

Study of problems of private secondary Schools subject teachers in the integration of ICT in teaching

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Abstract— The objective of this research paper is to examine the effects of various factors like infrastructure, IT ICT (information technology) Trainings, management support and Teacher interest on integration of ICT (information communication technology) in subject teaching. For analysis primary data has been used. Regression and correlation are used as analytical tools for the empirical estimation. This study finds that the management support and teachers interest in ICT (information communication technology) are statically significant factors with a positive sign. Moreover, the infrastructure and teachers IT training has also be found to be statically significant factors with negative sign. This study uses primary data collected by subject teachers of 10 secondary private schools of Lyari town. Results suggest that in order to implement ICT (information communication technology) in subject teaching, the management should ensure the proper infrastructure of computer lab with quarterly preplanned Teachers Trainings regarding ICT (information communication technology), so the teachers will show positive attitude towards technology aided learning.

Index Terms— ICT (information communication technology), Teachers Attitude, Infra structure, Integration of ICT (information communication technology)

1 INTRODUCTION

In any institute management support is a key factor in the integration of ICT (information communication technology) in subject teaching. In Lyari town the lack of interest of management observed during the last 5 years. This study examines why teachers do not incorporate and use computer technology as a resource, in teaching practices. The study specifically investigated teachers' problems towards ICT resources use in their instruction. The study also explored the factors that affect teachers' use or non-use of computer technology resources in teaching.

The study finally examines whether and to what extent opportunities, facilities and training are provided to teachers and to what extent they contribute. This research study is based on the reasons that why teachers are not using ICT as a teaching tool in secondary level teaching.

The ubiquitous nature of Information and Communication Technologies (ICTs) has transformed almost every facet of our society and radically changed how people live, work and play (Komza 2005). As part of that transformation, the pervasiveness of ICT in classrooms has become essential, as educational institutions must prepare students for living in 'a knowledge society' as part of this 'information age'.

To achieve this preparation, the need to integrate ICT in classrooms has become critical to the work of schools. It

was hoped that in conjunction with preparing students for this technologically driven society, teachers would also adopt new and innovative teaching methods. Schools will have little positive effect without proper broadband connections and training of teachers to use computers effectively".

Teachers therefore, are seen as key players in relation to this infusion of ICT. However, despite considerable funding, more powerful equipment and extensive support structures, it appears that ICT has not brought about the widespread changes in teaching methodologies that was initially hoped for. ICT it seems, has been merely superficially embraced by many teachers and many schools. A substantial body of research asserts that teachers have difficulty in integrating ICT because of obstacles or barriers. These barriers, if not addressed, can have a profound influence on the integration of ICT in both mainstream secondary and classrooms. Literacy and numeracy levels amongst students are often weak and they often have very negative attitudes towards education.

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ICT skills are improving teaching and learning environments, students are better able to develop the required skills. But the teachers who have trained are not implementing ICT in teaching successfully they have some problems this study based on those problems.

The purpose of this study is to examine the problems to the integration of ICT in teaching. In this study all the schools have ICT infrastructure and the whole staff are ICT trained by Intel Teach Program, so the basic problems faced by those teachers are the main focus of this study. Based on this study the research provides recommendations on improving ICT integration in the class rooms.

The need of this study is to investigate and identify the problems that prevent the successful integration of ICT in those private secondary schools of Karachi which have ICT infrastructure and their staff are ICT trained. This study presents a portrayal of the experiences of teachers in relation to technology integration in schools of private sector. It examines how teachers are using ICT and what factors prevent ICT use. Attention is given to internal problems, within teachers themselves and external problems, over which the teacher may have little or no control.

The main aims of this study was

- .To analyzes the factors lead to successful ICT integration in the classroom.
- To know the teachers competency of integrating computers.
- To analyze the importance of computer trainings for integration of ICT.

This research study has the potential to contribute to existing research in relation to the obstacles preventing ICT integration in the learning process. This research is expected to benefit educators by extending the knowledge base that exists already, as it presents empirical evidence in relation to these problems.

The study may be of significance to other teachers, since many of them may also experience the same difficulties, as those encountered by teachers that participated in this research. The findings from this research could be generalized to other same kinds of secondary schools of Karachi.

This study may help to raise awareness among manage-

ment and teachers, about the problems to ICT integration that exist. A thorough understanding of problem, will inform educators, in deciding how to address them, in the hope that they can be eliminated entirely from the teaching and learning process.

2 LITERATURE REVIEW

The use of ICT in the classroom has become important, as it provides opportunities for students to learn how to operate in an information age. The study of obstacles to the use of ICT in education may assist educators in overcoming barriers and support students in becoming successful technology adopters in the future. This literature review analyses some relevant literature and aims to identify the perceived barriers to technology integration in education. The availability of computer equipment does not in itself guarantee ICT integration in education. Successful implementation is a complex process, determined by pedagogical values, attitudes, curricular needs and physical infrastructures (Granger *et al* 2002, p.480). Akbaba-Altun (2006), in a study of eighteen Turkish schools, concluded that successful integration of technology is not simple, because it depends on such interlinking variables. ICTs are radically transforming the curriculum in a number of ways, demanding that teachers reflect on traditional methodologies.

Educators themselves accepted that the integration of ICT into the classroom will greatly enhance the learning experience (Sutherland *et al* 2004). The growth of ICT help students to adjust in the global economy, the way in which they are taught and what they are taught, requires adjustments to and around ICT (Watson 1999). However, Balanskat *et al* (2006) argued that teachers appear to acknowledge the value of ICT, difficulties continue to be encountered in adopting and integrating such technologies, while Mueller *et al* (2008), concluded that although many teachers are comfortable with technology in general, they still may not be ready or capable to integrate such technology, in their classrooms. The following section provides a brief overview of what ICT integration means.

In 1980 computers were very cheap and easily available for consumers. Governmental policies are going to be change in 21st century these policies motivated the mass production of computers for schools. Many researchers asserted that ICT will be an essential component of the education process for future generations (Bransford *et al* 2000; Grimus 2000; Yelland 2001). Towards the end of the 1980s, the term 'information technology' began to replace the

word 'computer' (Pelgrum and Law 2003). This term referred to the computer's processing ability, indicating a shift from computing technology to the capacity to store and retrieve information. Later, the term ICT emerged, signalling the introduction of e mail and electronic messaging with computer technology (Pelgrum and Law 2003).

It became accepted during this period, that educational systems needed to prepare students to adjust to and survive in this 21st century. This meant preparing students for "lifelong learning in an information society" (Pelgrum and Law 2003, p.20). ICT integrated education worked as a catalyst for change, fostering 21st century skills in problem solving and critical thinking, as well as the development of student centered learning (McGrail 2005, p.6). Kozma (2008, pp.1085-1087) identified three rationales for the introduction of ICT into education. Firstly, the *economic rationale* refers to the role it can play in preparing students as future workers and in supporting economic development.

Secondly, the *social rationale* where ICT investment aims to: increase knowledge sharing, encourage cultural creativity, increase civic participation, make government services more accessible and finally enhance social cohesion. Finally, the *educational or pedagogic rationale*, where ICT can advance educational reform and improve educational management structures. Similarly, Hepp *et al* (2004) broadly concur, identifying three reasons for the use of ICT in education: the development of new skills for the information age, increased productivity and the development of quality learning.

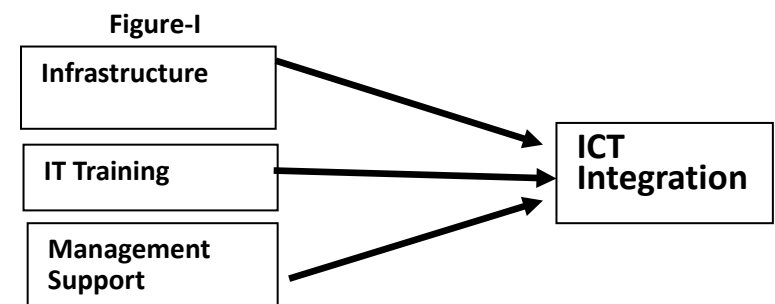
Drent and Meelissen (2008), identified three objectives for the integration of ICT in education. They are: the use of ICT as a 'discipline or profession'; ICT as a 'teaching or learning medium' and the use of ICT as an 'object of study' (Drent and Meelissen, 2008, p.187). It can be gleaned from these objectives that integration involves aiding the teaching and learning process (apart from the third objective which is a discipline in itself). Successful integration of ICT in education can lead to a number of benefits and some of these benefits will be explored in the following section.

The use of technology in the 21st century education environment has become an unstoppable. (Cohen *et al* 2004; Laubsch 2006). ICT impacts on a large section of education, from record keeping and school websites to the creation of online learning communities (Bishop 2007).

21st century institutions do not need students to be physically present. Virtual classrooms with improved internet accessibility provide a great opportunity and facilitation. (Stennes 2008). However, the usefulness of ICT use in subject teaching depends on the success with which it has been integrated (Condie and Munro 2007). Dawes (2001) asserted that new technologies could support education across the entire curriculum, providing innovative opportunities for effective communication. ICT in education has undoubted potential, to be influential in changing teaching methodologies.

Many researches and Studies showed that technology use can result in effective literacy gains with skills development. Many weak reader can be motivated and engaged through the use of ICT (Lynch *et al* 2000; Ó Murchú 2000; Segers and Verhoeven 2002). Condie and Munro (2007, p.5) concluded that the use of ICT has had positive effects in a number of subjects. Schofield and Verban 1988 (cited in Parr 1995), concluded that using technology Aided Instruction (TAI) diverts the teacher's focus to weaker students.

2.1 Theoraatical Framework



3. Hypothesis and description of variables

3.1 Dependent Variable

ICT integration is taken as the dependent variable. ICT integration in education in 21st century environment has become an unstoppable. (Laubsch 2006). ICT integration depends on many factors, so It is difficult to integrate ICT in Education.

3.2 Independent Variables

4.2.1 Infra Structure

Infra structure is play a vital part in the integration of ICT in Education. A successful ICT integration is impossible with-

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out equipment, its maintainence and availability. This variable is very important in Education, infact a good infra structure supports an educator to communicate.

H1: There is a positive impact of infra Structure on the integration of ICT in education.

3.2.2 IT (Information Technology) Trainings

A teacher should have some knowledge of IT for 21st century learning environment; this variable is taken as a independent variable. More IT trainings develop more active learning environment for learners and lack of training facilities create hurdles in ICT integration.

H2: There is a positive impact of IT Trainings on integration of ICT in Education.

3.2.3 Management Support

A teacher should have support of management; this variable is taken as a independent variable. More support and positive attitude of management and top administration develop more active friendly, problem solving and learning environment for learners and lack of support of management create many problems for educators, learners and management in ICT integration.

H3: There is a positive impact of management support on integration of ICT in Education.

4 DATA DESCRIPTION AND METHODOLOGY

This study is based on 100 teachers responses, who are MTs (Master Trainers) trained by Intel[®] Education. The main reason behind using this data is to explore the impact of the independent variable on the dependent variable. This data will enable us to minutely monitor the relationship between these variables. Majority of previous studies used different case studies and other variables but in our opinion our variables like infrastructure, IT trainings and Management support have an immediate impact on ICT integration in education. These variables are important Factors for successful integration of ICT in education. Data is taken from 10 different schools of Lyari town due to fact that these 10 schools have trained teachers, infrastructure and management support in different scenario. Hence, this study will enables us to determine very important factors of ICT integration in education.

Data used in this study has been obtained from the questionnaire distributed in 10 schools and each school filled 10 questionnaires by 10 different subject teachers. Linear regression model and correlation analysis is used to analyze the impact of the independent variables.

5 RESULT AND DISCUSSION

5.1 Reliability Test

The value of Cronbach's Alpha showed that tools are 60 to 75 % reliable. All the items supported the research hypothesis and they support to analyze the data and results. A complete summary of reliability results is reported in table 1.

TABLE 1

Variable	Cronbach's Alpha	No of items
ICT Integration	0.821	8
Infrastructure	0.722	9
IT training	0.551	3
Management support	0.709	3

5.2 Corelation Analysis

The results of correlation analysis shows that ICT Integration is correlated 67.1% with Infra Structure, 55.6% with IT Trainings and 67.6% with Management support. This shows the fact that ICT integration is successful due to the strong relationship with independent variables. A complete summary of correlation analysis is reported in table 2.

TABLE 2

Correlation	ICT Integration	Infra-structure	ICT Training	Manage support
ICT Integra-tion	1			
Infra Struc-ture	.671**	1		
ICT Training	.556**	.585**	1	
Management Support	.676**	.776**	.576**	1

5.3 Model Summary

TABLE 3

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.727 ^a	0.528	0.513	1.80492

R Square	F Chang	Sig. F Change	Durbin Watson
0.528	35.1	0	0.455

5.3 Explanation

The results of model summary are given in the table 4. The dependent variable is ICT integration. R squared is the magnitude of determinants. In our study it has been found that we have R square value of 0.528 which means that 52.8% model has explained parts. Adjusted R squared is 0.513 which is close to R square value. This shows that model and data is fit to use. In our analysis, F value is 35.11 at significant level of .000 less than 1% which shows that independent variables explained variation in the dependent variable very well.

5.4 Regression Analysis

TABLE 4

Hypothesis	Variable	t-value	p value	Decision
H1: Infra structure has positive impact on ICT integration (IS)	Constant	2.29	0.024	
	0.289	2.38	0.019	Accepted
H2: IT training has positive impact on ICT integration (ICTT)	0.186	2.05	0.043	Accepted
H3: Management support has positive impact on ICT integration (MS)	0.342	2.91	0.004	Accepted

Dependent Variable: ICT integration

5.5 EXPLANATION AND DISCUSSION OF RESULTS

5.5.1 HYPOTHESIS H1

The results of regression show that t- value is 2.389 with positive sign at significant level of .019. As p-value is less than .05, results are significant.

Hence, our first hypothesis i.e. H1: Infra structure has positive impact on ICT integration is accepted. This study found that the impact of infrastructure is positively significant. There may be many explanations. The more reasonable explanation may be that due to good infrastructure, accessibility of equipment and proper time tabling of computer lab, the integration of ICT can be successful in education.

5.5.2 HYPOTHESIS H2

The results of regression show that t- value is 2.052 at significant level .043. As p-value is less than .05, results are significant. Hence, our second hypothesis i.e. H2: IT training has positive impact on ICT integration is accepted. Teachers training is an important factors to create an e-learning environment. Trainings help educators to develop their skills and self-direction in this era. Our results confirm that more IT trainings are compulsory for successful integration of ICT. Hence, there is a need of quality and continuous trainings of teachers in education sector.

5.5.3 HYPOTHESIS H3

The results of regression show that t- value is 2.915 at significant level .004. As p-value is less than .05, results are significant. Therefore, our third hypothesis i.e. H3: Management support has positive impact on ICT integration is accepted. The results show a positive relationship between the FDI inflow and stock exchange which is consistent with literature on the subjects. This fact shows that support of management always play a role of catalyst and create a positive learning environment in education, infact an educator always depends on the support of management. In the results, management supports show a strong correlation of 62.64% and confirm that management support is a vital factor in the process of ICT integration.

6.0 Conclusions and Findings

Information and communications technology has become an integral part of our personal and working lives. The students of today have been born into this age of technology. The prevalence of ICT requires educators to ensure that all students are capable of full participation in this digital world. This final chapter outlines the key conclusions reached from the research and offers some recommendations to address the issues raised.

The findings from this study point to a number of barriers which are hindering the integration of ICT in secondary schools. These are a lack of time for teachers to engage with ICT. In addition a lack of training also emerged as a significant barrier. Finally, while teachers in the schools expressed satisfaction with ICT resources, there was a difficulty in accessing such resources.

The results from this study demonstrate that teachers, whether ICT capable or not, are generally positive in relation to ICT's role in education. They are clear about the potential benefits of an ICT permeated education process. A number of teachers in this study acknowledged the potential of ICT as a teaching resource, while a number of teachers have undertaken training in their own time and at their own expense. The factors that lead to successful ICT integration appear to be infra-structure, IT trainings and management support regarding integrated learning.

Informal in-house training is a worthwhile Endeavour as it brings positive experiences, leading to greater knowledge and competence. Greater knowledge inevitably leads to an increase in confidence and the alleviation of fear and apprehension. Full ICT integration will only be achieved when problems are eliminated or substantially alleviated. There needs to be in place a vision for ICT. This far reaching vision, articulated in a collaboratively designed and regularly reviewed plan, needs to be proactively driven, particularly by management. This drive to achieve integration needs to be supplemented by modern resources, skilled and enthusiastic educators, consistent and reliable support and unhindered access.

This study was carried out within a 10 schools of Lyari and it dealt exclusively with teachers. Students did not form part of this particular study, as it dealt solely with the problems faced by secondary teachers. The findings from such studies might indicate if other schools had similar or entirely different issues, in relation to ICT integration. Such a comparative study could influence and inform any potential strategies, formulated to tackle these problems. Furthermore, the findings might provide a contrast, between the difficulties that private school experience and the difficulties that mainstream secondary schools experience.

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