



# Effects of use of ICT: students' perception at higher education level

Azhar Mahmood<sup>1</sup>, Nasir Hussain Bokhari<sup>1</sup> and Farah Naqvi<sup>2</sup>

<sup>1</sup>Faculty of Social Sciences, International Islamic University, Islamabad, Pakistan

<sup>2</sup>Agriculture University, Rawalpindi, Pakistan.

### ARTICLE INFO

#### Article history:

Received: 3 July 2011;

Received in revised form:

23 August 2011;

Accepted: 28 August 2011;

#### Keywords

ICT,  
Gender,  
Higher Education,  
Learning,  
Training.

### ABSTRACT

This study was conducted to investigate the perceptions of male and female students about effects of use of Information and Communication Technology. The research study was a descriptive in its nature. The targeted population was the male and female students of the public sector universities. The purposive sampling technique was used to gather data from the faculty of social sciences of two public sector universities. Data were collected by administering a questionnaire that based on Likert- five point scales. The data were tabulated, analyzed and interpreted. The Chi Square and Mean score were applied to analyze the data. Present study showed the results that Role of Information Communication and Technology is very important to improve learning. Both type of respondents agreed that ICT is an agent of change. Information and Communication Technology helps to integrate the learning and technology. Information and Communication Technology enhances communication ability in students.

© 2011 Elixir All rights reserved.

### Introduction

The integration of ICT into education has been assumed as the potential of the new technological tools to revolutionize an outmoded educational system (Albrini, 2006). In the last 20 years, initiatives, projects and implications related to use of Information and Communication Technologies (ICT) into education motivate teachers to gain necessary knowledge and skills in using ICT in their instruction. Pelgrum (2001) has noted that ICT is "not only the backbone of the Information Age, but also an important catalyst and tool for inducing educational reforms that change our students into productive knowledge workers."

Developments in Information and Communication Technologies (ICTs) have impacted all sectors of society, including the education sector. In higher education, application of ICTs in form of e-learning is already changing teaching and learning processes. There are many pedagogical and socio-economic factors that have driven higher learning institutions to adopt e-learning. These include greater information access; greater communication via electronic facilities; synchronous learning; increased cooperation and collaboration, cost-effectiveness (e.g. by reaching different students and in greater numbers) and pedagogical improvement through simulations, virtual experiences, and graphic representations. Both trainers and learners can choose more appropriate applications which are flexible in time, in place, personalized, reusable, adapted to specific domains and more cost-efficient (Fisser, 2001; Pelliccione, 2001).

It is important for all stakeholders in the institution to know the existing ICT facilities and services and their importance in relation to their specific tasks. However, according to Tsubira and Mulira (2004), there tends to be some vague knowledge about ICTs, some interpreting them as simply advanced technologies that require a lot of money and very advanced skills. They are not appreciated as a means of creating efficiency and cost effectiveness. Lack of awareness goes along with

attitude. Positive attitude towards ICTs is widely recognized as a necessary condition for their effective implementation (Woodrow 1992). Full involvement of all stakeholders in the implementation process is a key to addressing awareness and attitude problem. Formally organized awareness programs, visits to similar institution where success has occurred, and short trainings can contribute to raise the awareness and change the attitude of stakeholders towards facilities and services.

The impact of ICT on the learning process seems to be more important and requires more than looking only to curricula. Improved student outcomes are observed, with regard to: motivation, enjoying learning; self-esteem; ICT skills; collaborative skills; subject knowledge; information handling skills; meta-cognitive skills, etc. (Yousaf, 2008).

### Review Literature

ICT has very strong effect in education and it provides enormous tools for enhancing teaching and learning. There have been many studies that have highlighted the various ways that ICT may support teaching and learning processes in a range of disciplinary fields such as the construction of new opportunities for interaction between students and knowledge; accessing information and etc. ICT can have a useful effect on teaching and learning if it is used under right conditions including suitable sources, training and support. ICT also offers the potential to meet the learning needs of individual students, to promote equal opportunity, to offer learning material, and also promote interdependence of learning among learners (Cavas, 2009).

ICT radically change the ways in which knowledge and information are constructed (i.e. Bolter, 2001; Brunner, 1992; Logan, 1995). For example, Logan (1995) argued the computer is "not just a new medium of communication; rather, it is radically new way to process and organize information and as such it represents a new form of language. Brunner and Tally (1999) claimed that ict is an expressive and creative medium and learning environment.

Researchers (Koochang, 1987; Loyd and Gressard, 1986; Hunt and Bohlin, 1993; Pepper, 1999) found that the significance to teacher educators was that those students who believed ICT literacy was vital for living in today's society held positive attitude toward ICT; however many did not perceive that they needed a good command of ICT for their future profession and they generally had negative attitude toward ICT. Based on findings that experience with ICT affect teacher attitudes, researchers sought the factors that might influence students' attitude. Savenye (1993), found that participation in the course of ICT literacy improved the student attitude toward computer and their use.

Kulik's (1994) meta-analysis study revealed that, on average, students who used ICT-based instruction scored higher than students without computers. The students also learned more in less time and liked their classes more when ICT-based instruction was included. Fuchs and Woessman (2004) used international data from the Program for International Student Assessment (PISA). They showed that while the bivariate correlation between the availability of ICT and students' performance is strongly and significantly positive, the correlation becomes small and insignificant when other student environment characteristics are taken into consideration.

Attwell and Battle (1999) examined the relationship between having a home computer and school performance, for a sample of approximately 64,300 students in the United States. Their findings suggest that students who have access to a computer at home for educational purposes, have improved scores in reading and maths.

Didia and Hasnat (1998) examined the determinants of student performance on an introductory finance course. They found that age, as a measure of maturity, had a significant influence on performance. Reid (1983) focused his study on an introductory university economics course and also found that age was a significant variable, with older students performing better than younger ones. Jaggia and Kelly-Hawke (1999) included variables concerning school inputs and student's family background in order to test whether these two variables influence student performance. They found that higher levels of spending did not have any consistent relationship with student performance. However, family background was clearly very important in explaining differences in achievement.

Leuven et al. (2004) concluded that there is no evidence for a relationship between increased educational use of ICT and students' performance. In fact, they find a consistently negative and marginally significant relationship between ICT use and some student achievement measures. Students may use ICT to increase their leisure time and have less time to study. Online gaming and increased communications channels do not necessarily mean increased achievement. Many other explanations were presented.

Researchers (Clarke and Chambers, 1989; Ware and Stuck, 1985; Singh, 1995; Watson, 1997) observe that young children believe that ICT is the domain of males. Betz and Hackett (1981) reported that college male students held similar efficacy beliefs for traditional male occupations whereas female students had high efficacy beliefs for positions traditionally held by women but low self-efficacy for positions traditionally held by men. Research consistently showed that boys were more likely to be engaged in extracurricular activities with computers, to use a computer at home and play computer games. It is also indicated that stereotypical male images of computing

magazines (Ware and Stuck, 1985) acted as deterrents for female involvement in technologies. Gender and ICT interact in complex ways but in the aggregate females are much less likely to participate in ICT courses, careers and leadership (Withers, 2000). Fenwick (2004) showed that gender inequity persists both in access to and experience of learning opportunities with ICT.

### Methodology

The research was targeted towards the male and female students of public sector universities located in Islamabad. Population was consisted on the male and female students of these universities. This population was targeted due to similar geographical location, socio-economic and cultural background. The purposive sampling technique was used. This purposive sampling was applied to enhance the process of collection of data which was essential owing to shortage of time and financial constraints. The sample was selected from the targeted population. Sample was consisted of the students of faculties of social sciences of two public sector universities, a) International Islamic University (IIUI), Islamabad, b) National University of Modern Languages (NUML), Islamabad due to delimitations of the study.

The total number of sample was four hundred. The sample was equally divided in two hundred female and two hundred male students of faculties of social sciences enrolled in postgraduate program in Spring semester 2010. The sample of the population was further divided, 100 male and 100 female students of faculty of social sciences were randomly selected from each university. A questionnaire was used to collect the data. A questionnaire was distributed to the targeted population with the permission of the heads of the different departments of faculties of social sciences of both the universities (IIUI and NUML) and personally collected. The questionnaire was structured on the basis Likert rating scale to provide the same frame of referencing for male and female respondents. The data collected through the questionnaire were tabulated, analyzed and interpreted. Mean score was applied to analyze the data. Chi Square was used at  $\alpha = 0.05$ , significance level.

Table No.2 illustrates that the calculated value of Chi Square respectively of statement 1 of male (242.19) and female (163.42), statement 2 of male (201.89) and female (132.20), statement 3 of male (68.12) and female (34.45), statement 4 (188.00) and female (252.99), statement 5 of male (52.73) and female (37.61) is greater than the tabulated value 9.49 of Chi Square. Therefore, it is concluded that all the statements are significant for both male and female respondents. The mean score of statement 1 of male respondents (4.42) and the mean score of the female respondents (4.30) fall in same category. This reveals that both the respondents were agreed with the statement regarding appropriateness of ICT for future career. The mean score of statement 2 of male respondents (4.37) and the mean score of the female respondents (4.06) fall in agree category. This finds that both the respondents were agreed that ICT makes them confident and expressive. The mean score of statement 3 of female respondents (2.66) and the mean score of the male respondents (2.18) shows that Both male and female respondents were disagreed to statement 3 that means both think ICT is unsuitable for classroom instructions. The mean score of statement 4 of male respondents (3.62) and the mean score of the female respondents (3.79) is almost same. It reveals both the respondents were agreed that ICT enhances communication ability. The mean score of statement 5 of female respondents (2.69) and the mean score of male respondents (2.25) fall

disagree category. Both male and female respondents disagreed with the statement 5 that means the knowledge gained from Internet is unreliable.

Table No.3 illustrates that the calculated value of Chi Square respectively of statement 1 of male (95.66) and female (55.97), statement 2 of male (35.66) and female (33.10), statement 3 of male (37.70) and female (46.12) statement 4 of male (123.45) and female (98.79) is greater than the tabulated value 9.49 of Chi Square. Therefore, it is concluded that all the statements are significant for both male and female respondents. The mean score of statement 1 of male respondents (2.41) is lesser than mean score of the female respondents (3.06). So, females need to get training than male. The mean score of statement 2 of male respondents (2.58) and the mean score of the female respondents (2.59) is same. This shows that both the respondents disagreed that usage of ICT affects the reading skills. The mean score of statement 3 of female respondents (3.61) and the mean score of the male respondents (2.89) fall in agree category. This reveals that respondents agreed with the statement 3. The mean score of statement 4 of male respondents (4.14) and the mean score of the female respondents (4.04) is same. This reveals that both the respondents were agreed that ICT has created a "Digital Divide".

#### Conclusions and Recommendations

Present study showed the results that Role of Information Communication and Technology is very important to improve learning. Both type of respondents agreed that ICT is an agent of change; it provides high quality multimedia products which are helpful in learning. Information and Communication Technology helps to integrate the learning and technology. Respondents also informed negative aspect of ICT that Plagiarism is increasing in students assignments because they try to copy the material from internet. ICT usage is appropriate for future career. Students disagree that ICT is unsuitable for classroom teaching at higher level. Information and Communication Technology enhances communication ability in students. Computer games affect the health of students and there is a need of training for proper utilization of ICT. This study generates the following recommendations based on the findings made above:

- 1- Provide necessary support for wider access to female students in ICTs through expansion of ICT infrastructure in the educational institutions particularly at universities level to facilitate and train them.
- 2- Department should establish Computer Assisted Instructions (CAI) system to impart knowledge in more effective manner.
- 3- Male and female students should be provided equal opportunities of using Internet in the computer laboratory.
- 4- Male and female students should have access to the facility of computer and phones available in the department.
- 5- Training infrastructure should be set up in the department to provide training to females.
- 6- ICTs should be provided in the department to use for academic and classroom teaching purpose.
- 7- The Internet is a reliable source of knowledge The Internet facility with other ICT infrastructure should be available to all the students in the department and university.
- 8- The awareness about the effects of excessive use of computers should be created among the male and female students. ICT and gender mainstreaming is essential in this regard.

9- Studies may be taken up to include a broad spectrum of gender-based studies.

10- Studies may be conducted on the educational problems of the students pertaining to their issues of gender and ICT in academic and administrative staff of universities.

11- Experimental researches may be conducted to study the magnitude of gender differences aroused under differently manipulated situation.

12- Keeping in view the needs, interests, and aspiration level of the student at higher secondary level research may be conducted for evaluation of the gender equality.

13- Studies may be replicated at primary and secondary level education as well as formal and non-formal education.

#### References

- [1] Albirini, A. (2006) Teachers' attitudes toward information and communication technologies: the case of Syrian EFL teachers. *Computers and Education*, 47(4), 373-398
- [2] Attwell, P.; Battle, J. (1999). *Home Computers and School Performance*. The Information Society. No. 15, pp. 1-10.
- [3] Bolter, J. D. (2001). *Writing Space: Computers, hypertext and the remediation of the print*. Mahwah: M. J. Lawrence Erlbaum Associates.
- [4] Brunner, C. (1992). *Integrating technology into the curriculum: Teaching the teachers*. New York: Centre for Technology in Education (ERIC document reproduction service No. EJ 553816).
- [5] Brunner, C. and Tally, W. (1999). *New media literacy handbook*. New York: Anchor books.
- [6] Clarke, V. Chammers, S. (1989). Gender-based factors in computing enrolment and achievement: Evidence from a study of tertiary students. *Journal of Educational Computing Research*, 5, 409-429
- [7] Cavas, B and Cavas, P. (2009). A Study on Science Teachers' Attitudes toward Information and Communication Technology in Education: *TOJET*, 8 (2), 20-32
- [8] Didia, D.; Hasnat, B. (1998). The Determinants of Performance in the University Introductory Finance Course. *Journal of Financial Practice and Education*. 8 (1), pp.102-107.
- [9] Fenwick, T. (2004). What happens to the girls? Gender, work and learning in Canada's new economy. *Gender and Education*, 2, 169-185.
- [10] Fisser, P. (2001) "Using Information and Communication Technology". Ph.D. thesis, Netherlands: University of Twente.
- [11] Fuchs, T.; Woessmann, I. (2004). "Computers and Student Learning: Bivariate and Multivariate Evidence on the Availability and Use of Computers at Home and at School", CESifo Working Paper. No. 1321. November. Munich.
- [12] Hunt, N. P. and Bohlin, R.M. (1993). Teacher Education Students' Attitudes Toward Using Computer. *Journal of Research on Computing in Education*, 25 (4), 487-497.
- [13] Jaggia, S.; Kelly-Havke, A. (1999). "An Analysis of the Factors that Influence Student Performance: A Fresh Approach to an Old Debate". *Contemporary Economic Policy*. Vol. 17, no. 2, pp. 189-198.
- [14] Koohang, A.A. (1987). A study of the attitudes of the pre service teachers towards the use of computers. *Educational Communication and Technology Journal*. 35 (3), 145-149.
- [15] Kulik, J. A. (1994). "Meta-analysis Study of Findings on Computer-based Instruction". In: E. I. Baker; H. F. O'Neil. *Technology Assessment in Education and Training*. Hillsdale, NJ: Lawrence Erlbaum.

[16] Leuven, E.; Lindahl, M.; Oosterbeek, H.; Webbink, D. (2004). "The Effect of Extra Funding for Disadvantaged Pupils on Achievement". IZA Discussion Paper. No.1122. Bonn: Institute for the Study of Labor.

[17] Logan, R.K. (1995). The fifth language: Learning a living in the computer age. Toronto. ON: Stoddart.

[18] Loyd, B.H. and Gressard, C. P. (1986). Gender and amount of computer experience of teachers in staff development programs: Effects on computer attitude and perception of the usefulness of computers. AEDS Journal, 302-311.

[19] Pelgrum, W.J.; Janssen Reinen, A.M.; Plomp, T. J. (1993). Schools, teachers, students, and computers: A Cross-national perspective. Twente, Netherlands: I.E.A.

[20] Pepper, k. (1999). A comparison of attitude toward computer use of pre service and in service teachers. Alabama: Annual meeting of Midsouth Educational Research Association. (ERIC document reproduction service No. ED 436525)

[21] Pelliccione, L. (2001) "Implementing innovative technology: Towards the transformation of auniversity", PhD thesis, Australia: Curtin university of Technology.

[22] Savenye, W.C. (1993). Measuring teacher attitudes toward interactive computer technologies. New Orleans: Paper presented at the annual conference of the Association for

Educational Communication and Technology. (ERIC document reproduction service No. ED362200).

[23] Singh, P. (1995). Discourse of computing competence, evaluation and gender: The case of computer in a primary classroom. Discourse, 16 (1), 81-110.

[24] Tusubira, F. & Mulira, N. (2004) "Integration of ICT in organizations: Challenges and bestpractice recommendations based on the experience of Makerere University and other organizations", Paper presented at the International ICT Conference Held at Hotel Africana, Kampala, Uganda. 5th to 8th September, 2004.

[25] Ware, M. and Stuck, M. (1985). Sex role message vis- vis microcomputer use: A look at the pictures. Sex Roles, 13 (3/4), 205-214.

[26] Watson, G. (1997). Pre-service teachers' views on their information technology education: Journal of Information Technology for Teacher Education, 6 (3), 255-270.

[27] Withers, P. (2000). Mismatched? Why so few women seem to be taking advantage of this hi-tech business Bonanza. BC Business, 28 (10), 102-111.

[28] Yousaf, A.B. (2008). Impact of ICT on Student Performance in Higher Education: Direct effects, indirect effects and Organizational Change. RUSC. 5(1), 45-56.

### Analysis

**Table No.1**

No	Statement	Option	N	$\chi^2$	Mean
1	ICT is an agent of Change	Male	167	185.66	4.31
		Female	176	208.49	4.41
2	ICT has increased "isolated learners"	Male	167	306.62	3.92
		Female	176	141.22	4.00
3	ICT helps to integrate the learning and technology	Male	167	177.28	4.19
		Female	176	166.91	4.25
4	ICT increases plagiarism.	Male	167	188.84	3.97
		Female	176	130.85	3.94
5	ICT produces high quality multimedia products.	Male	167	211.59	3.92
		Female	176	89.21	3.73

**Table No.2**

No	Statement	Option	N	$\chi^2$	Mean
1	ICT usage is appropriate for my future career.	Male	167	242.19	4.42
		Female	176	163.42	4.30
2	ICT makes me confident and expressive.	Male	167	201.89	4.37
		Female	176	132.2	4.06
3	ICT is unsuitable for classroom teaching	Male	167	68.12	2.18
		Female	176	34.45	2.66
4	ICT enhances communication ability.	Male	167	188	3.62
		Female	176	252.99	3.79
5	Knowledge from Internet is not reliable.	Male	167	52.73	2.25
		Female	176	37.61	2.69

**Table No.3**

No	Statement	Option	N	$\chi^2$	Mean
1	I can not use ICT properly due to lack of training	Male	167	95.66	2.41
		Female	176	55.97	3.08
2	ICT usage has also affected the reading skills.	Male	167	35.66	2.58
		Female	176	33.10	2.59
3	Computer games affect the health of students.	Male	167	37.70	2.89
		Female	176	46.12	3.61
4	ICT has created "Digital Divide" in students.	Male	167	123.45	4.14
		Female	176	98.79	4.04