Integrating Computer-Based Technology in Higher Education Programs: Availability, Utility, Opinions and Anxiety of University Teachers

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ABSTRACT

The current study was designed to assess the integration of computer-based technology tools in universities of southern Punjab, Pakistan. Integration of technology has become the major concern of educational institutions. This is because that technology is considered the knowledge transfer highway in various countries. Every nation is working hard to upgrade its education system according to international standards. A quantitative research design was selected for the present study. A survey approach was used for the collection of data. The population of the study was all university teachers in district Bahawalpur, Punjab. The sample size consisted of 205 public and private university teachers and was approached via a systematic random sampling technique. A questionnaire was developed according to the objectives of the study and its reliability was assessed by Cronbach alpha, which was 0.88. It was observed that various factors influence the integration of computer-based technology in classrooms including availability, utility, teachers' opinions, and anxiety towards computer-based technology.

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1. Introduction

Computer-based technology revolutionized the practices and approaches of the whole education system. Higher education is not an exception to this phenomenon. Universities are paying more attention to the integration of technology tools to produce quality education; therefore universities are motivating their staff to use modern computer-based technology tools in the classroom. Integration of CBT tools in educational institutions has become a crucial need of the time, as its desire to accomplish the modern international criteria of education. For the advancement of standards and fulfillment of students' needs, every educational institution is working hard to eradicate hurdles from the process of integration of CBT tools in the teaching-learning process. In education, computer-based technology has witnessed remarkable development in the last few decades (Albirini, 2006). This is because technology is considered the knowledge transfer highway in various fields. The way people acquire knowledge; their ways of learning have slightly changed as compared to outdated societies. Computer-based technology transformed how an individual thinks works and lives (Grabe & Grabe, 2008).

Integration of computer-based technology in the education sector includes the use of computers and various informational technologies in the classroom for the improvement of students' learning experiences. Computer-based technologies transformed traditional education. When the technology tools are integrated successfully it provides various benefits e.g. assists teachers to plan their teaching effectively, helps evaluators in assessing students' performances, makes learning courses more interesting for learners, and assists researchers in

research. It also provides an opportunity for learners to move from the passive receiver to active participant in the learning process (Roblyer & Roblyer, 2006).

In developing nations specifically in Asia, the federal government is showing more concerns in the integration of computer-based technology tools in the education system with the support of government educational institutions investing in the sector of IT to make educational technologies accessible to the young generation. For this purpose educational administration are motivating and preparing their teaching faculty to use modern technology tools in the teaching to make a rich technology environment. Considering the significant role of an instructor in the integration of computer-based technology tools it is crucial to examine the factors that are influencing the instructors' adoption of technology tools in teaching (John, 2015). The present study investigated the following research questions.

- What are the opinions of teachers towards the integration of computer-based technology tools?
- What are the factors that significantly influence the use of computer-based technology tools in classrooms?

One of the major factors that have a great impact on the integration of computer-based technology is instructors' opinions. According to Devis (1989), individuals' notions related to effectiveness and ease of use is considered the major determining factor of the application of any technology tool in an institution. Individual beliefs have a great effect on their attitudes which further influence their intents and generate the behavior (Fishbein, 1975). The positive opinions of teachers support them to remove learning difficulties, promote logical reasoning, and assist them to develop interpersonal relations with others. It also inspires them to improve the way they teach (Office of Technology Assessment, 1995). It was observed that Instructors have responded: "both positively and negatively to computer-based technology". Several positive responses have been caused by: (a) the power of communicating technology, (b) modification of teaching approaches, (c) supporting "classroom management", and (d) better feelings of self-confidence (Baker, Gearhart, & Herman, 1990). On the other side of the coin, it was observed that instructors with negative opinions towards computer-based technology have low self-confidence and are more likely to become frustrated and did not able to manage the teaching-learning process and fail to achieve the targeted outcomes.

The other factor that influences the integration of computer-based technology is the anxiety of instructors towards the use of technology. The term anxiety referred to the psychological state when an individual has feelings of confusion, distress, and when someone feels panic in a specific phenomenon. Specifically, computer anxiety refers to when the user has some kind of fear to lose his important data and commit some major mistake (Thatcher & Perrewe, 2002). Rosen & Wei (1995) identified many reasons for teachers' anxiety while using modern CBT tools, such as unavailability of modern technology tools, lack of teaching experience with CBT, lack of CBT specialist instructors to teach teachers computer skills, non-availability of financial support, lack of on-spot support for teachers in using technology, the nonexistence of help supervising children when using computers, and shortage of time required to successfully integrate technology into the curriculum.

Like the opinions and anxiety of instructors, the availability of computer-based technology tools has a marvelous effect on the integration of computer-based technology in education (Chien, 2012; Holden & Rada, 2011). For the past few years, computer-based technology has got more importance and prominence in higher education. The availability of information through various computer-based technology tools has extended the knowledge growth around the globe (Collis, 2002). Barnett (2001) suggested that educational institutions should develop an innovative technology design for students as Computer-based technology has a great impact on their learning. According to Patrikas and Newton (1999), it is important to give sufficient funds to educational institutions for the integration of computer-based technology tools and educational institutions must use those funds by careful planning to meet the quality standards. Improvement is slowed down by the fact that modern devices and software are still not equally given to all universities. Moreover, those universities that have modern tools of computer-based technology have skill issues in effective implementing of these modern tools as instructional material.

2.   Research Methodology

The study was descriptive in nature. A quantitative research design was selected. Data was collected via a survey approach. The research population was the public and private university teachers from district Bahawalpur, Punjab. Out of the whole population, 205 university teachers were approached through a systematic random sampling technique. A five-point rating scale questionnaire was developed according to the objective of the study and its reliability was assessed by Cronbach alpha, which was 0.88. For the validation of the tool, a pilot study was conducted. 50 Teachers from the Islamia University of Bahawalpur were approached for pilot testing. After pilot testing statements of research tools were modified. Data were analyzed in "SPSS" (Statistical Packages for Social Sciences). Agreement and disagreement of each statement and mean score were calculated.

3.   Findings

The above table displayed the demographic details of the respondents. Table 1 showed that 49.3% of respondents were male and 50.7 % of respondents were female. It also displayed the designation of respondents and illuminated that 54.1 % of respondents were lecturers, 36.1 % were assistant professors and 3.4% of respondents were working as professors. However, table 1 showed that 45.4 % of respondents had 1-5 years of experience, 24.4% had 6-10 years of experience. 18% had 16-20 years of experience, 7.3 % had 21-25 years of experience, and 2.9% of respondents had 26-30 years of teaching experience.

Table 1: Descriptive Statistics

Variable	F	%
Gender		
Male	101	49.3
Female	104	50.7
Designation		
Lecturer	111	54.1
Assistant Professor	74	36.1
Associate Professor	13	6.3
Professor	7	3.4
Experience		
1-5 years	93	45.4
6-10 years	50	24.4
11-15 years	37	18.0
16-20 years	15	7.3
21-25 years	4	2.0
26-31 years	6	2.9

Table 2: Availability of Computer-based technology tools

Items	No F	%	To some extend f	%	Yes F	%	Total f	Total %	Mean
Availability of CBT tools	31	15.1	54	26.3	120	58.5	205	100	2.53
Computer labs for teachers	48	23.4	44	25.1	113	55.1	205	100	2.34
Computers with no internet access.	118	57.6	35	17.1	52	25.4	205	100	1.68
Access to CBT tools.	38	18.5	37	18.0	130	63.4	205	100	2.45
Provision of CBT tools to every department.	36	17.6	55	26.8	114	55.6	205	100	2.38
Seminars for staff	34	16.6	72	35.1	99	48.3	205	100	2.32
Workshops on effective use of CBT tools	47	22.9	80	39.0	78	38.0	205	100	2.15
User guide for teachers	53	25.9	20	9.8	132	64.4	205	100	2.39
Final Result		197.6		197.2		408.7			2.29

Table 2 illuminated results about teachers, opinions about the availability of computer-based technology in their departments. The group statistics of the above table displayed the availability of computer-based technology, computer labs for teachers, computers with no internet access, access to computer-based technology tools, provision of technology tools to every department, seminars about effective use of computer-based technology, user guide for teachers. The mean score of computers with no internet access was relatively low (M= 1.68) in

sub-factors of availability of computer-based technology tools. While the mean score of availability of computer-based technology tools in the departments of universities was comparatively high (M= 2.53). However, the total mean score of the factor of availability of computer-based technology tools was 2.29 which concluded that most of the modern computer-based technology tools were unavailable in the universities.

Table 3: Teachers' opinions towards integration of Computer-Based Technology

Items	SDA f	%	DA f	%	N f	%	A F	%	SA F	%	Total f	%	Mean
Better learning	2	1.0	12	5.9	12	5.9	132	64.4	47	22.9	205	100	4.02
Facilitator	1	.5	20	9.8	16	7.8	117	57.1	51	24.9	205	100	3.96
Enthusiasm	4	2.0	15	7.3	8	3.9	117	57.1	61	29.8	205	100	4.05
Innovativeness	11	5.4	17	7.9	30	15	96	46.8	51	24.9	205	100	3.78
Productivity	3	1.5	12	5.9	14	6.8	119	58.0	57	27.8	205	100	4.05
Better skills	2	1.0	11	5.4	18	8.8	128	62.4	46	22.4	205	100	4.00
Improvement in the TLP	14	6.8	27	13.2	41	20	54	26.3	69	33.7	205	100	4.01
Final Result	**11.4**		**55.4**		**48.2**		**372.1**		**186.4**				**3.98**

Note: SDA= strongly disagree, DA= disagree, N= neutral, A= agree, SA=strongly agree f=frequency, TLP= Teaching and Learning Process

Table 3 displayed the results of teachers' opinions towards the integration of computer-based technology. The group statistics of the opinion factor illuminated better learning, a chance to a learning facilitator, enthusiasm, innovativeness of computer-based technology tools, productive behavior, development of skills, and improvement in the teaching-learning process. The total mean score of innovativeness of computer-based technology tools was comparatively low (M= 3.78). However, the total mean score of enhancement of productive behavior was high (M= 4.05). The overall mean score of the opinion factor was 3.98 which concluded that teachers' had positive behavior towards computer-based technology.

Table 4: Utility

Items	N f	%	R F	%	S f	%	O F	%	A F	%	Total f	%	Mean
Use of multimedia	10	4.9	10	4.9	48	23.4	109	53.9	28	13.7	205	100	3.66
Use of global libraries	18	8.8	23	11.2	44	21.5	90	43.9	30	14.6	205	100	3.44
Application of CBT tools	3	1.5	10	4.9	40	19.5	105	51.2	47	22.9	205	100	3.89
Use online resources	6	2.9	22	10.7	100	48.8	44	21.5	33	16.1	205	100	3.37
More participation	9	4.4	11	5.4	41	20.0	104	50.7	40	19.5	205	100	3.76
Convenience	7	3.4	22	10.7	72	35.1	72	35.1	32	15.6	205	100	3.49
Final Result		**25.9**		**47.8**		**168.3**		**256.3**		**102.4**			**3.60**

Note: N= never, R= rarely, S= sometimes, O= often, A= Always, *f*= Frequency

Table 4 illuminated the statistics of teachers' ease of use of computer-based technology. The final results of the ease of use factor displayed use of multimedia, utilization of global libraries, application of computer-based technology tools, use of online resources, more participation of students, and convenience of computer-based technology tools. The total mean score of use of online resources by university teachers was comparatively low (M= 3.37). However, the total mean score of the application of computer-based technology tools was high (M= 3.89). The total mean score of the factor of ease of use was 3.60 which showed that teachers' were using computer-based technology tools in the classrooms.

Table 5 displayed the results of teachers' anxiety towards the integration of computer-based technology. The group statistics of the anxiety factor illuminated feel uncomfortable, frustrating, frighten me, feel nervous, low confidence, and feel tense. The total mean score of feeling nervous was quite low (M= 2.24). However, the total mean score of feel tensed was relatively high (M= 2.90). The overall mean score of the anxiety factor was 2.41 which concluded that teachers' had anxiety while using computer-based technology.

Table 5: Teachers' anxiety towards the integration of computer-based technology

Items	SDA f	%	DA f	%	N f	%	A F	%	SA f	%	Total f	%	Mean
Uncomfortable	51	24.9	84	41.0	16	7.8	31	15.1	23	11.2	205	100	2.47
Frustrating	54	26.3	86	42.0	20	9.8	28	13.7	17	8.3	205	100	2.36
Frighten me	57	27.8	85	41.5	27	13.2	24	11.7	12	5.9	205	100	2.26
Feel nervous	62	30.2	83	40.5	20	9.8	28	13.7	12	5.9	205	100	2.24
Low confidence	69	33.7	75	36.6	17	8.3	28	13.7	16	7.8	205	100	2.25
Feel tense	39	19.0	53	25.9	28	13.7	59	28.8	26	12.7	205	100	2.90
Total		161.9		227.5		62.6		96.7		51.8			2.41

Note: SDA= strongly disagree, DA= disagree, N= neutral, A= agree, SA=strongly agree f=frequency

4.   Conclusion and Discussion

The basic motivation behind the study was to assess the integration of computer-based technology in higher education institutions of district Bahawalpur, Punjab. Computer-based technologies have transformed the teaching-learning environment according to students' needs and demands. The findings of the study highlighted that the positive opinions of the teachers towards computer-based technology tools are one of the key factors for the integration of modern CBT tools. It was observed that instructors who had positive attitudes towards technology tools were successfully utilizing modern CBT tools in their classrooms. As indicated by Rogers (1995), instructors' positive opinions are the determinant of the adoption of computer-based technology tools. The study also concluded that other major factors, which have a great impact on the integration of computer-based technology tools were availability, utility, and anxiety of university teachers towards computer-based technology tools. It was observed that there was the unavailability of computer-based technology tools in universities of district Bahawalpur. The inaccessibility of computer-based technology tools is the biggest hurdle in the successful integration of modern technologies in educational institutions. According to Chukwunonso and Oguike (2013), nonexistence of technology tools affects the integration process of modern technologies in classrooms. While on the other side of the picture, anxiety of teachers towards computers also influences the integration of computer-based technology tools. The present study's findings concluded that most of the university teachers were technophobic and did not use technology tools in the classroom. Hackbarth et al. (2003) illuminated in their study that teachers who have computer anxiety are less likely to use modern technology tools in classrooms. This study is also lined with the John (2015) which described that anxiety of teachers towards CBT tools affects the integration of computer-based technology tools in educational institutions.

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