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Original Research Article

Effects of Using ICT in Professional Development in Pakistan

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Abstract

The amalgamation of ICT in education has recently become one of the priorities of the Department of Education in all the provinces of Pakistan. The policymakers have been started emphasizing the use of ICT for training school managers to develop their professional skills. Hence, this study determines the effects of the use of ICT in professional development programs. The design of this study is quantitative, and nature is experimental with pretest-posttest designs. This study was conducted on public sector educational mangers who attended the professional development program. The Intact group is the adopted sampling technique, which is one of the non-probability sampling procedures. An achievement test is the research instrument that is used as a pretest and posttest. The results of the pretest and posttest are compared by employing paired sample t-test using SPSS. The findings of this study explore the significant positive impact of the use of ICT on managers; motivation for learning, and their skill development.

Keywords: ICT, Professional Development, Intact Group, Skill Development, Motivation For Learning

INTRODUCTION

Technology has abundant efficiency in enhancing professional development. Its three benefits prove its significance as useful and productive in the field of education. Its nature is practical. It keeps the teaching process-specific; above all of them, the learning process remains to continue not only within the classroom even beyond the classroom. ICT plays a significant role in promoting learners' higher-order cognitive skills, ability to solve problems and strong communication skills that are essential intellectual qualities and required in every professional domain. It is also essential in a conducive learning environment, crucial in building broader learning communities. Learning through ICT is considered interactive, supportive even of those people who have special needs for learning. As ICT is gradually used in education, its assimilation to learning has had a massive significance in nurturing technology-based education among learners (Islam, 2014). Videos on Simulations and real-setting make the learning concrete and stable. The use of cell phones makes learning interesting, possible, and continuous at the school level, which is considered more powerful than traditional learning environments. Relationships of dynamic processes that cannot be illustrated by individual pictures. Computer-generated graphics make them more precise as well as comprehensive to understand. Enhancive access to broad digital resources fulfills one's own professional needs as well as helps in purposeful reflection about specific subject-related methodology. Professional development takes place within a framework of continuous and sustained reflection when Technology provides those cost-effective ways of supporting to make them professional learning communities. Several studies have determined how teachers and educational managers learn professional development for their careers (Kraft, 2018; Hyler and Gardner, 2017). Ito (2019) says educational managers play a very significant role in taking the initiative for integrating the ICT in the institutions and building the capacity of teachers to accommodate and facilitate ICT in the teaching-learning process. The educational managers' primary responsibility is taking the right decisions of initiating and implementing change in school for the betterment of school; like the incorporation of ICT into pedagogical

practices. Successful ICT assimilation is related to actions taken at different levels, such as the development of an ICT plan, ICT support, and ICT training (Tondeur and van Keer, 2017).

Research on educational reform describes, for the last two decades, ICT got more room in professional development and education (Drent and Meelissen, 2008). Research findings prove the positive effects of the use of ICT on learners' learning (Buckingham, D.2013; Hattie, 2015). Al-Shboul (2017) describes four ways through which ICT supports teaching-learning: (i) supporting education in schools; (ii) providing non-formal education for out-of-school children and adults; (iii) supporting pre-service distance education of teachers and their in-service professional development, and (iv) enhancing the management of schools. According to Sultana (2018), ICT support education to improve its quality: real-time conversation, learning by doing, delayed time conversation, and directed instruction. Malapile et al (2014) suggested that the use of ICT impacts whole education by improving performance, teaching, as well as administration. It also develops relevant skills in disadvantaged communities.

Most of the developing countries like Pakistan are unreceptive in adopting advancements; in accepting modern changes as a result they remain passive in getting benefits from the developments and advances that technology does offer. Because of "the Digital Divide" some countries limit their ability to take advantage of technological developments. Access is chief among them. According to the U.S. State Department (Akarawang, 2000), by the end of the twentieth century, approximately 275 million people online. According to a UNESCO report (Skryabin et al., 2015), while over 26% of the U.S. population are Internet users, only 0.8% of the Latin American population are Internet users. The figure for South Asia, 0.04%. Access is only the most obvious problem. Besides facing other challenges, developing countries have fewer devotions, lack of commitment as well as lack of intelligent decisions for developing the well-knitted framework for incorporating ICT to improve and reform education, teacher preparation, curriculum, pedagogy, assessment as well as challenges related to the professional development of educational managers. The World Bank Institute launched a program to address these problems. Therefore, this study intends to explore the impact of using ICT in professional development among educational managers in Pakistan. To achieve this objective, this study hypothesizes that the use of ICT plays a significant role in effective professional development for educational managers.

Globally, ICT is being used for teaching and training purposes, but in Pakistan, especially in the public sector, it is ignored. A small number of institutions use ICT for teaching and professional development in their classrooms. Thus, this study was designed to explore the perceptions of the managers who experienced a program of professional development that used ICT for their classroom teachings, and the impacts of ICT on the process and achievement of the objectives of the program.

RESEARCH METHODOLOGY

This study was conducted at an institution where educational managers gathered from all over Pakistan for their professional development in Islamabad. Only public sector managers were taken into the part of this study. They were not informed about this study as researchers intended to observe them in natural settings. The aim was to study the effects of ICT on participants' participation rate, ability to time management in the classroom, and their skills development. These three dimensions were part of this study. A pretest was administered to collect the pre-learning evidence. A posttest was also administered to test the effect of training. The nature of this research was pre-experimental in which researchers followed basic steps of experimental study but did not have the control group. Pre-experimental designs follow basic experimental steps but don't have a control group. In other words, a single group is studied. Its pre-treatment or post-treatment are compared. It is a single group study (https://allpsych.com /researchmethods/preexperimentaldesign/).

The researchers studied the impact of independent variable ICT on dependent variables such as rate of participation, ability to time management, and skill development in the already set environment instead of a controlled environment. One-group pretest - post design is the selected design for the study. The total population of this study was considered as a sample size. The intact group was the adopted sampling technique, which is one of the non-probability sampling techniques. The entire population was taken as one group-experimental.

A test was developed from the module of training that was administered first before starting the training program to gauge the professional knowledge that they already had. The same test was also administered at the end of the training to gauge the impact of the program as well as to measure the difference. A total of 42 managers were involved in this study. The paired-sample t-test was used to analyze the obtained data to compare the differences between pre and post-training programs. The data were analyzed using SPSS.

RESULTS

Table 1 represents the statistics of the paired-sample t-test. The description of the hypothesis is in column 1. The obtained Mean of pre and post-tests are in column 2. The sample size is in 3 as N= 42. The standard deviation of

Table 1. The Results of the Paired-sample t-test

Paired Samples Statistics					
Use of ICT plays significant role in effective Professional Development of Educational Managers		**Mean**	**N**	**Std. Deviation**	**Std. Error Mean**
Pair 1	Posttest	70.4524	42	1.34713	.20787
	Pretest	51.1429	42	2.22592	.34347

Table 2. The results of Paired Samples Test

Paired Samples Test									
Use of ICT plays significant role in effective Professional Development of Educational Managers		**Paired Differences**							
					95% Confidence Interval of the Difference				
		Mean	**Std. Deviation**	**Std. Error Mean**	**Lower**	**Upper**	**t**	**df**	**Sig. (2-tailed)**
Pair 1	Post - Pre	19.30952	3.11165	.48014	18.33987	20.27918	40.217	41	.000

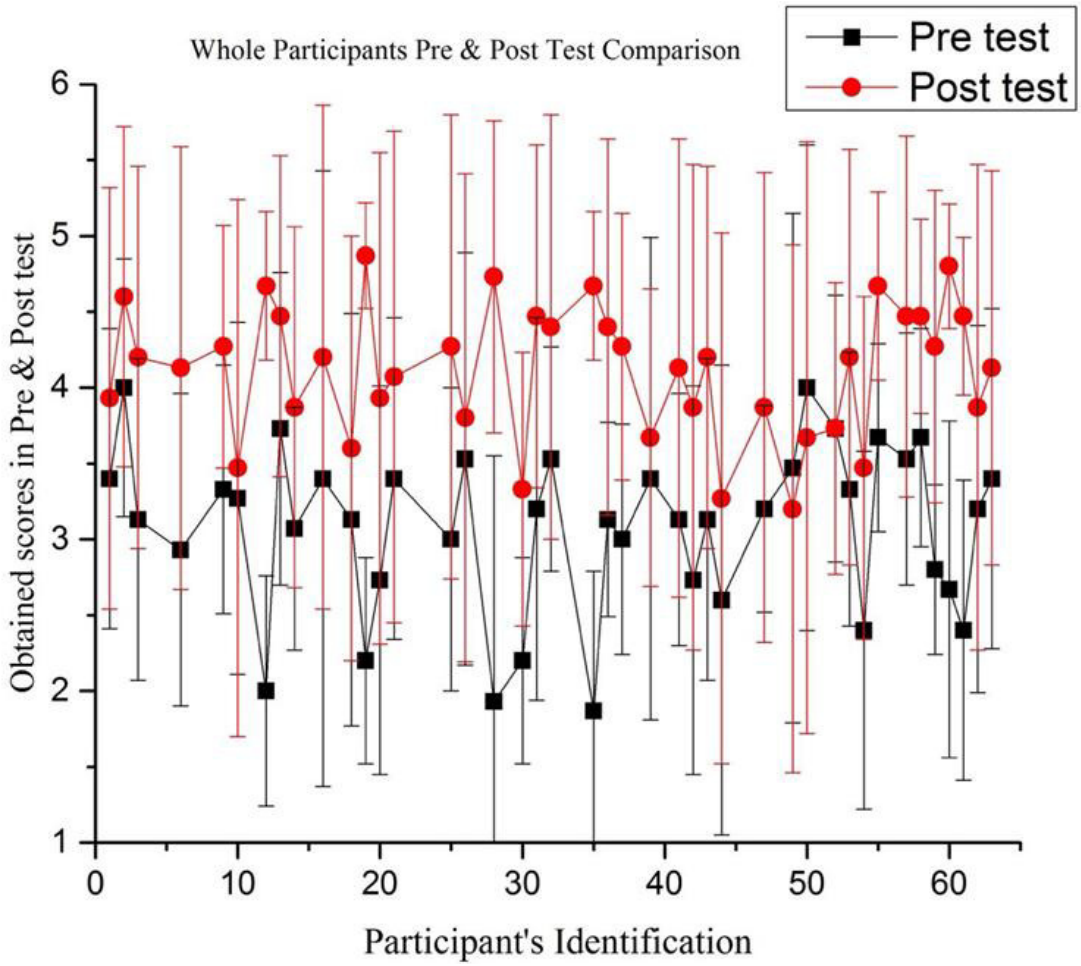

Figure 1. Participants' Pre and Posttest Comparison

both scores is in column 4 and Standard Error of Means in column 5. In column 2, the obtained mean in Posttest is 70.4524, and in pretest is 51.1429. In column 4, the standard deviation of Posttest scores is 1.34713, and of pretest scores are 2.22592. In column 5, the obtained standard error of the mean of posttest scores is .20787

and the pretest is .34347.

The table shows that the difference between obtained means is significant enough to determine the effect of the program. And the variance in the data of the posttest is smaller as standard deviations are less than 2 that determine the improved consistency in the data. The data has fewer errors as its error of the mean is lesser to 1.

Figure 1 shows that the mean of obtained pretest scores of most of the district teams seems significantly lower than the mean of the obtained posttest scores. This indicates that all the participants were provided with an equal chance of learning through ICT during the training. Overall the graph is showing a significant difference in the learning of participants before and after the training.

Table 2 represents the results of the paired-sample t-test. The description of the hypothesis is given in column 1. The Mean difference (19.30952) is given in column 2. The standard deviation difference (3.11165) is shown in column 3. Standard Error of Means (.48014) is shown in column 4. Interval of the difference with 95% confidence is in columns 5 and 6. Positive mean difference depicts that the mean of post-test is greater than pretest scores mean which explains that the alternative hypothesis is accepted. The t-value is given in column 7. Degree of freedom is given in column 8, *P-value* (0.00) is given in column 9 expressing that the obtained findings do not have probability to be changed and are significant enough to infer the hidden meanings of the data so the null hypothesis is rejected and the alternative hypothesis has been accepted that use of ICT plays significant role in effective professional development of educational managers in Pakistan.

DISCUSSION

From the above findings, this aspect is obvious that the use of ICT in the classroom can play a significant role in enhancing the performances of both; teachers and learners. Not only it enables teachers to present multiple dimensions of a concept to the learners simultaneously but also keeps learners motivated. It helps in managing time to complete the learning activities. It provides ample opportunities to reflect on their learning.

The participants of the study were not seemed to be the part of the program as their pretest scores depict less consistency along with weak knowledge. But as they experienced the classroom environment by using ICT, their motivation level was increased. After one or two days, they became conscious and volunteer learners. They took part enthusiastically in every activity. The module for the training remained under their discussion and reflection. The gap between the resource person and course participants was minimized because of using ICT. Because of these course participants, learning was continuous and stable. This study provides the documents of the evidence about the effects of using ICT in the classroom to present to the researcher, authorities, and government so they may enhance the use of ICT for educational purposes, especially in the classroom. International telecommunication union ITU measures the level of advancement of ICT in more than 150 countries to observe progress in using ICT. It developed the ICT Development Index (IDI) to compare the progress made between 2002 and 2007. The ITU ranks Pakistan 127 with an IDI value 1.46 in its 2007 survey (Albion., et al 2015). Although the Government of Pakistan is committed to implementing ICT in education, the process is hindered by several barriers. Some of them are; lack of equipment, the unreliability of equipment, lack of technical support, and other resource-related issues.

In developing countries, many stakeholders, educators, government, and business leaders consider that ICT investment enhances the instructional use of computers and improves teaching and learning. Effective implementtation of ICT in education requires a commitment from; the government of Pakistan, administrators, teachers, parents, students, and the community that is essential in shifting the paradigms of instruction.

CONCLUSION

In line with the findings of this study, researchers suggest that professional development programs should be planned and developed using ICT at an initial level as technology strengthens teaching relationships. For better outcomes, it should be ensured in the beginning that all participants are proficient in using a computer. Technology is used to promote engaging pedagogical/ anagogical techniques among the resource persons and facilitators of any professional development program. Opportunities for local adaptation would play a significant role in producing high-quality teaching and learning environments. The importance of impact evaluation should be done at different intervals of the time that depicts an actual picture of the program. Finally, the impact of technology should be assessed independently.

CONFLICT OF INTEREST

No conflict of Interest

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