Attitude towards Information and Communication Technology Use among University Teachers of different Faculties in Relation to Computer Anxiety

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Abstract

The rapid growth in computer-based Information and Communication Technology (ICT) has created new opportunities for universities to manage teaching and training differently and more effectively. The present study was conducted on 200 university teachers' attitude towards ICT use belonging to different faculties and at different levels of computer anxiety. Two tools were used for data collection, viz., Scale of Attitude towards Information and Communication Technology use and Computer Anxiety Scale. The main findings of the study were: (i) There was no difference between attitude towards Information and Communication Technology use among university teachers of different faculties, and (ii) Teachers with low, moderate and high computer anxiety exhibited difference in their attitude towards Information and Communication Technology use. Teachers with low computer anxiety exhibited better attitude towards Information and Communication Technology use as compared to those with moderate and high levels of computer anxiety.

Introduction

Information and Communication Technology (ICT) is an umbrella term that includes all technologies for the manipulation and communication of information; it is the overlap of computer information and telecommunication technologies, and their

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applications. Therefore, ICT offers more than just computers, but any technology involved in communicating such as software, CD-ROMs, the Internet, television and radio, image capturing devices including still and video cameras, sending, data logging and control apparatus, and other equipment for example even using a video recorder (Alsop & Hicks, 2001). The ICT can be used to access global knowledge and communicate with other people since it is an electronic based system of information transmission, reception, processing and retrieval, which has drastically changed the way people think, the way people live and the environment in which people live (Ogunsola, 2005).

The rapid growth in ICT has afforded opportunities for universities to manage teaching and training differently. In order for societies to be economically and socially successful in the new knowledge-based world, a highly skilled and well-trained population is required. The advances in digital technologies that are faster, more capable and easier to use have made it possible for university teachers to rethink the pedagogical assumptions related to teaching strategies (Li, 1998). Information technologies offer new opportunities to teachers to enhance the quality and accessibility of their instructional material. Tools such as electronic mail, computers and the World Wide Web are assumed to strengthen communication and collaboration between students and university teachers.

Today universities face a huge challenge to increase access to higher education and improve the quality of higher education. Universities are compelled to be innovative and provide academic leadership to the education system of the country. ICT's in higher education can be of great help for developing course materials, delivering and sharing, communication between the learners and the teachers and for conducting research.

Studies have indicated that ICT has made little impact in university classrooms and majority of the teachers are still using traditional expository pedagogy. We know that teachers are the agents of change within the classroom. But in the absence of positive attitude towards ICT, teachers will not use ICT in the classroom whole heartedly. Other research studies have also indicated that many teachers feel uneasy and fear while using computer technology. So, attitude towards ICT and computer anxiety are important variables that influence ICT integration in education.

Attitude towards Information and Communication Technology (ICT)

Attitude towards ICT is defined as the degree of favour or disfavour towards ICT. It is a person's general evaluation or feeling of favour or antipathy towards computer technologies and specific computer related activities (Palaigeorgion, Siozos, Konstantakis &Tsoukalas, 2005). This assessment usually encompasses statements that examine users' interaction with computer hardware, computer software, other people relating to computers and activities that necessitate computer use (Roussos, 2004). Information and Communication Technology attitude is the predisposition of a person to respond positively or negatively towards computers and related technologies.

Research reveals that Greek secondary education teachers exhibited variation in attitude towards ICT in education, viz., strongly positive, positive and negative or neutral beliefs (Jimoyiannis & Korris, 2006). Government and private secondary school teachers of Nepal exhibited comparable attitude towards ICT. Also teacher's attitude towards ICT was not found to be different for teachers with different academic streams (Newa, 2007). Turkish science teachers exhibited positive attitude towards ICT (Cavas, Cavas, Karaoglan & Kisla, 2009). Although teachers had the basic necessary knowledge and skills related to ICT, but focused training on ICT in instruction was needed (Abu Qudais, Al-Adhaileh & Al-Omani, 2010). Malaysian secondary school teachers perceived ICT positively and had moderate basic ICT knowledge and skills (Mahmud & Arif, 2010). School teachers of Cyprus (Paparionnpou & Charalambous, 2011), Turkish EFL teachers (Kizil, 2011) and Spanish teachers (Sanchez, Marcos, Gozales & Gnanlin, 2012) and Indian teachers (Mhetre & Suryawanshi, 2013) exhibited positive attitude towards ICT, but they need to have more training to acquire ICT skills.

Computer Anxiety

Computer anxiety is an emotional fear, apprehension, and phobia felt by individuals towards interactions with computers or when they think about using computers (Herdman, 1983). Selwyn (1997) stated that computer anxiety is a feeling of unease or apprehension an individual experiences in anticipation of or while using computer technology that is disproportionate to the threat the technology presents resulting in computer avoidance, excessive caution with computers, and minimising the use of computers

and related technology. Rovai and Childress (2003) noted that the more knowledge individuals have of computers, the less computer anxiety they experience, and the higher the likelihood of increased performance. Computer anxiety is not only a stumbling block for teachers in integrating emerging educational technology into education programmes, but is also one of the main reasons for limited technology acceptance by teachers.

Studies indicate that university teachers had low levels of computer anxiety and high levels of computer self-efficacy (Ball, 2008; Embi, 2007). Turkish female students had higher computer anxiety levels than Dutch female and Dutch male students. With increasing computer experience, computer anxiety decreases (Tikinarshan, 2008). Male teachers exhibited lower computer anxiety as compared to female in-service secondary school teachers. Trainees from Science Faculty exhibited lower computer anxiety than those from Humanities Faculty (Halder & Chaudhari, 2011). Further, Indian students exhibited more computer anxiety as compared to Iranian University students. But science students were less anxious about computers than arts students (Mehra & Omidian, 2011). Primary school teachers exhibited more computer anxiety as compared to secondary school teachers. Science and Mathematics stream teachers exhibited less computer anxiety as compared to Social Science and Language stream teachers (Arya, 2012).

Rationale of the Study

Research has indicated that, despite support through policy and resources provision, ICT has made little impact in the classroom practices and teachers are still using traditional expository pedagogy. Today, India actively promotes the use of ICT in education sector, the country's decision-makers, at both the central and state levels, have chosen to explore the use of newer computer and internet-based ICTs for education, along with broadcast ICT. An important key element in application of ICT tool is attitude of teachers as the end-users and the real agents of change within the classroom arena. Another equally important element is existence of computer anxiety among teachers. So, the present study was conducted to investigate attitude towards ICT of university teachers with different levels of computer anxiety.

Objectives

- To study university teachers' attitude towards ICT use belonging to different faculties with regard to computer anxiety.
- To study university teachers' attitude towards ICT use at different levels of computer anxiety.
- To study interaction between type of faculty and levels of computer anxiety with regard to university teacher's attitude towards ICT use.

Hypotheses

H_o1: There is no significant difference between attitudes towards ICT use scores of teachers of different faculties.

H_o2: There is no significant difference between attitudes towards ICT use scores of teachers with different levels of computer anxiety.

H_o3: There is no significant interaction between faculty type and different levels of computer anxiety with regard to teachers' attitude towards ICT use scores.

Method

Descriptive method of research was employed in the present study to compare university teachers of different faculties with respect to attitude towards ICT use and computer anxiety. 2x3 ANOVA design was employed and the dependent variable was university teachers' attitude towards ICT use belonging to different faculties. Computer anxiety was studied at 3 levels, viz., low, moderate and high.

Sample

Employing stratified random sampling technique 200 teachers of Panjab University, Chandigarh were selected at two levels in the present investigation. Firstly, 4 faculties were selected by lottery method from 10 faculties: Arts + Education, and Science + Engineering and Technology. Next, five departments were selected each from Arts/Education and Science/Engineering and Technology faculties.

Table 1
Sample Distribution

Faculty	Department	Sample
Arts/Education	Education	20
	Public Administration	20
	Economics	20
	Geography	20
	Political Science	20
Science/ Engineering and Technology	Botany	20
	Physics	20
	Computer Science and Technology	20
	Mechanical Engineering	20
	Electronics & Communication Electronics	20
Total		200

Tools

The following tools were used in the study.

1. Scale of attitude towards ICT use (developed by the authors). The scale comprised 74 items in eight domains, viz., ICT use in instructional setting, confidence in ICT use, encouragement from colleagues, ICT and health problems, ICT and socialisation, ICT relative advantage, ICT complexity, and barriers to ICT use. Reliability of the scale was found to be 0.85. Content validity of the scale was also established.
2. Computer Anxiety Scale (Embi, 2007). The scale comprised 18 items divided into four domains, viz., general anxiety about ability to use computers, confidence in ability to learn about computers, power and control of computers. Reliability of the scale was found to be 0.79.

Data Collection and Analysis

The scales were administered to the participants, i.e. 200 university teachers of different faculties. Next, scales were collected and scoring was done in accordance with instructions given in the manual of each tool. 2×3 ANOVA was employed for analysing university teachers' attitude towards ICT use with respect to different levels of computer anxiety.

Results

Table 2 contains the means and standard deviations of computer anxiety for different sub-groups.

Table 2
Mean and S.D.s of sub-samples of attitude towards ICT use scores at different levels of computer anxiety

Type of Faculty	Level of Computer Anxiety	Mean	Std. Deviation	N
Arts/ Education	Low	256.00	-	1
	Moderate	255.26	20.339	77
	High	249.64	15.668	22
	Total	254.03	19.369	100
Science/ Engineering & Technology	Low	270.67	4.933	3
	Moderate	261.22	21.434	86
	High	243.64	19.304	11
	Total	259.57	21.607	100
Total	Low	267.00	8.367	4
	Moderate	258.40	21.072	163
	High	247.64	16.906	33
	Total	256.80	20.654	200

Table 3 shows that the F ratio for the differences in the mean of university teachers' attitude scores towards ICT use at different faculties was not significant. It may be inferred that the means of different faculties on university teachers' attitude scores may be considered equal. The null hypothesis (Ho1) of equality was therefore retained. However, the F-ratio for the differences among the means of attitude scores of university teachers with low, moderate and high computer anxiety scores was significant at the level 0.01 of confidence. This suggested that the university teachers were significantly different beyond chance, on their attitude towards ICT use when they had low, moderate and high computer anxiety. Therefore, H_o2 was rejected at the specified level. An examination of the means of teachers' attitude scores at different faculties (Table 2) clearly indicated that the means of university teachers' attitude scores at Arts/ Education faculty with regard to high computer anxiety (mean= 249.64) were less than teachers' anxiety under moderate (mean=255.26) and low (mean=256.00) levels of computer anxiety. Similarly, the means of university teachers'

attitude scores at Science/Engineering & Technology faculty with regard to high computer anxiety (mean=243.64) were less than teachers' attitude scores under moderate (mean=261.22) and low (mean=270.67) levels of computer anxiety.

Table 3
ANOVA for university teachers' attitude towards ICT use scores at different levels of computer anxiety

Source	Type III Sum of Squares	df	Mean Square	F
Faculty	143.192	1	143.192	0.350
Different levels of computer anxiety	3485.143	2	1742.572	4.257**
Faculty * Different levels of computer anxiety	970.702	2	485.351	1.186

** P < .01

F-ratio for the interaction between the two variables viz., type of faculty and different levels of computer anxiety (Table 3) was not found to be significant even at 0.05 level of confidence. Hence H_o3 was retained. University teachers of different faculties with low, moderate and high levels of computer anxiety exhibited comparable attitude towards ICT use.

Discussion

Hypothesis 1, "There is no significant difference between attitude towards ICT use scores of teachers of different faculties" was retained as the university teachers belonging to different faculties exhibited comparable attitude towards ICT use. Similar findings were reported by Abu Qudais, Al-Adhaileh and Al-Omari (2010), Newa (2007), and Yapici and Hevedanli (2012). They also discovered that there was no significant difference between faculty members' attitude towards using technology and colleges or classes. But, Turkish Science teachers exhibited better attitude towards ICT as compared to Arts teachers (Cavas, Cavas, Karaoglan and Kisla, 2009).

Hypothesis 2, "There is no significant difference between attitude towards ICT use scores of teachers with different level of computer anxiety" was rejected as the means of university teachers attitude scores with regard to high computer anxiety were less than university teachers' attitude scores under moderate and low computer anxiety scores.

Hypothesis 3, "There is no significant interaction between faculty type and different levels of computer anxiety with regard to teachers' attitude towards ICT use scores" was retained as all the teachers of different faculties exhibited comparable attitude towards ICT use under low, moderate and high computer anxiety. Further studies have shown that Science Faculty exhibited lower computer anxiety than those from Humanities Faculty (Halder & Chaudhari, 2011). Science and Mathematics streams teachers exhibited less computer anxiety as compared to Social Science and Language stream teachers (Arya, 2012).

Conclusion

Technology implementation in the classroom should become an integral part of the core mission for the institution, with its primary focus rooted in the paradigm shift from teaching to learning. To cope with computer anxiety among teachers and enhance teachers' attitude towards ICT, university authorities should organize Professional Development Programmes, with special emphasis on ICT training. This will enable university teachers to integrate ICT in instructional settings. Programmes that foster the use of information and communication technology in the classroom increase familiarisation with technology and lead to improvement in technology as well as teaching. Future generations would be computer literate and would expect technology implementation in the classroom. University administrators should place emphasis on building teachers' perception of their ability to use ICT with a view to transform classroom practice.

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