

COMPUTER SELF-EFFICACY AMONG PROSPECTIVE SECONDARY SCHOOL TEACHERS WITH RESPECT TO GENDER AND ACADEMIC STREAM

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Abstract

The main aim of the present investigation was to study computer self-efficacy among prospective secondary school teachers with respect to gender and academic stream. For conducting this study, a sample of 850 prospective secondary school teachers from 38 B.Ed. colleges was selected by adopting stratified random sampling technique. Data were collected from prospective secondary school teachers with the help of Computer Self-Efficacy Scale developed by Sood and Reena (2017). Mean, S.D. and t- test was used for analyzing the data. The findings of the study revealed that female prospective secondary school teachers had shown significantly high computer self-efficacy as compared to male prospective secondary school teachers. Similarly, prospective secondary school teachers of science stream possessed significantly more computer self-efficacy as compared to prospective secondary school teachers of arts stream. In the end of the paper, implications of the study have been discussed.

Keywords: *Computer self-efficacy, Prospective secondary school teachers.*

INTRODUCTION

The concept of self-efficacy has been described as an individual's own judgement on himself about his/her capacity to organize and make successfully necessary activities to show a certain performance and a quality which is effective in constituting of behaviours. The belief of self-efficacy is a concept not about how an individual is competent but his/her belief on his/her own abilities. Bandura (1986) defines self-efficacy as self-evaluation of individuals who organize necessary activities in order to display specific performance and their capacity to conduct these activities successfully. It is concerned not with the skills one has, but with judgments of what one can do with whatever skills one possesses. Self-efficacy reflects an individual's confidence in his/her ability to perform the behaviour required to produce specific outcome and it is thought to directly impact the choice to engage in a task, as well as the effort that will be expended and the persistence that will be exhibited. Self-efficacy has been shown to influence choice of whether to engage in a task, the effort expended in performing it, and the persistence shown in accomplishing it. The greater the people perceived their self-efficacy to be, the more active and longer they persist in their effort. Computer self-efficacy is a specific type of self-efficacy. Specific self-efficacy is defined as belief in one's ability to "mobilize the motivation, cognitive resources, and courses of action needed to meet given situational demands" (Wood & Bandura, 1989). Thus, computer self-efficacy is a belief of one's capability to use the computer and participants with little confidence in their ability to use computers might perform more poorly on computer-based tasks. Computers are common tools in most of schools, computers are used increasingly in all subject areas. In so far as computer aid learning, it is crucial for all prospective teachers to become familiar and comfortable with their use. Teachers are currently being asked to become computer literate to integrate emerging computer technology into their teaching. Because computers are a relatively new phenomenon in education, it is important for prospective teachers to

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understand what level of impact teachers' degrees of computer self-efficacy have on their teaching. In addition, individuals who did not see themselves as competent to computer, these users were less likely to use computers. Miura (1987) has suggested that self-efficacy may be an important factor related to the acquisition of computing skills. Computer self-efficacy refers to "a judgement of one's capability to use a computer". Computer self-efficacy has a major impact on an individual's expectations towards using computers. Research on computer self-efficacy in general also revealed that males on average have better computer self-efficacy than females (Torkzadeh & Koufteros, 1994). On the other hand, it has been concluded that computer self-efficacy beliefs of male prospective teachers are higher than that of females and that computer self-efficacy beliefs of prospective teachers who have a computer are higher than that of those who have not got. Agerwal, Sambaurthy and Stair (2000) found that judgment of self-efficacy serve as key antecedent of perceived cognitive efforts (ease of use) associated with technology usage. Further, self-efficacy judgments in the task domain of computing are strongly influenced by the extent to which individuals believe that they are personally innovative with respect to information technology. Further, Durndell and Haag (2002) showed that significant zero order correlations were obtained with the relationships being between higher computer self-efficacy, lower computer anxiety, more positive attitudes towards the internet and longer reported use of the internet. Significant gender effects were found throughout, with males tending to report greater computer self-efficacy, lower computer anxiety, more positive attitudes towards the internet and longer use of the internet than females. Carter (2004) found that students with more computer experience developed a higher self-efficacy and those with less computer experience had lower self-efficacy beliefs. Stern (2004) in his study reported that the relationship between computer self-efficacy, anxiety, experience and support were positively related to computer self-efficacy and computer self-efficacy was negatively related to anxiety and positively related to usage. Sam, Othman and Nordin (2005) indicated 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. This study identified greater gender equivalence in interest, use, and skills levels. Saade and Kira (2009) showed that computer self-efficacy had a strong significant mediating influence on reducing the anxieties towards the learning management system (LMS) utilization. Regression analysis demonstrated the significant role of mediation played by computer self-efficacy. Topkaya (2010) found that pre-service English teachers had moderate level of computer self-efficacy perceptions. Computer experience, frequency of use and gender were identified to create a significant difference. Aremu and Fasan (2011) showed that computer self-efficacy was average for most of the teachers, though female teachers have higher computer self-efficacy than male teachers. This means that female teachers are more confident in the use of computer than males. Simsek (2011) examined that students had higher self-efficacy scores than their teachers; elementary students were more self-efficient than secondary students; and males had higher computer self-efficacy scores than females. The correlation between the variables of computer anxiety and computer self-efficacy was moderate, negative, and significant. Further, John (2013) found that social factors do not play a major role in improving an individual's computer self-efficacy. Computer self-efficacy was found to be directly influencing perceived usefulness and indirectly influencing intention to use an information system. It was found that there was a weak relationship between computer anxiety and computer self-efficacy among employees (Achim and Kassim, 2015). Therefore, it can be reasoned from the findings, the

anxious feelings operating computer in the system had slightly affected employees' self-efficacy.

It has been witnessed in schools that teachers are different in their attitude and abilities towards different aspects of teaching-learning process including use of computers. In addition, some students are enthusiastic about using computers, others may be more apprehensive. Computer knowledge and attitudes play an important role. Attitudes towards computer technologies are associated with a concept known as computer self-efficacy, which, in turn, has proven to be a factor in understanding the frequency and success with which individuals use computers. Therefore, it is essential that teachers right from the stage of their pre-service training should be imparted training in using computers for academic purposes. Hence, it was decided to undertake present investigation to study the existing level of computer self-efficacy among prospective secondary school teachers so that recommendations could be made for bringing necessary reforms in curriculum of B.Ed. course, if required.

OBJECTIVES OF THE STUDY

1. To study gender-wise difference in computer self-efficacy among prospective secondary school teachers.
2. To study academic stream-wise difference in computer self-efficacy among prospective secondary school teachers.

HYPOTHESES OF THE STUDY

1. There exists no significant gender-wise difference in computer self-efficacy among prospective secondary school teachers.
2. There exists no significant academic stream-wise difference in computer self-efficacy among prospective secondary school teachers.

METHODOLOGY

For conducting the present investigation, survey technique under descriptive method of research was employed.

Sampling

A representative sample of 850 prospective secondary school teachers (pursuing B.Ed. course) from 38 pre-service secondary teacher training institutions of Kangra, Hamirpur, Una, Bilaspur, Mandi, Solan and Shimla districts of Himachal Pradesh was selected by applying stratified random sampling technique.

Research Tool Used

Computer Self-Efficacy Scale developed by Sood and Reena (2017) was used to study computer self-efficacy among prospective secondary school teachers.

Analysis of Data

The data were analyzed with the help of descriptive statistics and t-test was used to study gender-wise and academic stream-wise difference in computer self-efficacy among prospective secondary school teachers.

FINDINGS OF THE STUDY

1. In order to study the difference in computer self-efficacy among male and female prospective secondary school teachers, means, standard deviations, standard error of difference between means and t-value were calculated which are given in Table 1.

Table 1. Means, Standard Deviations, Standard Error of Difference between Means and t-Value in respect of Computer Self-Efficacy of Male and Female Prospective Secondary School Teachers

Variable	Gender		SE _{dm}	d _f	t-value	Eta-Squared	
	Male (N=226)	Female (N=624)					
Computer Self-Efficacy	Mean	124.18	129.46	1.78	848	2.97**	0.010295
	SD	23.473	21.267				

** Significant at 0.01 level of significance.

Table 1 reveals that the mean computer self-efficacy score of male prospective secondary school teachers was found to be 124.18 and the mean computer self-efficacy score of female prospective secondary school teachers was computed to be 129.46. The calculated value of 't' testing the significance of the mean difference (5.28) came out to be 2.97 which was higher than the table value (2.58) at 0.01 level of significance, for d_f 848.

Hence, the Hypothesis that, "There exists no significant gender-wise difference in computer self-efficacy among prospective secondary school teachers", was not accepted. So, it may be interpreted that male and female prospective secondary school teachers differed significantly from each other with respect to their computer self-efficacy. Female prospective secondary school teachers had shown significantly high computer self-efficacy as compared to male prospective secondary school teachers. Further, the computed value of eta-squared (0.010295) indicated that gender has a very small effect on computer self-efficacy of prospective secondary school teachers. In other words, it may be said that the variable of gender contributes only about 1.029% towards computer self-efficacy among prospective teachers.

2. In order to study the difference in computer self-efficacy among arts and science stream prospective secondary school teachers, means, standard deviations, standard error of difference between means and t-value were calculated which are given in Table 2.

Table 2. Means, Standard Deviations, Standard Error of Difference between Means and t-Value in respect of Computer Self-Efficacy of Prospective Secondary School Teachers with Arts and Science Stream

Variable	Academic Stream		SE _{dm}	d _f	t-value	Eta-Squared	
	Arts (N=504)	Science (N=346)					
Computer	Mean	126.57	130.23	1.53	848	2.39*	0.006690

Self-Efficacy	SD	21.801	22.104
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** Significant at 0.05 level of significance.

Table 2 reveals that the mean computer self-efficacy score of prospective secondary school teachers of arts stream was found to be 126.57. Similarly, the mean computer self-efficacy score of prospective secondary school teachers of science stream was found to be 130.23. The calculated value of 't' testing the significance of the mean difference (3.66) came out to be 2.39 which was significant at 0.05 level of significance, for d_f 848 (critical value of $t = 1.96$).

Hence, the Hypothesis that, "There exists no significant academic stream-wise difference in computer self-efficacy among prospective secondary school teachers", was not accepted. So, it may be interpreted that prospective secondary school teachers of arts and science streams differed significantly from each other with respect to their computer self-efficacy. Prospective secondary school teachers of science stream possessed significantly more computer self-efficacy as compared to prospective secondary school teachers of arts stream. Further, the computed value of eta-squared (0.006690) indicated that academic stream has extremely very small effect on computer self-efficacy of prospective secondary school teachers. In other words, it may be said that the variable of academic stream contributes only about 0.669% towards computer self-efficacy of prospective teachers.

CONCLUSIONS

1. Prospective secondary school teachers possessed average level of computer self-efficacy irrespective of their gender and academic stream.
2. Male and female prospective secondary school teachers differed significantly from each other with respect to their computer self-efficacy. It may be concluded that mean computer self-efficacy score (129.46) of female prospective secondary school teachers is significantly higher than the mean computer self-efficacy score (124.18) of male prospective secondary school teachers. Female prospective secondary school teachers possessed significantly more computer self-efficacy as compared to male prospective secondary school teachers. Moreover, the variable of gender was found to have very small effect on computer self-efficacy and contributed only 1.029% towards computer self-efficacy among prospective teachers.
3. Prospective secondary school teachers of arts and science streams differed significantly from each other with respect to their computer self-efficacy. It may be concluded that mean computer self-efficacy score (130.23) of prospective secondary school teachers of science stream is higher than the mean computer self-efficacy score (126.57) of prospective secondary school teachers of arts stream. Prospective secondary school teachers of science stream possessed significantly higher computer self-efficacy in comparison to the prospective secondary school teachers of arts stream. Moreover, the variable of academic stream was found to have extremely very small effect on computer self-efficacy and contributed merely 0.669% towards computer self-efficacy among prospective teachers.

IMPLICATIONS

The present investigation was conducted to study computer self-efficacy among prospective secondary school teachers with respect to their gender and academic stream. After drawing out the results from the study, it has been found that female prospective secondary school teachers possessed significantly more computer self-efficacy as compared to male prospective secondary school teachers. The lower self-efficacy among male prospective

secondary school teachers may be due to greater amount of pressure on them for getting the employment so as to prepare for family life and meeting out family burdens in future. Hence, it is recommended that appropriate knowledge and skills relevant to the present day needs of schools and the industry be imparted to the prospective secondary school teachers in an effective manner so that they can fit perfectly into the profession in near future. Similarly, prospective teachers of science stream possessed significantly higher computer self-efficacy as compared to arts stream prospective teachers. This may be due to the reason that the nature of the subjects studied by the prospective science stream teachers during their previous academic years is more or less related to the nature of the content matter covered in the computer education / ICT subject. Due to this, the science stream prospective teachers are already familiar to some extent with the nature of computer education / ICT subject matter and therefore, possessed more computer self-efficacy. On the other hand, arts stream prospective teachers had studied such subjects in their previous academic years whose nature is entirely different from computer / ICT related subject matter. Hence, it is recommended that in the teacher training institutions, the computer instructors and the teacher educators should provide more attention towards arts stream student-teachers while imparting computer-related knowledge and skills to them. A greater use of computers in teaching-learning process by teacher educators in B.Ed. colleges can increase computer self-efficacy among prospective teachers to a larger extent. Mentoring system may be adopted by the institutions by engaging computer-versed prospective teachers in providing training to those prospective teachers who are not well-versed in making use of computers. This will prove to beneficial in reducing gender and stream-wise disparities in computer self-efficacy and computer usage among prospective secondary school teachers. On the basis of the results of the study, necessary steps can be taken to bring suitable changes in computer self-efficacy beliefs of prospective secondary school teachers. Necessary changes can be brought in curriculum of pre-service teacher education programmes with special reference to computer education.

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