score below 3.4 was taken as an indicator of low efficacy perception (Topkaya, 2010, p.147).

## RESULTS

### Research Question 1

- 1) What is the level of the Egyptian industrial education teachers' perceived computer self-efficacy?

Data in Table 1 show the result obtained from the respondents on the Egyptian Industrial Education Teachers' perceived computer self-efficacy' scale. The mean ranged from 1.33 to 4.06 which qualified the Teachers adopting their perceived computer self-efficacy. In most of the items the teachers attested that the best perceived computer self-efficacy usually depends on the use computer or context of using by teacher. the mean value of item 5 (Mean= 3.30) supports the idea that teachers had moderate computer self-efficacy perceptions.

**Table 1.** Response on the Egyptian industrial education teachers' perceived computer self-efficacy Scale (N=66).

S/N	Items	M	SD
1.	I use computers while planning my day.	2.98	1.37
2.	I think of computers almost as a part of me.	2.57	1.31
3.	I fear that I might do something wrong while working with computers.	2.83	1.38
4.	I think I can use the computer efficiently.	2.74	1.18
5.	Computers fail me.	3.30	1.34
6.	I believe that I master computer terminology and concepts.	2.65	1.19
7.	I surf in the computer and make new discoveries	2.28	1.22
8.	Most part of the time I spend with computers is a waste.	2.92	1.33
9.	I feel competent when computers are concerned.	2.66	1.46
10.	I know what to do when I meet a new thing while working with computers.	2.62	1.34
11.	It is easy for me to write all kinds of things on the computer.	2.92	1.47
12.	I have always believed that it is impossible for me to master computers totally.	2.78	1.38
13.	I am talented about computers.	1.77	0.95
14.	I believe that I have a special talent toward using computers.	2.00	1.12
15.	I panic when a problem occurs while working with computers	2.16	1.31
16.	If I try hard, I can solve the problems related to computers.	2.01	1.30
17.	At-the-moment solutions while working with computers are enough for me.	2.65	1.07
18.	I feel nervous while working with computers.	2.10	1.30
	computer self-efficacy	2.55	0.53

The mean value of item 13 (Mean= 1.77) supports the idea that teachers had not talented about computers .In the table, a score of 3.4 and above on the scales was taken as the indicator of moderate efficacy perception while 4.2 and above a high one. Any score below 3.4 was taken as an indicator of low efficacy perception.. Table 1 had a grand mean of 2.55 and SD = 0.53.

**Research Question 2**

2) Does the Egyptian Industrial Education Teachers' perceived computer self-efficacy differ according to majority?

Table 2 shows the Egyptian industrial education teachers' perceived computer self-efficacy differ according to majors (Architectural Construction M= 2.55, Architecture Carpentry M= 2.54, Sanitary works M= 2.57). In other words all through the majors, teachers' perceived computer self-efficacy were low, not going beyond moderate level. As a result, a statistical significance was not found between the computer self-efficacy perceptions of the Egyptian industrial education teachers and their Majors (p< .05) (Table 3).

**Research Question 3**

3) Does the Egyptian industrial education teachers' perceived computer self-efficacy differ according to age?

**Table 2.** Response on Computer self-efficacy perceptions of the Egyptian industrial education teachers at different majors.

S/N	Majors	N	M	SD
1.	Architectural Construction	22	2.55	0.64
2.	Architecture Carpentry	19	2.54	0.46
3.	Sanitary works	25	2.57	0.49
	Total	66	2.55	0.53

Table 4 shows the Egyptian Industrial Education Teachers' perceived computer self-efficacy differ according to age(from 20-30 years M= 2.26, from 30-40 years M= 2.60, from 40-50 M= 2.69, from 50-60 M= 2.13). In other words all through the levels of age, teachers' perceived computer self-efficacy were low, not going beyond moderate level.

As a result, a statistical significance was found between the computer self-efficacy perceptions of the Egyptian Industrial Education Teachers and their age (p< .05) (Table 5). Further analysis was carried out to better understand within which groups this significance was seen (Table 6).

As is evident in Table 6, Post Hoc Tukey HSD test revealed a significant difference between the computer efficacy perceptions.

There are difference between age50-60 years and age 40-50 years (p< .05), Also There are difference between age 30-40 years and age 50-60 years (p< .05). However, it should be noted that the significance found here may

**Table 3.** One-way analysis of variance (ANOVA) for computer self-efficacy in relation to majors.

S/N	Majors	Sum of Squares	df	Mean Square	F	Sig.
1.	Between groups	0.006	2	0.003		
2.	Within groups	18.33	63	0.291	0.010	0.991
	Total	18.34	65			

**Table 4.** Response on Computer self-efficacy perceptions of the Egyptian industrial education teachers at different age (N=66).

S/N	age	N	M	SD
1.	20-30	4	2.26	0.14
2.	30-40	32	2.60	0.52
3.	40-50	22	2.69	0.55
4.	50-60	8	2.13	0.41
	Total	66	2.55	0.53

**Table 5.** One-way analysis of variance (ANOVA) for computer self-efficacy in relation to age.

S/N	Age	Sum of Squares	df	Mean Square	F	Sig.
1.	Between groups	2.25	3	0.75		
2.	Within groups	16.087	62	0.25	2.89	0.04
	Total	18.34	65			

**Table 6.** Post Hoc Tukey HSD Test for computer self-efficacy perceptions of the Egyptian industrial education teachers in relation to age.

S/N	Age (1)	Age (J)	M (1-J)	Sig.
1.	20-30	30-40	0.34	0.584
		40-50	0.43	0.406
		50-60	0.12	0.978
2.	30-40	20-30	0.34	0.584
		40-50	0.08	0.921
		50-60	0.46	0.048*
3.	40-50	20-30	0.43	0.406
		30-40	0.08	0.921
		50-60	0.55	0.048*
4.	50-60	20-30	0.12	0.978
		30-40	0.46	0.103
		40-50	0.55	0.048*

**Table 7.** Response on computer self-efficacy perceptions of the Egyptian industrial education teachers at different computer experience level (N=66).

S/N	Computer experience level	N	M	SD
1.	5-10	13	2.14	0.63
2.	10-20	22	2.57	0.38
3.	More than 20	31	2.72	0.49
	Total	66	2.55	0.53

#### Research Question 4

4) Does the Egyptian Industrial Education Teachers' perceived computer self-efficacy differ according to Computer experience level?

Table 7 shows the Egyptian Industrial Education Teachers' perceived computer self-efficacy differ according to Computer experience level (from 5-10 years M= 2.14, from 10-20 years M= 2.57, from more than 20 M= 2.72). In other words all through the levels of Computer experience, Teachers' perceived computer self-efficacy were low, not going beyond moderate level (Table 8).

As a result, a statistical significance was found

be in support of the significance of age on computer self-efficacy perceptions.

That is, naturally because when increase teacher age increase experiences and spends more time working with computers and this may affect their self-efficacy perceptions.

**Table 8.** One-way analysis of variance (ANOVA) for computer self-efficacy in relation to Computer experience level.

S/N	Computer experience level	Sum of Squares	df	Mean Square	F	Sig.
1.	Between groups	3.05	2	1.52		
2.	Within groups	15.28	63	0.24	6.30	0.003
	Total	18.34	65			

**Table 9.** Post Hoc Tukey HSD test for computer self-efficacy perceptions of the Egyptian industrial education teachers in relation to Computer experience level.

S/N	Computer experience level (1)	Computer experience level (J)	M (1-J)	Sig.
1.	5-10	10-20	0.43	0.040*
		More than 20	0.57	0.002*
2.	10-20	5-10	0.43	0.040*
		More than 20	0.14	0.538
3.	More than 20	5-10	0.57	0.002*

**Table 10.** Response on computer self-efficacy perceptions of the Egyptian industrial education teachers at different computer training (N=66).

S/N	Computer training	N	M	SD
1.	From 1-2	36	2.65	0.44
2.	From 3-5	17	2.20	0.54
3.	From 5-10	13	2.75	0.56
	Total	66	2.55	0.53

between the computer self-efficacy perceptions of the Egyptian Industrial Education Teachers and their Computer experience level ( $p < .01$ ). Further analysis was carried out to better understand within which groups this significance was seen (Table 9).

As is evident in Table 9, Post Hoc Tukey HSD test revealed a significant difference between the computer efficacy perceptions of Computer experience level. There are difference between from 5-10 years, and more than 20 years ( $p < .01$ ), from 5-10 years and from 10-20 years ( $p < .05$ ).

However, it should be noted that the significance found here may be in support of the significance of computer experience level on computer self-efficacy perceptions. That is, naturally because when increase teacher Computer experience level increase experiences and spends more time working with computers and this may affect their self-efficacy perceptions.

### Research Question 5

5) Does the Egyptian Industrial Education Teachers' perceived computer self-efficacy differ according to Computer training?

Table 10 shows the Egyptian industrial education teachers' perceived computer self-efficacy differ according to Computer training (from 1-2 training course  $M = 2.65$ , from 3-5 training course  $M = 2.20$ , from 5-10 training course  $M = 2.75$ ). In other words all through the levels of Computer training, Teachers' perceived computer self-efficacy were low, not going beyond moderate level (Table 11).

As a result, a statistical significance was found between the computer self-efficacy perceptions of the Egyptian Industrial Education Teachers and their Computer training ( $p < .05$ ). Further analysis was carried out to better understand within which groups this significance was seen (Table 12).

As is evident in Table 12, Post Hoc Tukey HSD test revealed a significant difference between the computer efficacy perceptions of Computer training. There are difference between from 1-2 training course, and from 3-5 training course ( $p < .01$ ), from 5-10 training course and from 3-5 training course ( $p < .05$ ). However, it should be noted that the significance found here may be in support of the significance of computer training on computer self-efficacy perceptions. That is, naturally because when increase teacher computer training increase experiences and spends more time working with computers and this

**Table 11.** One-way analysis of variance (ANOVA) for computer self-efficacy in relation to Computer Training.

S/N	Computer Training	Sum of Squares	df	Mean Square	F	Sig.
1.	Between groups	2.95	2	1.47		
2.	Within groups	15.38	63	0.24	6.045	0.004
	Total	18.34	65			

**Table 12.** Post Hoc Tukey HSD test for computer self-efficacy perceptions of the Egyptian industrial education teachers in relation to computer training.

S/N	Computer Training (1)	Computer Training (J)	M (1-J)	Sig.
1.	From 1-2	From 3-5	0.45	0.008*
		From 5-10	0.09	0.825
2.	From 3-5	From 1-2	0.45	0.008*
		From 5-10	0.54	0.011*
3.	From 5-10	From 1-2	0.09	0.0825
		From 3-5	0.54	0.011*

**Table 13.** Response on computer self-efficacy perceptions of the Egyptian industrial education teachers at different graduation college (N=66).

S/N	Graduation College	N	M	SD
1.	College of Education	35	2.72	0.53
2.	College of Industrial Education	17	2.51	0.48
3.	College of Engineering	14	2.21	0.40
	Total	66	2.55	0.53

**Table 14.** One-way analysis of variance (ANOVA) for computer self-efficacy in relation to graduation college.

S/N	Graduation college	Sum of squares	df	Mean square	F	Sig.
1.	Between groups	2.67	2	1.33		
2.	Within groups	15.67	63	0.24	5.36	0.007
	Total	18.34	65			

may affect their self-efficacy perceptions

### Research Question 6

6) Does the Egyptian Industrial Education Teachers' perceived computer self-efficacy differ according to Graduation College?

Table 13 shows the Egyptian Industrial Education Teachers' perceived computer self-efficacy differ according to Graduation College (College of Education M= 2.72, College of Industrial Education M= 2.510, College of Engineering M= 2.21). In other words all through Colleges of graduation, Teachers' perceived computer self-efficacy were low, not going beyond moderate level.

As a result, a statistical significance was found between the computer self-efficacy perceptions of the Egyptian Industrial Education Teachers and their graduation college ( $p < .01$ ). Further analysis was carried out to better understand within which groups this significance was seen (Table 14).

As is evident in Table 15, Post Hoc Tukey HSD test revealed a significant difference between the computer efficacy perceptions of Graduation College. There are difference between College of engineering and college of education ( $p < .01$ ), However, it should be noted that the significance found here may be in support of the significance of Graduation College on computer self-efficacy perceptions. That is, naturally because when graduates teachers from college of education increase educational experiences and spends more time working

**Table 15.** Post Hoc Tukey HSD test for computer self-efficacy perceptions of the Egyptian industrial education teachers in relation to graduation college.

S/N	Graduation College (1)	Graduation College (J)	M (1-J)	Sig.
1.	College of Education	College of Industrial Education	0.20	0.338
		College of Engineering	0.51	0.005*
2.	College of Industrial Education	College of Education	0.20	0.338
		College of Engineering	0.30	0.220
3.	College of Engineering	College of Education	0.51	0.005*
		College of Industrial Education	0.30	0.220

with computers in computer education laboratories in college of education and this may affect their self-efficacy perceptions.

## DISCUSSION

This study aimed to investigate the relation between the Egyptian industrial education teachers' demographic characteristics and their perceived computer self-efficacy.

The findings of the research questions revealed that most of the items the teachers attested that the best perceived computer self-efficacy usually depends on the use computer or context of using by teacher. The mean value of item 5 (Mean= 3.30) supports the idea that teachers had moderate computer self-efficacy perceptions. The mean value of item 13 (Mean= 1.77) supports the idea that teachers had not talented about computers. In this study, the overall computer self efficacy perceptions of Egyptian industrial education teachers' perceived computer self-efficacy in this sample was found to be moderate.

The former studies also showed that teachers' computer efficacy was generally at a moderate level (Topkaya, 2010; Chou et al., 2010; Adalier, 2012; Buntat et al., 2010; Aşkar, 2001; Simsek, 2011).

In this study also there are differences between age 50-60 years and age 40-50 years ( $p < .05$ ). However, it should be noted that the significance found here may be in support of the significance of age on computer self-efficacy perceptions (Topkaya, 2010; Chou et al., 2010).

There were differences between experience from 5-10 years, and experience more than 20 years ( $p < .01$ ), experience from 5-10 years and experience from 10-20 years ( $p < .05$ ). However, it should be noted that the significance found here may be in support of the significance of Computer experience level on computer self-efficacy perceptions. That is, naturally because when increase teacher Computer experience level increase experiences and spends more time working with computers and this may affect their self-efficacy perceptions (Topkaya, 2010; Chou et al., 2010; Isman, 2009).

There were differences between from 1-2 training course and from 3-5 training course ( $p < .01$ ), from 5-10 training course and from 3-5 training course ( $p < .05$ ).

However, it should be noted that the significance found here may be in support of the significance of Computer training on computer self-efficacy perceptions. That is, naturally because when increase teacher Computer training increase experiences and spends more time working with computers and this may affect their self-efficacy perceptions (Topkaya, 2010; Chou et al., 2010).

There were differences between college of engineering and college of education ( $p < .01$ ). However, it should be noted that the significance found here may be in support of the significance of Graduation College on computer self-efficacy perceptions. That is, naturally because when graduates teachers from college of education increase educational experiences and spends more time working with computers in computer education laboratories in college of education and this may affect their self-efficacy perceptions (Topkaya, 2010; Chou et al., 2010).

Also the result of this study shows that there is no significant difference among in-service secondary industrial education teachers' perceived computer self-efficacy according to their major

## CONCLUSION AND RECOMMENDATIONS

This study aimed to investigate the relation between the Egyptian industrial education teachers' demographic characteristics and their perceived computer self-efficacy. In this study, the overall computer self efficacy perceptions of Egyptian Industrial Education Teachers' perceived computer self-efficacy in this sample was found to be moderate.

The results of this study indicated that computer training, age, computer experience level, college of graduation is a crucial factors for increasing the effectiveness and knowledge of using computers among the Egyptian Industrial Education. Also the result of this study shows that there is no significant difference among in-service secondary industrial education teachers' perceived computer self-efficacy according to their major.

In this study, some teachers of industrial education about 12% of the study sample were not interested in using the computer in their teaching originally did not get the courses in the computer and do not have a conviction using the computer in the industrial school.



The results of this study have some significant implications for teacher educators. Firstly, those specific courses that aim to equip pre-service teachers with knowledge, skill and confidence regarding computer use should be reconsidered in the light of the research done in this field. Content and procedural renovations could be made and implemented which could then be followed by research to determine whether the intended behavioral, cognitive and affective changes have taken place.

However, it should be borne in mind that helping teachers' build high level of computer self-efficacy is a collective endeavor. That is, secondly, all educators regardless of the courses they teach should seek ways to contribute to the training of pre-service teachers in computer use. They can do it, in the first place, by modeling good manipulation of computers in their own teaching.

For the purpose of disseminating the use of computers as a tool of education by Egyptian Industrial Education Teachers, it is necessary for the teachers, to whichever branch they belong to, to improve their skills related to computer literacy as well as learning software developed for computer aided learning and to utilize them in teaching of various technical courses.

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