

A Study of Computer Anxiety of Higher Secondary Students in Punjab

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Abstract

This article is a part of Ph.D dissertation. Computer anxiety is a fear of computers or the tendency of a person to be uneasy while using computer but at the same time we cannot ignore the importance of computer so the causes of computer anxiety must be explored. The aim of present research was to measure the computer anxiety in the higher secondary students along the exploration of the factors which can affect the anxiety. 1068 higher secondary students were administered a computer anxiety scale. Findings showed that gender, grade, personal computer, previous knowledge, teachers' qualification and physical facilities at colleges affect the computer anxiety of the students. It is recommended that hand on experience, well qualified teachers and personal computers should be provided to the students at higher secondary level.

Keywords *Anxiety, Computer Anxiety, Higher secondary education*

1. Introduction

As a psychological construct, anxiety is by and large, a twentieth century phenomenon. Anxiety is recognized as a powerful influence on everyday lives of the peoples and is reflected in much of what they do. Research has established firmly that stress and anxiety reduce performance effectiveness. Although anxiety is a powerful influence, there has been little or no agreement on its definition.

Kakkar (1992) says about anxiety, it is a response to a hidden and subjective danger, distinct from fear, which is a response to an obvious and object danger. The subjective factor leading to anxiety may be unconscious. While Traver, Stephon and Thomas (1993) said anxiety may be defined as an unpleasant sensation that is usually experienced as feelings of apprehension and general irritability accompanied by restlessness, fatigue and various somatic symptoms- such as headaches and stomach.

There is a question in the minds of many people that what are the reasons of anxiety? Different psychologists gives different answers Read & Overbaugh (1993) are of the view that anxiety can be caused by exposure to new material, new teachers or new technologies

An anxiety state refers to transitory state or condition of the person that varies in intensity, fluctuating over time as a function of the amount of stress upon an individual. Anxiety is a general feeling that has many causes.

General emotions associated with anxiety include embarrassment, disappointment and fear. Common or more specific feelings associated with anxiety are irritation, frustration and bewilderment. According to Slavin (1994), Anxiety is a constant companion of education. Every student feels some anxiety at some time, but for certain student anxiety seriously inhibits learning or performance.

Type and degree of anxiety differ widely among students. For some students small amount of anxiety can facilitate learning while in others a high level of anxiety affects achievement. For some student anxiety is a generalized fear of the total situation for others a fear of specific aspects. Dembo (1994) is of the view that higher anxiety more likely results in the lower achievement. There is a negative correlation between anxiety and intelligence

Students' fear of computers or the tendency of a student to be uneasy, apprehensive and phobic towards current or future use of computers in general is called computer anxiety of the students. As computers emerged into the main stream in the 1980's, it becomes apparent that many users experienced anxiety in using this new technological device. Many researchers have spent the greater part of the past three decades verifying the existence of the construct of computer anxiety, finding relationships between computer anxiety and factors such as gender, age and exposure with computers and seeking ways to predict who will experience computer anxiety and how to reduce it. Despite the increasing growth of computers, there is evidence that the use of computers by people appears to be limited due to the prevalence of computer anxiety or fear of computers (Howard & Smith, 1986; Igbaria & Chakarabarti 1990; Anderson 1996).

An individual is considered computer anxious, if the emotional state during interaction with computer reduces the benefits of the use of computers and discourages necessary use of computers. In fact computer anxiety clouds an individual perception of computer as somehow being not useful for them. This obviously affects their knowledge and performance. In this regards Smith & kotrlik (1990) says that Computer anxious people are those who fear using computers or become afraid at the prospect of using them. Consequently, they can choose not to learn at all, their ability to learn could be affected, or they may have extreme negative feelings, akin to phobia.

Some researchers indicated that limited experience with computers might increase the level of students' anxiety, which may affect students' academic performance. (Hedi, O'Neil & Hansen, 1973; Johnson & White, 1980; Johnson & Johnson, 1981). The results of many studies exploring other factors such as age (Loyd & Gressard, 1984) and experience demonstrate similar contradictions. Francies (1988) studied the impact of educational level, gender, age and computer experience on computer attitude. The sample of the study was 30 students. The results show that only the educational level was not a significant factor in relation to computer anxiety.

Dyck and Smither (1995) studies the levels of computer anxiety and computer experience. Subjects completed a demographic and computer experience questionnaire and two computer anxiety scales. Results indicate a negative relationship between computer anxiety and computer experience, more over males have less anxiety as compared to females.

Delveccio (1995) reported on a study by Deakin University. The study found that the more experience people had with computers, the less likely they were to display anxiety, and that an increase in experience and knowledge of computers helped to overcome the fear and anxiety. An important and perhaps obvious result was that students who reported computer anxiety tended to do poorly in their computer exams.

Yang, Mahamed and Beyerbach (1999) investigated how computer related experience affects the relationship of computer anxiety in Vocational technical educators to selected demographic variables; learning style, age, gender, ethnic/cultural background, teaching/ professional area, educational level and school type. The participants were selected from vocational technical educators in Dade County, Florida. Survey research was used to get specific information. Instruments were learning style inventory (LSI) and Computer Anxiety Scale (COMPAS). The results of the study indicated there was no relationship between computer anxiety and age, ethic/cultural background, teaching/professional area and learning

styles while computer related experience, educational level and school type were found significantly related to computer anxiety.

Morgan (2000) examine through survey data gathered from 100 participants in 1990 and 100 participants in 1997. The relationship among demographic variables, computer experience, training, anxiety and administrative support were examined. Results indicated that level of experience decrease the computer anxiety while age and gender do not correlate with computer anxiety.

2. Methodology

In this study the population consisted of all the higher secondary students of Punjab Studying the subject of computer science Researcher decided to collect data from all the divisional headquarters of the Punjab. From each divisional headquarter, one college from each strata i.e. one male and one female college were selected randomly. All the students present on the day of administration of the scale were included in the study. Total number of the students who were administered the scale was 1068.

Table 1: Number of Students

Name of Division	Male		Female		Total
	I.C.S. 1 st Year	I.C.S. 2 nd Year	I.C.S. 1 st Year	I.C.S. 2 nd Year	
Rawalpindi	45	47	25	71	188
Sargodha	45	47	*	16	108
Multan	46	49	03	47	145
Lahore	29	35	*	55	119
Bahawalpur	48	41	40	44	173
D.G.Khan	36	32	47	38	153
Faisalabad	50	27	39	***	116
Gujranwala	28	38	**	**	66
Total:	327	316	154	271	1068

Note: * Indicate that there was no student in the sample of that particular category due to the absence of students on the day of data collection.

** Indicate that no college in the division was offering computer science course.

*** Indicate that there was no 2nd year student in the college.

3. Data Analysis

A scale for measuring computer anxiety along with a demographic section to get information about the students' gender, grade, personal computer and previous knowledge of computers was used to collect the data.

Table 2: Difference between Male & Female Students' Computer Anxiety

Gender	N	Mean	t.	df	Significance
Male	643	23.61			
			3.892	1066	.000
Female	425	22.26			

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Table explains that t value is significant, so it is concluded that there is a significant difference between male and female students' computer anxiety Male students have higher mean score than the female students on computer anxiety

Table 3: Difference between 1st & 2nd year Students' Computer Anxiety

Class	N	Mean	t.	df	Significance
1 st year	481	23.63	2.964	1066	.003
2 nd year	587	22.62			

Above table explains that t value is significant, so it is concluded that there is a significant difference between 1st and 2nd year students' computer anxiety. 1st year students have higher mean score than 2nd year students on computer anxiety

Table 4 Difference in Computer Anxiety of Students' with and without Personal Computers

Personal computer	N	Mean	t.	df	Significance
With Personal Computer	302	21.61	0.5470	1066	.000
Without Personal Computer	766	23.65			

In table #4 the "t" value is significant, so it is concluded that there is a significant difference regarding computer anxiety between the students with and without personal computer. The students who are without personal computer have higher mean score than the students who have personal computer on Computer Anxiety

Table 5: Difference in Computer Anxiety of Students' with Sufficient and insufficient physical facilities

Physical facilities at colleges	N	Mean	t.	df	Significance
Sufficient	251	24.46	5.094	508.748	.000
Insufficient	817	22.65			

Table 5 explains that "t" value is significant, therefore it is concluded that there is a significant difference regarding computer anxiety between the students who have sufficient and who have insufficient physical facilities at college

The students who have sufficient physical facilities at college have higher mean score than the students who have insufficient physical facilities at college on Computer Anxiety.

Table 6: Difference in Computer Anxiety of Students’ with and without Previous Knowledge of Computers

Previous Knowledge of computers	N	Mean	t.	df	Significance
With Previous Knowledge of computers	245	22.31	2.464	1066	.014
Without Previous Knowledge of computers	823	23.30			

The “t” value in table # 6 is significant, so it is concluded that there is a significant difference regarding computer anxiety between the students with and without previous knowledge of computers.

The students who have no previous knowledge of computers have higher mean score than the students who have previous knowledge of computers on Computer Anxiety

Table 7: Difference in Computer Anxiety among students taught by teachers with different qualifications

Teachers’ qualification	N	df	F	Significance
Science graduate + Diploma in Computer science	82	2	9.162	.000
Computer graduate	732			
Any other qualification	254			

Table 7 explains that F value is significant at, so it is concluded that there is a significant difference regarding computer anxiety among students taught by teachers with different qualifications. As the results were significant so it was decided to run LSD Post Hoc Test of Multiple Comparison.

Table 7a: Multiple Comparisons

Teachers’ qualification	Mean difference	Significance
Science graduate + Diploma in Computer science VS Computer graduate	1.05	.102
Science graduate + Diploma in Computer science VS Any other qualification	0.63	.373
Computer graduate VS Any other qualification	1.68	.000

The overall results for the post hoc test indicates that: the students’ computer anxiety is significantly affected by the teachers who are Science graduates + diploma in Computer studies and Computer graduates

4. Findings

- 1 There is a significant difference between male and female students' computer anxiety.
- 2 Male students had higher mean score on computer anxiety than the female students.
- 3 There is a significant difference between 1st and 2nd year students' computer anxiety.
- 4 1st year students had a higher mean score on computer anxiety than the 2nd year students.
- 5 There is a significant difference regarding computer anxiety between the students with and without personal computer
- 6 The students who have no personal computer had high mean score on computer anxiety than those who have personal computer.
- 7 There is a significant difference regarding computer anxiety between the students who have sufficient and insufficient physical facilities at colleges.
- 8 The mean score on computer anxiety was higher for students who have sufficient physical facilities than those who have insufficient physical facilities.
- 9 There is a significant difference regarding computer anxiety between the students with and without previous knowledge of computers.
- 10 The mean score on Computer Anxiety was higher for students who have no previous knowledge of computers than those who have previous knowledge of computers.
- 11 There is a significant difference regarding computer anxiety among students taught by teachers with different qualifications

5. Conclusions

- 1 The students' computer anxiety is significantly affected by their grade
- 2 The female students have less computer anxiety than the male students. The students' computer anxiety is significantly affected by their gender.
- 3 The students' computer anxiety is significantly affected by personal computer.
- 4 The computer anxiety is negatively affected by the physical facilities provided at colleges for computer education.
- 5 The students' computer anxiety is significantly affected by their previous knowledge of computers
- 6 The qualifications of the teachers significantly affect the students' computer anxiety.

6. Discussion

In this study female students have less computer anxiety. Literature reviewed show contradiction in this regard. Moe (1984), Linn (1985), Shulkhu (1989), Al-Badar (1993), Francis (1994) and Morgan (2000), Honeyman & While, 1987; Cohen & Waugh, 1989; Robertson, 1995 explored that gender had no effect on students' anxiety regarding computers while Igbaria & Chakrabarti (1990) found gender to be significantly related to computer anxiety. Even at early kindergarten video games were more appropriate to boys than girls. Levin & Gordon (1989) Igbaria & Chakrabati (1990) Singh (1992) Barrier & Margonio (1993) Shahani (1994) Shahani (1995) Fletcher Flinn & Suddendorf (1996) Comber (1997), Okebukola, (1993), investigated that male students were better than females. While the study of Jegedege, Okebukola & Aiewole (1990), Loyd & Gressard, 1984 showed that females were better than males.

Anderson (2002) perceived that males show more favorable results towards computers because computers may be a career asset for them.

Students' computer anxiety is affected by their grade level. This is a logical finding. 2nd year students should have less computer anxiety than 1st year students because they have learned more and have greater experience of handling the computers. Research studies e.g. Arndt (1984), Lee (1986), Howard & Smith (1986), Francies (1988), Skulkhu (1989), Smith & Kotrlik (1990), Ray & Minch (1990), Shahani (1994), Shahani (1995), Delveccio (1995) and Ridzuan, Sam & Ahmad (2001) explored that greater experience with computers results in a decrease in computer anxiety. Arndt et al (1984) found that students with greater amounts of computer experience have low levels of computer anxiety. Lee (1986) found that there was no significant difference in the anxiety level of students. Howard & Smith (1986) indicated that students' computer anxiety decreased when computer experience increased Ray & Minch (1990) developed a 7-point Likert type scale to measure computer anxiety. They administered it to two classes of Biology Honors before and after the 2nd semester. Results showed a significant decrease in anxiety. Hence computer exposure/ experience decreased the anxiety regarding computers.

Personal computer also reduces anxiety because it provides excessive opportunity of working with computers. The present study evidenced the above statement. Al –Badar (1993), Colley et.al. (1994) and Pelgrum & Plomp (2000) also of the same view. Where as Shahani (1995) concluded that personal computers had no effect on computer anxiety.

Physical facilities at colleges also affect the anxiety, there was an astonishing finding i.e. the computer anxiety of the students with sufficient physical facilities is more than the insufficient physical facilities. The reasons may be that the concerned persons might have reported false and fictitious information about the physical facilities or the students are not provided the opportunities to have sufficient hands on experience with computers and other related things. Previous knowledge of computers does have significant effect on anxiety.

7. Recommendations

- 1 Results of the study revealed that personal computer have a positive effect on students' computer anxiety, it is therefore suggested that students must be provided loans to buy their own computers on easy installments.
- 2 To reduce computer anxiety teachers should encourage optimum hands on experience Because results indicates that greater experience helps in reducing the computer anxiety
- 3 The findings of the study revealed that students who are provided with sufficient physical facilities have more computer anxiety, which is contrary to other research results; a survey is recommended to investigate the reasons.
- 4 Since the findings of the study showed that females have less anxiety, more research studies are needed to be conducted at various levels and with varied samples to investigate the reasons

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