
Reducing Internet and Computer Anxiety Among Freshmen at King Abdulaziz University Through Workshop : An Experimental Study

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Introduction :

There are a number of challenges Saudi Arabian freshmen face as they enter university life. Some of the university students in Saudi Arabia are the first members of their families to pursue higher education. In these families, the reaction to a child's educational progress is often ambivalent. The families' pride and sense of progress are mixed with suspicion and fear that higher education will separate the family and lead to an abandonment of family and traditional values.

Besides such intangible obstacles, Saudi university freshmen face many technical obstacles as well. Just like many freshmen students in the United States

and other countries, most of the incoming Saudi freshmen have inadequate study skills and training in analytical thinking. Bostick (1992) cites in her study that many freshmen do not understand the concept of transferring skills. That is, skills that are learned in one course can be used in another.

Unless students have computers at home, they have little or no experience using a computer. Computers are not available in all or most Saudi elementary or secondary schools at the current time, even though a national project supported by the crown prince to push forward computer use at schools is just starting at the beginning of the new millennium. In all areas of academic scholarship today, computers have become extremely

important, if not essential. Lack of computer and Internet knowledge represents a tremendous obstacle to any college or university student, in any country.

University life is always a bit of a shock to the incoming freshman, having to learn how to use computers, search the Internet, attend college-level classes in a second language in many cases; foreign professors who are teaching also in a second language, different levels of learning styles, and ambivalent responses from the family at home in many cases, produce high levels of anxiety.

Formal higher education is relatively new to Saudi Arabia. The first Saudi Arabian university was founded in 1957. There are now eight major universities in Saudi Arabia : King Saud University (KSU, founded in 1957), The Islamic University of Imam M. Ibn Saud (founded in 1953, gained university status in 1974), King Abdul Aziz University (KAAU, founded in 1976), Umm Al-Qura University (established in 1981), Islamic University (established in Medina), King Fahad University of Petroleum and Minerals (KFUPM, founded in 1963, gained university status

in 1975), King Faisal University (KFU, founded in 1975), and King Khalid University (KKU, founded in 1998).

Historical Background of King Abdul Aziz University (KAAU) :

This study will focus on King Abdul Aziz University, in Jeddah, Saudi Arabia's western main seaport. KAAU was originally founded as a private university and became public in 1971, under the authority of the Ministry of Higher Education. It has twelve colleges, one of which is the Faculty of Arts and Humanities where this study was conducted. All schools provide bachelors degrees and some departments offer graduate programs, mostly master's degrees and in few departments Ph.D. programs.

KAAU has a central library, as well as quite a few branch libraries at all colleges. The central library is responsible for technical services for all college and branch libraries. In addition to the central library at the girls' campus, it also handles all budgetary allocations, personnel recruitment, and staff training for the parent libraries (Marghalani & Hafez 1993). Among the 91 library staff,

only 39 are professionals with a library and Information Science Degree. The Central library has a collection of 657,337 volumes and subscribes to 2,089 serial titles. Because of the local economic situation, financial constraints and budget cuts have directly affected acquisition policies concerning books and serial subscriptions. This forced the library to explore other venues, such as electronic sources and the Internet. Not only does the library serve the academic community, including faculty, undergraduates and the graduate students, it also extends its services to the local community.

The university installed an DOBIS / LIBIS online integrated, interactive system years ago. However, not all of KAAU library systems are entirely computerized, due to the cost. Terminals for accessing the DOBIS / LIBIS system are mainly in the library. Students, faculty, and member of the local community may access the system freely to search for materials. Recently, the library changed its system and started the installation process of its new automated system (HORIZON) which is an integrated web-based system.

The library has a department for online and CD-ROM databases searches. This service is available through the library, local area network (LAN), and soon to be offered through the Internet. The library also has had an Internet lab with 20 workstations for use inside the library since 1999. This is to go along with the computer and Internet labs available at the computer center of the university and the labs available at a few colleges; the faculty of Arts and Humanities is not one of them at this time.

Statement of the Problem :

The Internet is a recent technological tool to be soon available at all levels in Saudi Arabia. Even though Saudi Arabia was one of the last countries in the region to regulate Internet use through King Abdul Aziz City of Science and Technology, it has the fastest growing rate of users at 20% annually. The number of Internet users currently in Saudi Arabia exceeds 500,000 and the providers of the service are more than 40 in the Kingdom (Alsereihy & Aref, 2002).

When most freshmen students at the Faculty of Arts and Humanities of KAAU

use the library, they have had no experience with the DOBIS / LIBIS or Horizon systems, and little experience or none with computers or the Internet. Because of their computer, Internet and library anxiety, they use different methods to obtain the information they need or use the technology for research or other purposes. They usually ask a friend for help or someone at the library or the computer lab for help. They may also try to find their way through a trial and error process and sometimes experience different problems.

Even after three or four years of undergraduate study, some students avoid using the library system or computer and Internet technology. They usually go directly to the area of the library where their major's books are, or they ask someone at the front desk if they need something different. They also may depend on others for help in understanding computers or the Internet.

Reducing computer and Internet anxiety and having students feel comfortable using these technologies should be a major objective of the KAAU administration. Having students do their own data searching would free library

personnel to attend to other, more pressing matters. It also upgrades a students' level of technological use.

In short, the research addressed the following question : can short workshops reduce Internet anxiety among Saudi freshmen at the Faculty of Arts and Humanities of KAAU in Saudi Arabia ?

Research Question :

Previous research has shown that both computer and library anxiety respond favorably to intervention through seminars, training courses and workshops. One-on-one instruction and additional experience with both library research and computers seem significantly to reduce user anxiety (Miwa & Nakayama, 1984).

Therefore, this study used a two day workshop with freshmen students at the Faculty of Arts and Humanities of KAAU to train them in the use of the Internet, in an attempt to reduce their Internet anxiety. The following are the research questions that will be addressed in this study.

- Do workshops, to help teach groups of freshmen how to use the Internet significantly reduce Internet anxiety in those students ?

- What are the major factors of frustration freshmen students at KAAU face when using the Internet ?
- Is there a gender difference in attitudes towards using the Internet ?

Methodology :

The purpose of this study was to determine :

- whether Internet anxiety can be reduced through workshops; and
- the major factors of frustrations and anger related to freshmen students at KAAU when using the Internet.

This study used the experimental methodology through equivalent groups of freshmen students enrolled in course (LIS 150), which is an introductory course given at the second year of study in some departments of the Faculty of Arts and Humanities. The experiment itself involved an experimental group (20 male students and 19 female students) and a control group (33 male students and 19 female students). The experimental group was introduced to the experimental variable; the workshop. All other variables, such as materials to be taught, text books, teaching style, tests, number of class meetings, and the students

themselves were of similar background and at the same level in their educational stage and was controlled to ensure the internal validity of the experiment, so any significant differences between the groups can be attributed to the experimental treatment manipulated by the researchers. Male and female students were given similar instructions during the course teaching or during the short workshop. The same training was administered to both groups at the same time. Furthermore, an assignment was given to all students enrolled whether they participated in the workshop or not.

Twenty male and a similar number of female students were chosen randomly to take the workshop: one female student did not participate. Other students did not participate in the workshop, but took the assignment and their views were measured as well. A two pages questionnaire was developed and tested before it was distributed to all students enrolled in the course. The analysis used the data gathered through the main instrument of the study, the questionnaire, and the results of the assignment to find out how well all student did on the assignment.

Limitations :

This study is limited to measuring male and female freshmen students' Internet anxiety at the Faculty of Arts and Humanities of KAAU. All subjects are Saudi citizens and native Arabic speakers. The experiment was conducted during the first semester of the academic year 2000-2001 at KAAU's facilities.

Significance of the Study :

As information and technology expand, the academic community and libraries in specific will continue to become increasingly complex. Reducing library, computer or Internet anxiety, and having students feel comfortable using the Internet is one objective of universities all over the world. This provides useful information for students, as well as valuable computer experience.

Working on instructional or training techniques to reduce students' Internet anxiety would help the academic communities and improve student learning levels and achievements. According to a recent study by psychologists Rosen and Weil (1994), about 70% of the overall American public is uneasy with technological change

(McGrath, 1999). Different kinds of fears are experienced when computers or the Internet are used. The Internet has quickly become a prevalent aspect of many peoples' lives all over the world in general, and technologically advanced countries in specific. As more individuals and companies begin to conduct their everyday business on the Net, it will be necessary for even more people to not only have Internet access, but to be able to maneuver through the Web. Many of these individuals will look to their local libraries to provide both access and instruction. Thus, it will be important for librarians to understand Internet anxiety from the user's point of view and to be able to employ successful strategies to help reduce such anxiety.

By conducting this study, it is hoped that the academic community through its programs and facilities such as the computer center, student affairs, the admission office, and the library would play a major role in helping students, especially new enrollees deal with technology comfortably. The library, in fact, through its instructional programs can provide a great deal of help and should prepare itself to play its part in this issue.

Computer and Internet Anxiety :

Hopson (2001) mentioned that a large number of Americans suffer from computer anxiety and she mentions that one of the measures of stress caused by a technological society has been called techno phobia. She went further and cited Bowers and Bowers (1996) who defines techno phobia as "a reaction caused by fear of social disgrace, which causes apprehension, tension, or uneasiness in cognitive or behavioral patterns." Also, Hopson (2000) wrote that Henry and Stone (1997) define computer techno phobia as "conditions when people resist information technology".

The Macquarie Dictionary defines anxiety as "distress or uneasiness of mind caused by apprehension of danger of misfortune" and Fajou stressed that computer anxiety is an extremely complex issue and it is surprising how little information is available on it, especially considering how important computers are becoming in everyday life to all people. (Fajou,). Anxiety is defined as "an exaggerated state of fear," that motivates a variety of defensive behaviors, including physical signs, conscious apprehensiveness, or disorganization"

(Sievert et al., 1988). Maurer and Simonoson (1994) have defined computer anxiety as "the fear and apprehension that is felt by an individual when considering the implications of utilizing computer technology, or when actually using computer technology. The individual is in a state (of computer anxiety) because of the fear of interaction with the computer, even though the computer possess no immediate or real threat." On the other hand, Fisher (1999) discussed the concept "computer anxiety" and found that much of the research into the concept of computer anxiety has been directed at attempting to define the concept itself. For example, Nykodym, Simonetti and Christen (1988) and Rosen, Sears and Weil (1987) use terms such as computer anxiety, compustress, cyberphobia, computerphobia, and technostress inter-changeable. Common to most definitions of computer anxiety is the notion of underlying fear and apprehension that users may experience, as well as the probability that, in the world of work such fear may be directed towards future use of computers because organizations are computerizing at a rapid rate and on a global scale (Nykodym, Simonetti & Christen (1988); Weil, Rosen and Sears (1997) described an

uneasy or apprehensive or fearful about current or future use of computers (Parauraman & Igraria, 1990). Moreover, Fisher (1999) continues his exploration of the concept and found that in the body of academic research literature which now exists exploring computer anxiety, there are many underlying assumptions concerning its antecedents, causes and correlates. Some researchers have sought causal clues through the study of constructs as diverse as locus of control, rigidity, ownership avoidance, automatic bank teller card use, typing speed, video game ownership and video game avoidance (Morrow, Prell & McElroy, 1986), computer use experience and computer knowledge, (Martoccio, 1994; Parasuraman & Igbaria, 1990). Other researchers have similarly studied other anxiety targets, such as anxiety about mathematics (Heinssen, Glass, & Knight, 1987; Okebukola, 1993; Spector, 1982); while others still have focused on issues of self-presentation, fear of failure and ego-deflation as the root cause of barrier building (Bloom, 1985).

In trying to understand how anxiety affects student attitudes and performance of academic tasks, researchers have identified specific areas of academic

pursuit to which anxiety is a common response and studied presumed causative factors and interventions intended to reduced these "specialized anxieties", for example, math anxiety, test anxiety, computer anxiety, Internet anxiety, and library anxiety.

There are many feelings associated with computer anxiety, as well as symptoms and warning signs for teachers to look for. The issues to be examined are emotions, states of mind associated with anxiety, causes of anxiety, motivation, relevance, questioning and ways of dealing with computer anxiety.

Fajou went further in her discussion of the concept of computer anxiety and cited a number of studies, such as Scharzer (1986) who mentioned that under certain circumstances anxiety may facilitate performance. She also stressed that this may be true for students of high ability where high anxiety can improve their performance on tasks of simple to moderate ability; however, "high anxiety will generally lead to performance decrements for individuals of low ability" (Gaudry & Spielberger, 1971). A moderate level of anxiety can be healthy in most students, which indicates an

interest in what they are doing, and a low level of anxiety can indicate an apathetic attitude which can be just as detrimental as high anxiety is to a student's learning. Fisher (1999) discussed anxiety in the context of negative high anxiety. Low anxiety generally indicates boredom and is harder to overcome, a high input of motivation is required, whereas high anxiety has a large number of contributory factors and possible solutions (Fajou).

Fajou also wrote that some of the negative feelings associated with computers are anxiety, frustration and irritation, all of which lead to panic. People also often feel fear of embarrassment and of failure and disappointment. Some physical symptoms of anxiety are: becoming cold and sweaty; getting clammy hands; feeling sick in the stomach; a tightening or "lump" in the throat; increased heart rate; feeling like crying; and getting tense in the limbs. There are some warning signs that teachers can look for in students, some of the more obvious are glazed eyes or rigidity in the student's posture. "An awareness of changes in manner can help avoid creating

uncomfortable situations" (Buxton, 1981). In fact, Fajou discussed two states of mind associated with anxiety. The first is the "mind in chaos," where the mind is in a type of frenzy or turbulence and has trouble separating all its thoughts. The second is more common and involves a freezing of the mind, a sense of paralysis or the mind locking up. The best way to avoid this "freezing up" of the mind is by employing problem solving methods of teaching rather than ROTE/reaction learning. It can be compared to the way actors learn lines for a play. They use ROTE learning and memorize their lines, which means if they forget their lines there is no escape and usually this leads to panic. Alternatively, they can learn the "theme" of the play and then learn the words, so if they forget their lines they can ad-lib or improvise and therefore avoid the panic situation (Fajou).

Similarly, library anxiety is manifested in student fears that: "(1) they have inadequate library skills and that they are alone in this deficiency; (2) their inadequacy is 'shameful and should be hidden;' and (3) asking questions would only reveal their inadequacy" (Mellon, 1986). Students with library anxiety are

“frustrated when presented with too many options; they want one simple answer” (Mellon, 1986). Internet anxiety on the other hand, is no different from library or computer anxieties. In fact, issues such as slow connection, viruses, hackers, and fears of not knowing how to navigate or search the Net add to the dilemma of Internet anxiety.

Presno (1998) specifically sought to investigate Internet anxiety among novice adult students. Her research on Internet anxiety would certainly be of benefit to librarians conducting instructional sessions or workshops about the Internet. By understanding the four types of anxieties, she discussed, that contribute to overall Internet anxiety, librarians will be better able to view the situation from the user's perspective and more appropriately address their concerns. Presno (1998) then went on to identify nine instructional techniques and behaviors that helped to reduce each of the four areas of Internet anxiety. Those nine successful instructional techniques and behaviors identified by Presno (1998) are basic enough that they could easily be built into library instructional sessions. Librarians who incorporate Presno's (1998) research findings into

their own teaching methods will definitely help to reduce Internet anxiety among their users. In evaluating Presno's (1998) research, it is important to note that a number of her findings are consistent with those found in the literature about computer anxiety. This makes sense because Internet anxiety is considered to be a subset of computer anxiety. Furthermore, the beneficial instructional techniques and behaviors observed by Presno (1998) are consistent with the literature, which addresses the teaching of the Internet, but not Internet anxiety specifically.

Rosen, Sears, Weil (1993) studied computer phobia reduction. They used 162 students on which they began treatment modules while enrolled in a course that required computer interaction. After a 5 week program the group showed dramatic changes. There was a decrease in computer anxiety with an improvement of computer cognition and enhanced attitudes about computers. Because of the program, there was “a 50% reduction in dropout rate, a significant increase in grade performance in the computer courses and less anxiety”.

Other studies will be discussed in the literature review to help illustrate how anxiety over computers and Internet use go hand-in-hand with overall academic performance.

Literature Review :

Library anxiety was first identified by Mellon (1986). She had students record their feelings and reactions toward conducting library research in journals during a bibliographic course she taught. She noticed repeated entries among her students referring to "library phobia" The university library was described as "scary, overpowering, big". Students described feeling "lost, puzzled, having no idea where to look".

Recent studies have confirmed the existence of library anxiety and have sought to explain its origins. Scott Stebelman of George Washington University believes the rapid changes in organization, operation, and services of libraries has produced a lack of predictability. He feels the "current transitional stage of automating functions and storing materials in a multitude of formats" is intimidating by its newness (Bungard, 1987). This may be a valid

problem for Saudi university students whose library training was not with computerized catalogs.

Ilene Rockman of California Polytechnic State University believes "people come to libraries with expectations and desires for success" (Bungard, 1987). Sally Jo Milne feels libraries "cause anxiety by challenging (patron's) self-image, self-confidence, self-esteem and what others will think of them if they must ask for information" (Bungard, 1987). Jean Hatfield cites a dread of work as a key factor in library anxiety (Bungard, 1987).

Various studies have explored means of measuring library anxiety. Sharon Bostick at Wayne State University tried to "develop a valid and reliable instrument to measure library anxiety, as defined in Mellon's theory" (Bostick, 1992). She devised a list of key components of library anxiety :

- Staff Assistance in Using the Library.
- Comfort in Using the Library.
- Constraints to Using the Library.
- Knowledge of the Library and Library Independence.

Bostick (1992) began with 294 statements measuring these and other components, but after multiple pilot tests, she reduced that number to 43 items. They were created and divided into categories based on the components of the Master List. Bostick's (1992) scale, which she named the library Anxiety Scale, does effectively measure library anxiety which is also part of the problem at KAAU.

On the other hand, library anxiety is another topic that is not covered in this study; however, computer anxiety related to library personnel or library patrons have received considerable attention. There is a wealth of materials on this topic. Silver et al. (1988) found that for library staff, computer experience, association with a particular department, and number of years worked in the library influenced the incidence of computer anxiety. Some studies have also linked gender and computer anxiety, finding significantly higher computer anxiety among girls and women (Koohang, 1987; Jacobson, 1991). On the other hand, neither Jones and Wall nor Pope-Davis and Twing found any significant relationship between gender

and computer anxiety (Jones & Wall, 1985; Pope-Davis & Twing, 1991). Maurer (1994) states that some relationship exists between gender and computer anxiety, and age and computer anxiety.

In fact, Jacobson (1991) examined sex differences in library anxiety, computer anxiety, and using computers for library research anxiety in 40 academically oriented high school seniors during the course of a year-long intensive library research experience. The original abstract of this study reveals that the major findings of this study found that there was a gender gap which exist in all three areas, with boys having significantly higher library anxiety than girls, and girls having significantly higher computer anxiety and using computers for library research anxiety than boys. Both sexes improved significantly in all three areas except for girls on Using Computers for Library Research Anxiety scale. Jacobson suggested that by placing computers in a "nonmathematical" educational setting, girls may experience less computer anxiety, but the negativity associated with computers may compromise girls' attitudes about the computer-mediated

activity they are engaged in, such as library research.

Both computer and library anxiety have been linked to inability to perform independently and to user satisfaction in libraries and / or with computer technology. The anxiety itself becomes a barrier to proper use and effectiveness. Turner, Baker, and Kaske (1990) found a significant relationship between a user's anxiety level and his or her search performance during online bibliographic searches. On the other hand, Jones and Wall (1989) found no significant relationship between "[computer] anxiety and students' academic achievement in the course "Computer in Society", which included computer experience. They did however, find a significant relationship between computer experience and reduction in computer anxiety.

Typically, those with high degrees of computer and / or library anxiety will avoid using the objects of their anxiety, as the Saudi undergraduates may avoid using computer labs or the Internet.

Worthington and Zaho (1999) discussed and reviewed the literature related to the topic of computer anxiety

and found that many researchers have spent the greater part of the past two decades verifying the existence of the construct of computer anxiety (Cohen & Waugh, 1989; Dukes, Discenza, & Couger, 1989; Francis & Evans, 1995; Kernan & Howard, 1990; Loyd & Gressard, 1984b; Marcoulides, 1989; Marcoulides, Mayes, & Wiseman, 1995); positing relationships between computer anxiety and factors such as gender, age, and level of familiarity with computers (Ayersman & Reed, 1995-6; Gilroy & Desai, 1986; Gos, 1996; Igarria & Chakrabarti, 1990; Loyd & Gressard, 1984a); and seeking ways to predict who will experience computer anxiety and subsequently how to reduce it (Dupagne & Krendl, 1992; McInerney, McInerney, & Sinclair, 1994; Szajna, 1994; Woodrow, 1991). Several scholars (e.g., Dupagne & Krendl, 1992; Maurer, 1994; Rosen & Maguire, 1990) have also attempted to make sense of this massive body of literature so as to provide directions for further research and practice.

Worthington and Zaha (1999) revealed that the existing literature on computer anxiety has neglected to consider two

issues : (1) that there is an existential element to computer anxiety, and (2) that computer technology has undergone historical changes that bring with them subsequent changes in the metaphors we use to understand computers. The researchers pointed out that failure to consider these two issues has resulted in a vast body of literature that is inconsistent and ultimately of little practical or theoretical value. They discussed some of the problems in the literature that defines, develops measurement instruments for, posits correlates of, and attempts to "cure" computer anxiety and explain how attention to the two issues described above could mitigate some of these problems. Worthington and Zhao (1999) suggested ways in which attention to these two issues could help in the development of a meaningful theory to support investigation into computer anxiety.

Many factors lead to anxiety toward computers and other technological advances in the workplace and school environment. Faerstein (1986) identified "need for control or autonomy, resistance to change, need for status or power, fear

of failure or the unknown, feeling of isolation, and role identity." Fine (1986) claims that "resistance to computers is not a function of personality or demographics but is related to the climate of the organization and the beliefs, attitudes, and values of the individual."

Another factor in computer anxiety is the computer itself : its size, speed (a baud rate), and "user-friendliness." Bloom and Hautaluoma (1990) studied the impact of user-friendliness on computer anxiety. Turner, Baker, and Kaske (1990) found a significant relationship between baud rate and searcher experience during online bibliographic searches.

The Computer Attitude Scale used by Francis (1994) questioned 378 first year undergraduate students about gender stereotyping of computer use. The results showed that there were no significant differences in sex. A small number had stereotyped views of the use of computers. It was found that women like men, felt they were better at using computers.

Chu and Spiree (1991) have listed "expectations of how a valid measure of

computer anxiety would behave in response to several demographic traits and cognitive styles.”

Many interventions have been conducted to reduce computer anxiety. Most focus on increasing the subjects' experience with and understanding of computers. Computer anxiety is positively correlated with an external locus of control : the belief that outcomes are more influenced by the external environment than by the subjects' actions (Baumgarte, 1984). Baumgarte (1984) believe that “teaching the function of computers by using a set of rules; using several strategies to lower students' frustration levels; having the beginner adopt a computer mentality, in which orderliness, sequencing, and attention to detail are paramount to successful human / computer interactions; and insuring that early assignments incorporate tasks that are relevant to students' education goals.”

Researchers have taken various approaches to study what reduces computer anxiety. Miwa and Nakayama (1984) measured the effect of a three-day online searching training session on the computer anxiety levels of librarians learning online searching. Sievert et al.,

(1988) used a “voluntary sixteen week in-service program emphasizing sequential instruction that staff members could somewhat tailor to their own needs.” Lambert (1991) tested the impact of computer experience on computer aversion among 1,542 students enrolled in an Introductory Psychology course with a computerized tutorial program. They exposed the students to one of three teaching formats involving different levels of computer tutorial usage.

Bloom and Hautaluoma (1990) “assessed the effects of self-managed relaxation and cognitive coping skills training on the anxiety and performance of 80 apprehensive computer trainees.” They also examined the influence of a computer's user friendliness upon these measures. This study showed how training in relaxation or cognitive coping skills reduced error rates and task times, but not computer anxiety.

Rosen and Weil (1995) used a three-factor model of computer anxiety : measuring Interactive Computer Learning Anxiety, Consumer Technology Anxiety, and Observational Computer Learning Anxiety. They tested their model at seven universities in the United States. Then

they tested their three-factor model in nine additional countries. They found that they needed an additional factor, which they termed a Computer Victimization factor in order to accurately measure user experience in various countries. The reliability of their instruments varied in different countries, which they discuss in light of cultural characteristics, computer education, and availability of similar hardware and software.

This study shows that available instruments in the United States for measuring computer and library anxiety may not accurately reflect the anxiety levels of Saudi students. Similarly, previously used workshop and seminar should be modified to be helpful to Saudi freshmen.

In 1991 Marcoulides sampled the attitudes and reactions of college students from Los Angeles, California and Hunan, People's Republic of China, toward computers. The results showed that computer anxiety is present to a similar degree for both samples of American and Chinese students.

Gilroy and Desai (1986) reported that in a student sample the use of word

processing packages in an English composition class reduced computer anxiety levels more than a computer class. Martoccio (1992) reported that where microcomputer use was labeled as an *opportunity*, by providing written words, or labels that subjects were asked to review, computer anxiety scores were significantly lower than computer usage that was not provided with a label.

Similarly, Martoccio (1994) found that creating a context in which trainees believed they could build on their present abilities was associated with a significant decrease in computer anxiety, whereas informing trainees that their efforts were constrained by their present ability did not impact on computer anxiety scores. This link with context and motivation has a direct connection with users willingness to accept computer technology as a consequence of the level of perceived usefulness and perceived fun attached to the interaction (Igarria, Schiffman & Wieckowski, 1994).

Crage (1994) reviewed related literature to the field of managing computer related anxiety and stress within organizations. This review revealed that computer-related anxiety and stress

affects everyone who uses a computer and is aggravated by poor management, faulty system design, inadequate training, misunderstandings by users of what computers can do, and substandard documentation. The author revealed that research has shown that computer users, no matter how experienced they are, can experience anxiety and stress that negatively affect their job performance. He went further and mentioned that the problem is so pervasive that no single management strategy, ergonomic plan, training model, or system design can resolve the dilemma. Physical and psychological problems that afflict computer users can be reduced only by a united effort of all people involved with designing systems, training, and operating computers within organizations. Craig's article, as the author pointed out, reviews research in the field, and outlines how management, system designers, and technical communicators can help users relieve stress and anxiety when using and learning how to operate computers. When managers, designers, and technical communicators work together, factors that create computer stress and anxiety

can be identified and reduced when computer systems and training are properly designed and managed.

Bradley and Russel (1997), in a study of 350 Australian school teachers found a high negative correlation ($r = -0.78$) between competence and the level of computer anxiety. They reported three types of computer anxiety: damage anxiety – a fear that they would damage the computer; task anxiety – fear of performing computer tasks; and social anxiety – fear that they would embarrass themselves. Bradley and Russell (1997) suggested that the best way to reduce computer anxiety was to increase the quality of the computer training received by the teachers. Suggested improvements were that schools provide non-student contact time for teacher to learn to use computers and establish a government policy to encourage teachers to purchase computers.

In a different study Shashaani (1997) examined the gender gap in computer attitudes and use based on a sample of 202 college students. She surveyed the students' attitudes in relation to gender, experience, and parental encouragement. The major findings of this study showed

that students responded differently in regard to attitudes and experience : females were less interested in computers and less confident than males; males were more experienced. Further analysis of the students' responses showed that one semester of computer training improved their attitude toward computers and this is similar to what the current study tried to find out through short workshop. The results are discussed in terms of students' precollege computer experience and parental behavior.

Delveccio (1995) wrote an article in *The Sydney Morning Herald* (Delveccio, 1995) and reported on a study by Deakin University, which found that one in ten young people suffer from computer anxiety even though over 50% had computers at the time of the survey. The report revealed that 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 overcome the fear and anxiety felt. An important and perhaps obvious result was that students who reported computer anxiety tended to do poorly in their computer exams which coincides with the

findings of this study. The study also "highlighted the importance of playfulness to successful human-computer interaction" (Delveccio, 1995).

Fisher (1999) reported on a study where two groups of such employees (N=40) were exposed to two contrasted methods of introduction to computer use as part of their initial training. He mentioned that all participants were identified as similar in terms of their initial biographical detail, employment record and in particular computer experience and knowledge, and all required initial skills development in a windows environment. Fisher (1999) went further and mentioned that each participant was randomly assigned to one of four training groups. The first two groups were introduced to basic computer functions using conventional methods of guided interaction. The other two groups were introduced to the same functions using game playing (solitaire) and the principle of enjoyment and fun as an integral part of the learning process. Training objectives and task learning criteria were otherwise identical for all participants. Measures of biographical information, computer experience and

knowledge, and computer anxiety measures were taken of each participant immediately following their being informed of their inclusion in the training program. Repeated measurement of computer anxiety was taken immediately prior to the start of the training program, at its conclusion, and two weeks after the program. Fisher (1999) also pointed out that measures were also taken of perceived fun at the end of the first three hour session of the program, and at the end of the program. Measures of learning criteria were taken during the training program and measures of computer use activity for the one month following training. The author summarizes the work and mentioned that initial computer anxiety scores were similar for both groups, but the game playing groups reflected a statistically significant reduction in anxiety following training, and more frequent, wider and more adventurous use of available computers in the month following training. These findings are discussed, as fisher stated, in the context of reducing computer anxiety as an obstacle for organizational development and revised methods of organizational communication designed to encourage inclusivity and participation.

Data Analysis and Discussion :

This study was conducted in the first semester of the academic year 2000-2001 at KAAU's Faculty of Arts and Humanities. The instrument used for this study was a two pages questionnaire developed by the researchers and tested by other professionals. The questionnaire was distributed to all members of the class, whether they participated in the short workshop or not. On the other hand, the time factor was important, therefore, the questionnaire was distributed after the experiment and an Internet assignment that was taken by both groups; the experimental and the control groups.

Statistical analysis were conducted using SPSS for MS Windows. Descriptive statistics and cross-analysis results were obtained to show the distribution of the answers or attitudes of the groups. Nonetheless, a two sample t-test was used to compare the study's two group means (control and experimental) on different variables. The scores of their assignments were used to find out which group performed better in the assignment. The number of students participated in the experiment was 39 (20 males and 19 females) where the control

group consisted of 52 (33 males and 19 females).

Before presenting the data gathered, the results of the evaluation of the assignment given to all students in the class will be discussed. The overall results of that assignment showed better performance from those who participated in the workshop. The average score within the experimental group was 8 out of 10; whereas it was 5 out of 10 within the control group. A statistical significant difference was found between the two groups.

Significant differences were also found between the two groups when

analyzing their responses on the questions directed to them in the questionnaire. Their understanding of the assignment, feeling of happiness during the assignment, time taken to finish the assignment, willingness to use the Internet in the future for school work or other purposes, the ability to write down difficulties faced during the assignment, and the ability to write down the e-mail address correctly.

Table 1 presents the results of the t-test analysis. It shows significant differences among the two groups on those variables presented earlier at the level of significant (0,05).

Table 1

Variable	t-value	df	t-table (0,05) + or -	Decision	Significanee
Understanding	2,41	84,65	1,66	Reject	Significant
Happiness	-2,21	57,17	1,67	Reject	Significant
Time	-4,31	86,08	1,66	Reject	Significant
Willingness	-3,97	83,71	1,66	Reject	Significant
Difficulties	3,43	83,39	1,66	Reject	Significant
e-mail	-3,33	87,85	1,66	Reject	Significant

The null hypothesis $H_0 : \mu_1 - \mu_2 = 0$ was rejected in all cases as shown in Table 1. The results showed that the experiment made a difference in the performance of the experimental group and their attitude. They finished the assignment in a shorter time, felt happier during the assignment, were able to write down their e-mail addresses and the difficulties they faced simply and correctly, they understood the assignment better, and were willing to use the Internet in the future, more than those in the control group.

The results also found that the control group members felt that they were lost some how during the assignment answering period, and they were afraid of continuing more than the experimental group did. Also, they felt some nervousness, more than what the experimental group experienced. However, no statistical significance was found in both variables. Table 2 shows the t-test results on both variables where no significant statistical differences were found.

Table 2

Variable	t-value	df	t-table (0,05) + or -	Decision	Significance
Fear	1,65	88,14	1,66	Accept	Not Significant
nervousness	1,45	88,06	1,66	Accept	Not Significant

On the other hand, there was no significant differences between male and female students participating in this study. This research found no gender differences in attitudes toward using the Internet. Both groups of students viewed all the questions similarly.

Previous analysis shows a great deal of significant differences between the two groups on some important variables, such as the time taken to finish the assignment

and aided those involved in the experiment to be able to navigate the Net better and feel happier as well.

A direct question to list the major factors of frustration and anger noticed by the participants reveled that Internet time delay and slow connection, the English language difficulties, and not knowing how to navigate the Net as the major factors of frustrations.

Conclusion :

The major findings of this study can be summarized as follows :

- Students, both male and female, identified Internet delay anxiety as a major factor of frustration and anger at some point of time. They mentioned that slow connection and browsing time caused them to lose their tempo and feel irritated.
- This study discovered a significant relationship between attending training workshops, or instructional programs, and the improvement of computer and Internet level of understanding and positive attitude towards the Net. This helped students participating in the study to save time, improve their understanding, and feel comfortable working on the Net and consequently reduce the level of anxiety they may experience.
- A notable and maybe understandable result was that students who reported computer and Internet nervousness tended to do poorly in the assignment given to them.

- There was no significant differences between male and female students participating in this study. This research found no gender differences in attitudes toward using the Internet. Both groups of students viewed all the questions similarly in general.

On the other hand, the current study recommends that universities should develop different instructional programs using different techniques to educate students, both male and female, on how to deal with technology and reduce computer and Internet anxiety. Issues such as time delays, web site address changes, and search techniques should be addressed freely.

Moreover, more attention and research should be directed toward improving technology teaching at the Saudi general education level to be able to prepare students for higher education. This may involve investigating the role of Saudi homes and general education schools in improving technology awareness and comprehension among Saudi students.

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