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Teacher Educators' Attitude towards the Pedagogical use of ICTs: A Study from Karachi, Pakistan

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Abstract

At present teacher education in Pakistan is in a transitional phase. The Government of Pakistan has developed ten professional standards for teachers' recruitment and training (NPSTP, 2009). Two subjects 'Computer literacy' and 'ICTs in Education' have been introduced in the new curriculum to equip prospective teachers with Standard # 7 of NPSTP 2009 (i.e., 'Effective Communication and Proficient Use of Information and Communication Technologies') and to enhance contemporary technological skills required by a 21st-century educator. This quantitative descriptive study was aimed to investigate teacher educators' attitudes towards the pedagogical use of ICTs in the teaching and learning process. For this quantitative study, five research questions, one descriptive and four inferential were formulated. A questionnaire was used for data collection. The sample of the study of 133 teacher educators' was conveniently selected from different teacher training institutions of Karachi. The descriptive analysis of the attitude scale illustrates the moderate level of positive attitude towards the use of ICTs among teacher educators of Karachi TTIs. The analysis of inferential questions (null hypotheses) illustrates that there is no significant difference in attitudes of teacher educators concerning gender, age, and experience, and this finding is aligned to recent studies conducted by Mustafina (2016) and Tweed (2013). Consequently, from the findings of this study, it may be concluded that demographical variables (i.e., gender, age, and experience) are not

the determinants of teacher educators' attitudes towards the use of ICTs. The findings of the study suggest that supportive conditions and hands-on training on the pedagogical use of ICTs should be conducted in TTIs.

Keywords: B.Ed. program, information and communication technology, pedagogy, teachers' attitude, teachers training

Introduction

The success of any educational and instructional reform is directly dependent on the strength and quality of teacher training institutions of any country. At present teacher education in Pakistan is in a transitional phase. The Government of Pakistan has developed ten professional standards for teachers' recruitment and training (NPSTP, 2009) and with the support of USAID through their Pre-Service Teacher Education Programme (Pre-STEP) and Pakistan Reading Project (PRP) has launched the reforms to address the quality of teacher education programs and institutions.

A new curriculum has been developed, for two programs; a two-year Associate Degree in Education (ADE) and four-year B.Ed. (Hons) program (Ayesha, 2013). Later the B.Ed; secondary 2.5 years and 1.5 years programs were also introduced. The out-dated short duration Certificate in Teaching (CT), Primary Teacher Certificate (PTC), and the one-year B.Ed. programs were replaced by this longer duration advanced courses. The two subjects 'Computer literacy' and 'ICTs in Education' were introduced in the new curriculum to equip prospective teachers with Standard # 7 of NPSTP 2009 (i.e., 'Effective Communication and Proficient Use of Information and Communication Technologies') and to enhance contemporary technological skills required by a 21st-century educator.

The dilemma of the situation is such that there are almost no teaching resources or materials available for the teachers to be updated with the ongoing changes except that on the Internet but due to the orthodox approach and lack of computer skills, educators are finding it hard to convince themselves to take assistance from it and to incorporate in curriculum and instructions (Ali & Parveen, 2013).

To ensure the sustainability of reforms and to meet standard # 7 there is a need to study teacher educators' attitudes towards computer technology. With this purpose in mind, the present research study has been conceptualized as an attempt to investigate the faculty (teacher educators) attitudes towards the pedagogical use of information and communication technologies in teacher training institutions. The study focuses on institutions that are implementing national-level reforms, initiated by the government of Pakistan in collaboration with USAID to respond to the demand of qualified teachers and for capacity building of prospective and in-service teachers.

Purpose of the Study

The overall purpose of the study is to investigate the faculty's attitudes towards the pedagogical use of ICTs in the teaching and learning process.

Research Questions

1) What are teacher educators' attitudes towards the pedagogical use of ICTs?
2) Is there any significant difference between male and female faculty attitudes towards the use of ICTs?
3) Is there any significant difference between younger and older faculty attitudes towards the use of ICTs?
4) Is there any significant difference among less experienced and more experienced faculty attitudes towards ICTs?

Literature Review

Teacher education in Pakistan is being offered in different public and private sector institutions. Siddique (2017) stated that according to the government of Pakistan there are 189 teachers' training institutions in Pakistan, out of these 80% are in the public sector while only 20% are in the private sector. Government Elementary Colleges of Education (GECEs), Government Colleges of Education (GCEs), University Departments (i.e., Education or Teachers' Education Department), Institute of Education and Research (IERs), and Directorates or Centers for in-service training are the major institutions for teachers' education and training in Pakistan (Dilshad et al., 2010; Siddiquah, 2017).

In the past, a variety of teacher education programs prevailed throughout the country (UNESCO, 2006). Over time, shorter duration CT, PTC, and B.Ed. courses have become obsolete and ineffective (Siddiquah, 2017). Following the recommendations of the National Educational Policy, these short duration programs are being gradually replaced by relatively longer duration Associate Degree in Education (ADE), 2 years pre-service degree (ADE), and a variety of B.Ed. (Hons); 1.5 years, 2.5 years, and 4 years programs.

Table 1

Present Teacher Education Programme, Duration and Eligibility Criteria

Program	Eligibility & Duration	Offered by Institutions
ADE leading to B.Ed. (Hons) 2 years	Intermediate with 50% (12 + 2)	- Public GECEs - Private colleges affiliated with any Public University
B.Ed. (Hons) Elementary 4 years	Intermediate with 50% (12 + 4)	- Public GECEs/GECs - Private colleges affiliated with any Public University - DAIs/ Universities
B.Ed. Secondary 2.5 years	Graduation with Second Class (14 + 2.5)	- Public GECs - Private colleges (affiliated with any public university) - DAIs/ Universities
B.Ed. Secondary 1.5 years	Masters with Second Class (16 + 1.5)	- DAIs/ Universities

Source: NACTE, STEDA[1], and University of Karachi

To ensure the quality of these programs the Federal Higher Education Commission of Pakistan has established the 'National Accreditation Council for Teacher Education' (NACTE), which is an autonomous body for the quality assurance and improvement of teacher education programs.

ICT Development Index of Pakistan

ICT Development Index by region shows that Pakistan is far behind many developing and regional countries in the world in terms of IDI world ranking and value.

Table 2

ICT Development Index by Region

Sl No.	Country	IDI 2017 World Rank	IDI 2017 VALUE
1	Iran (I.R.)	81	5.58
2	Sri Lanka	117	3.91
3	Bhutan	121	3.69
4	India	134	3.03
5	Myanmar	135	3.00
6	Nepal	140	2.88
7	Bangladesh	147	2.53
8	Pakistan	148	2.42
9	Afghanistan	159	1.95

STEDA: Sindh Teachers Education Development Authority
Source: Measuring the Information Society Report, 2018

Measuring the Information Society report (2018) places Pakistan in 148th position out of 176 countries on the ICT development index 2017 published by International Telecommunication Union (ITU). The data shows that except for Afghanistan other regional countries progressing toward ICT are better as compared to Pakistan although they face similar social and economic constraints of sustainability.

Bladergroen et al. (2012) argued that surprisingly the positive impact of technology on education is purported in developing countries where resources are not available, and teachers are less qualified. According to him “this perception has

resulted in growing investment in government initiatives implementing ICT in schools in developing countries, often with the support and involvement of donor agencies" (p.108). At present many International donor agencies working under the umbrella of UNESCO are supporting Pakistan in implementing current education reforms. USAID and CEDA in particular are supporting teacher's education institutions in teacher training and building infrastructure, to uplift the quality of teacher education institutions as well as future teachers.

Teachers' Attitudes Towards ICTs

According to Rogers (1995), people's attitude towards new technology is a key element in its diffusion. Many research studies identified that pedagogical adoption of computer-related technology is a complex process (Alrasheedi, 2009; Gulbhar & Guven, 2008) that is influenced by many factors (Albirini, 2004; Al-zaidiyeen, 2010; Koro, 2012). Successful transformation in educational practice largely depends upon the support and attitudes of teacher educators involved (Albirini, 2006; Rana, 2012). Albirini (2006) pointed out that initial research on computers' use in education has focused on students' achievement and has ignored teachers' attitudes. Recent studies have shown that the successful implementation of educational technologies depends largely on educators' attitudes. Rana (2012) argued that teachers' attitude is a major enabling/disabling factor in the adoption of new technology. Positive attitudes motivate less technologically oriented teachers to learn the new skills necessary for the implementation of technology-based activities in the classroom. In an educational setting, the teacher's attitude is considered as a major predictor for their future use (Albirini, 2006; Rana, 2012). Several studies have been carried out to determine teacher attitudes towards computer use (Al-zaidiyeen, 2010).

Mustafina (2016) examined four factors' (self-confidence, knowledge, gender, and age) influence on teachers' attitudes towards the integration of technology. The findings of the study showed that teachers had a positive attitude towards ICT and all four factors including gender, age, knowledge, and confidence have the potential to influence and change teachers' attitudes towards technology. However, in hypothesis testing, the relationship between gender and teachers' attitudes toward ICT was not statistically proven, similarly, the study was unable to find a correlation between teachers' attitudes and age.

Shirvani (2014) conducted a study entitled 'Pre-service teachers' attitude toward the use of technology' at a university located in the southern part of the United States. The researcher's investigation found that the mean of students' (pre-service teacher) attitudes for older students was slightly higher on almost all questions, but was significant on only three questions of the twenty-nine survey questions.

Upadhyaya's (2013) study in Allahabad, India examined prospective teachers' (B.Ed. students) attitude towards computer use. He reported that students in the Science group had better attitudes towards computers as compared to students of the Arts group. His findings also revealed that male and female students had similar attitudes towards computers whereas a study conducted by Suri and Sharma (2013) could not find a significant relationship between gender and attitude towards computer technology among students of Punjab University of India.

Majoka et al. (2013) conducted a study on the implementation of ICT in Education courses in teacher training institutions of Punjab and KPK province of Pakistan. They observed that the suggested activities in the course guide were not implemented properly due to some issues such as the shortage of ICT tools, power breakdown, and a lack of training skills in ICT application. However, the study showed concern that how teachers followed the course guide was another factor that affected the implementation of ICT in Education course.

Elsaadani (2012) conducted a study in Egyptian higher education institutions to investigate if gender was a significant factor in teaching staff's attitude toward ICT. The study found slightly higher mean scores for a male than female students, however, the study observed that t (value of independent t-test) was not significant. The study, therefore, concluded that there was no significant difference between male and female teaching staff attitude towards the use of ICT.

Another study by Al-Zaidiyeen (2010) aimed to investigate the level of ICT use among public school teachers of Jordan and to examine teachers' attitudes towards the use of ICT for educational purposes. The data gathered through questionnaires were analyzed employing descriptive statistics and correlation. The computed overall mean score evidenced the low-level use of ICT for educational purposes and the correlation results identified a significant positive correlation

between Jordan teachers' level of ICT use in their attitudes.

A descriptive research study by Albirini (2006) in Syrian high schools investigated EFL teacher's attitudes towards ICT. The study concluded that within the Syrian province Hims, EFL teachers had a positive attitude towards the use of ICTs. The findings further revealed a mismatch between ICT and the existing curricula, and teachers' low level of access to school computers, as the main barriers in technology implementation in Syrian schools.

Methodology

This quantitative descriptive study was primarily designed to study teacher educators' attitudes towards the pedagogical use of ICTs in the teaching and learning process. The population of the study consisted of all teacher educators working in public and private universities, degree-awarding institutions, and in public and private teachers training colleges situated in Karachi, the cosmopolitan city of Pakistan.

To select a true representative sample, first, the Teacher Education institutions were identified from NACTE, Sindh Teachers Education Development Authority (STEDA) website, and the University of Karachi's list of affiliated colleges (Dilshad, 2010). As there was no authentic sampling frame for faculty (particularly for a private institution) available, random sampling was not possible. Consequently, the convenience sampling method was adopted. According to Creswell "Inconvenience sampling, the researcher selects participants because they are willing and available to be studied" (Creswell, 2012, p.142).

Because of the diverse nature of the institutions, to ensure the representativeness of the sample, participants from all 5 types of institutions were approached to participate in the study (see table 1 and 3). The researcher along with a questionnaire and a letter of introduction visited the teachers training institutions' administration (concerned departmental head/principal) to seek permission for the survey, after getting permission sometimes on the same day or negotiated day, available faculty members were requested to participate in the study, those who showed their consent to take part in the study were explained about questionnaire and purpose of the study, most of the participants filled and returned the questionnaire on the same day while few returned later. Using this method majority

of the target population was accessed, therefore the researcher is quite confident about the sample being the representative of the majority of the faculty (133 teacher educators) who participated in the study (see table 3).

A self-developed questionnaire was used for data collection. The items of the questionnaire were taken from previous relevant studies and local experts were consulted to ensure the validity of the items. The validity and reliability of the questionnaire were ensured through piloting. The reliability of the questionnaire was assessed using Cronbach's Alpha and was found to be (0.85) satisfactory.

Both descriptive and inferential statistical methods were used for data analysis. The frequencies and percentages were used to illustrate sample characteristics, while items of the questionnaire were analyzed employing descriptive statistics i.e. percentages, Mean and Standard Deviation. The null hypotheses were tested employing an independent t-test.

The Composition of the Sample

Table 3

Institutional Demographics of the Sample

Demographics	Frequency	Percentage
Faculty Institution University & DAI	45	34%
Government	16	12%
Private	29	22%
Colleges	88	66%
Government	71	53%
Private	17	13%
	(133)	
Government Colleges		
GECs (Colleges Department Sindh)	39	29%
EGCEs (Directorate TTIs Sindh)	21	16%
EGCEs (KMC Karachi)	11	8%
	(71)	

The table shows that out of 133 faculty members (teacher educators) who

participated in this study, 34% were from Universities/Degree Awarding Institute and 66% were from Colleges. Additionally, it shows that out of 45 participants of Universities/Degree Awarding Institute 12% were from government Universities and 22% were from private Universities. Likewise, out of 88 faculty members of colleges, 53% were from government colleges while the remaining 13% were from private sector colleges. It also shows that 65% of the participant of the study were from the government sector TTIs while 45% were from private sector TTIs. Furthermore, it also shows that out of 133 faculty members 71 (53%) were from different public sector colleges (GECs and GECEs). Out of 71(53%) government college participants, 29% were from College Education Department Sindh (GECs), 16% were from Directorate TTIs Sindh/BoC (GECEs), while 8% belonged to Local Government (KMC Karachi) GECEs colleges.

Table 4

Personal Demographics of the Sample

Demographics	Frequency	Percentage
Gender		
Male	56	42%
Female	77	58%
Age		
Below 31 years	9	7%
31-40 years	41	31%
41-50 years	50	37%
51-60 years	28	21%
Above 60 years	5	4%
Designation		
Lecturer	80	60%
Asst. Professor	22	16.5%
Associate Professor	11	8%
Professor	02	1.5%
Others	18	14%
Academic Qualification		
Master	92	69%
M.Phil.	24	18%
Ph.D.	17	13%

Professional Qualification		
None	07	5%
B.Ed.	25	19%
M.Ed.	101	76%
Experience		
Below 5 years	32	24%
06-10 years	41	31%
11-20 years	37	28%
21-30 years	18	13%
Above 30 years	5	4%

Table 4, illustrates that out of 133 participants of the study 42% were male and 58% were female teacher educators. As for age group, 7% of participants were below 31 years, 31% were 31 to 40 years, 37% were 41 to 50 and 24% were from the age group 51-60 years, while only 4% were above 60 years. In designation, a majority of the participants 60% were lecturers, around 17% were Assistant Professors, 8% were Associate Professors and just 1% were Professors while 14% (others) participant of the study were promoted school teachers or Director Physical Education Instructors (DPs) who were teaching the different subjects in different GECEs of Karachi. As for qualification, 69% of faculty members were Masters, 18% were M.Phil., and 13% were Ph.D.; while 76% of the participants were M.Ed., 19% had a B.Ed. degree, while the remaining 5% did not hold any professional qualification. As for teaching experience, 24% of participants had below 5 years of experience, 31% had 06 to 10 years, 28% had 11 to 20 years, and 13% had 21 to 30 years' experience, while 4% were had above 30 years of experience as a teacher educator.

Findings

To answer the Research Question regarding teacher educators' attitudes towards the pedagogical use of ICTs, itemized analysis of the questionnaire (attitude scale) was carried out using descriptive statistics (Percentages, Mean & Standard Deviation). The high percentages of agreement and disagreement with the mean score along standard deviation were computed to determine the level of faculty's attitude towards the pedagogical use of ICTs in the teaching and learning process.

The high percentages of agreement and mean score were accounted for:

'ICTs are a window of opportunity for teachers' continuous professional development' (95% of the faculty members answered that they agreed or strongly agreed with that statement) with Mean score (M=4.42) and Standard Deviation (SD=0.66), 'ICTs are valuable tool for interactive and collaborative teaching and learning' (93% of the faculty members answered that they agreed or strongly agreed with that statement) with Mean score (M=4.38) and Standard Deviation (SD=0.71), 'ICTs create the learning environment that appeals to diverse learning style' (90% of the faculty members answered that they agreed or strongly agreed with that statement) with Mean score (M=4.26) and Standard Deviation (SD=0.83), 'I am aware of the opportunity that ICTs offer for 21st century teacher and pedagogy' (89% of the faculty members answered that they agreed or strongly agreed with that statement) with Mean score (M=4.25) and Standard Deviation (SD=0.76), 'I am well aware that NPSTP (2009) Standard #. 7 about effective and efficient use of ICTs' (88% of the faculty members answered that they agreed or strongly agreed with that statement) with Mean score (M=4.32) and Standard Deviation (SD=0.86), 'The use of ICTs requires curriculum and instructional reform' (86% of the faculty members answered that they agreed or strongly agreed with that statement) with Mean score (M=4.14) and Standard Deviation (SD=.81), 'There are other important issues that needs to be taken before implementing computers in education' (74% of the faculty members answered that they agreed or strongly agreed with that statement) with Mean score (M= 3.91) and Standard Deviation (SD=0.90), 'Contemporary teacher education courses are not easy to teach without computers and internet' (72% of the faculty members answered that they agreed or strongly agreed with that statement) with Mean score (M=3.81) and Standard Deviation (SD=1.05).

While high percentages of disagreement and mean score was accounted for: 'ICTs are not applicable into the subjects that I have been teaching' (59% of the faculty members answered that they disagreed or strongly disagreed with that statement) with Mean score (M=3.63) and Standard Deviation (SD=1.15), 'I don't prefer web-based content because of less authenticity' (54% of the faculty members answered that they disagreed or strongly disagreed with that statement) with Mean score (M=3.23) and Standard Deviation (SD=1.14), 'ICTs distract concentration and waste students time' (51% of the faculty members answered that they disagreed or strongly disagreed with that statement) with Mean score (M=3.35) and Standard Deviation (SD=1.26), 'I don't use computer as much as (compare) other resources

(e.g., text-book, reference book, dictionary of education, charts etc.) for instructional purpose' (48% of the faculty members answered that they disagreed or strongly disagreed with that statement) with Mean score (M=3.12) and Standard Deviation (SD=1.22). And a relatively low level of agreement was accounted for the items: 'ICTs promote copy-paste culture among students' (58% of the faculty members answered that they strongly agreed or agreed with that statement) with Mean score (M=3.41) and Standard Deviation (SD=1.17), 'Rarely, I felt a need to use ICTs in my instructional activities' (53% of the faculty members answered that they strongly agreed or agreed with that statement) with Mean score (M=3.14) and Standard Deviation (SD=1.29), 'The use of ICTs brings minor improvement in learning over the traditional time-tested method' (49% of the faculty members answered that they strongly agreed or agreed with that statement) with Mean score (M=3.21) and Standard Deviation (SD=1.21).

The overall Mean score (M=3.77) and Standard Deviation (SD=0.95) of the attitude scale items reveal that the faculty members of TTIs had a moderate level of positive attitude towards the use of ICTs for educational purpose.

For statistical analysis, Research Questions 2 to 4 based on demographic variables were converted in Null Hypotheses. The demographic variables gender, age, experiences were collapsed in two groups and re-coded before the application of independent t-test.

Gender

H_0: There is no significant difference between male and female faculty attitudes towards the pedagogical use of ICTs.

The independent t-test was run to test the null hypothesis 'There is no significant difference between male and female faculty attitudes towards the pedagogical use of ICTs'. The results of the independent t-test show, that the p value 0.904 is greater than 0.05 (p:0904 > 0.05), so the null hypothesis is not rejected. Therefore, it is concluded that there is no significant difference between male and female faculty attitudes towards the use of ICTs.

Age

H_o: There is no significant difference between below 40 years and above 40 years old-faculty attitudes towards ICTs.

The independent t-test was conducted to see the significance of the null hypothesis 'There is no significant difference between below 40 years and above 40 years, faculty attitudes towards the pedagogical use of ICTs'. The results show that the p value 0.135 is greater than 0.05 (p:0.135 > 0.05), so the null hypothesis is not rejected. Therefore, it is concluded that there is no statistically significant difference between 40 years age group and the above 40 years age group faculty attitudes towards the use of ICTs in the teaching-learning process.

Experience

H_o: There is no significant difference among less experienced (below 10 years) and experienced (above 10 years) faculty attitudes towards ICTs.

An independent t-test was used to evaluate the significance of the demographic null hypothesis of experience 'There is no significant difference among less experienced (below 10 years) and experienced (above 10 years) faculty attitudes towards ICTs'. The results of the independent t-test show that the p value 0.409 is greater than 0.05 (p:0.409 > 0.05), so the null hypothesis is not rejected. Therefore, it is concluded that there is no statistically significant difference between the above 10 years' experience and below 10 years' experience faculty attitudes towards the use of ICTs.

Discussion

This study mainly aimed to investigate teacher educators' attitudes towards the pedagogical use of ICTs, these educators were from different teacher training institutions (Universities and colleges) of Karachi. The descriptive statistical method was used to answer the first research question. The itemized analysis of the questionnaire displays a high Mean (4 and above) score for items (1, 2, 4, 12, 13, 14, and 15) which were related to perceived benefits of ICT while a relatively low Mean score (3 and above) was observed for items (5, 6, 7, 8, 9 and 11) which were related to practices. Whereas the overall Mean score (M=3.77) and Standard Deviation (SD=0.95) evidenced that the teacher educators have a moderate level of

positive attitude towards the instructional use of ICTs in the teaching and learning process. The analysis stated above concludes that in general, teacher educators have positive attitudes towards the ICTs but this was not reflected in practices probably due to the lack of supportive conditions such as technology-oriented skills and access to ICT resources as observed by Ali and Perveen (2013).

The research questions 2 to 4 based on demographic variables like gender, age, and experience were converted into null hypotheses to test the significance of hypotheses. The first hypothesis was based on gender where the results of the independent t-test (p:0904 > 0.05) found no significant difference between male and female faculty attitudes towards the use of ICTs. Likewise, in the computation of descriptive statistics, no significant difference was observed in the mean score for Male (M=53.9643) and Female (M=53.8312). The second hypothesis was based on age where the findings of the Independent t-test (p: 0.135 > 0.05) found no statistically significant difference between below 40 years age group and above 40 years age group faculty attitudes towards the use of ICTs. A slightly high mean score was observed for the above 40 years age group faculty. (Below 40: M=52.23, above 40: M=54.51) and this result is quite similar to Rana's (2012) study. The third hypothesis was about faculty experience as teacher educators, the results of the Independent t-test (p value 0.409 > 0.05) displayed no statistical significant difference between below 10 years and above 10 years' experience faculty attitudes towards the use of ICTs. A slightly high mean score was observed for above 10 years' experience faculty (below 10: M=53.47, above 10: M=54.38) and this result is aligned with age group results. For this study (based on Mean score) it may be concluded that older and experienced teacher educators had slightly better attitudes towards the ICTs as compared to their counterparts and this may need further investigation.

The hypotheses analysis of this study illustrates that there is no significant difference in the attitude of teacher educators concerning gender, age, and experience. This finding is corroborated by recent studies conducted by Mustafina (2016), Tweed (2013), and Rana (2012). Many early studies proclaim that males have more positive attitudes towards computers than females while current studies assert that gender is not a significant predictor in the use of technology (Chai, 2008; Tweed, 2013; Elsaadani, 2012; Liquat 2012; Mustifina, 2016). Some studies exhibit that technology integration increases with teacher's age and years of

experience while others indicate that younger teachers use technology more in the classroom (Tweed, 2013). The findings of this study are consistent with previous studies highlighting that demographical variables do not play a significant role in teacher educators' attitudes towards the use of ICTs. The multitude of attitude studies conducted in different parts of the world indicates that it is not a universal phenomenon because many agents can play their role in developing attitudes and have an influence during studies (Mustifina, 2016). Additionally, the proliferation of ICTs is also narrowing the gap.

Conclusion and Recommendations

According to Rogers (1995) people's attitude towards a new technology is a key element in its diffusion. The findings of this study reveal that teacher educators of Karachi's teachers training institutions have a moderate level of positive attitude towards the instructional use of ICTs. Furthermore, this study did not find any statistically significant differences in the attitude of male/female, younger/older and experienced/less-experienced faculty towards the pedagogical use of ICTs. Additionally, a slightly higher mean score was observed for experienced educators and teacher educators in the age range above 40 years. Therefore, it may be concluded that older and experienced teacher educators have a slightly better attitude towards the ICTs as compared to their counterparts. However, this was not significant in hypothesis testing and needs further investigation. Consequently, it is concluded that teacher educators of Karachi's teacher's training institutions have a moderate level of positive attitude towards ICTs and demographical variables do not play a significant role in teacher educators' attitudes towards the pedagogical use of ICTs.

Lastly, this study suggests that there is a need to provide supportive conditions for the implementation of ICTs in the curriculum by ensuring availability, easy access to ICT resources, and continuous professional development of teacher educators and time-to-time participation in hands-on workshops on the pedagogical use of ICTs.

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