

## FACTORS AFFECTING INTEGRATION OF ICT IN SECONDARY EDUCATION-A CASE STUDY

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### Abstract

*Information and communication technology (ICT), which includes radio, television, and newer digital technologies like computers and the internet, are potentially significant instruments for expanding formal and nonformal educational possibilities to everyone. It enables the adoption of reducing teaching approaches as well as meaningful content that engages pupils. The purpose of this study is to identify the essential aspects that influence the effective use of ICT in secondary education from the perspectives of teachers. A questionnaire-based survey was undertaken, and the relevance of these aspects was examined from the perception of teachers. The research was carried out at number of secondary school in Dhenkanal district of Odisha. The results of the data analysis indicated that different types of respondents ascribed considerably varying weight to criteria related to efficient ICT use. The investigation also discovered other elements that looked to be impediments to ICT usage. Teachers must be familiar with the usage of ICT in their subject areas in order to assist students in learning more successfully. The findings might be beneficial to any institution considering incorporating ICT into its curriculum. This article explored the different factors of ICT in secondary education in the twenty-first century.*

**Keywords:** *ICT, Information Technology, Communication Technology, Critical Factors, Secondary Education*



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### Introduction

In today's world, the rapid advancement of information and communication technology (ICT) has revolutionised teaching and learning. Technological advancements are increasingly being used to develop advances that will dramatically improve education. Integrating ICT into teaching and learning allows teachers and students to cooperate more effectively in a globalised digital context. ICT provides a significant opportunity for teachers and students to

improve the quality of teaching and learning in the classroom. For 21st-century educational success, the use of information and communication technology (ICT) to improve and increase the quality of teaching and learning is crucial. Any technology that is used to handle and communicate information, as well as its usage in education, is referred to as ICT. For example, desktops, mobile telephony, digital recording equipment, software applications, multimedia resources, information systems, Intranet, Internet, tablet, PCs, e-readers, laptops, and other devices provide both opportunities and challenges for education in general, especially in the teaching and learning environment.

### **Concept and Nature of ICT**

Information and communication technology (ICT) refers to the processes and technologies that enable the production, collection, processing, storage, display, and determination of information. Information appears anytime and whenever we discover or create patterns. Information should be useful, interesting, and novel, comparable with and related to prior information, correcting prior knowledge, accurate, relevant, and action-oriented. Communication is defined as the sharing of ideas, emotions, experiences, and information between two or more people. Technology is critical in the transformation of data into information, knowledge, and wisdom (Kozma, 2005).

### **ICT Integration in Education**

ICT in education refers to any information technology that focuses on the acquisition, storage, modification, management, transmission, or reception of data for educational purposes (Yuen et. al., 2005). For example, information about students' records, admissions, and updates on their academic and co-curricular activities. In a variety of methods, information technology (ICT) can help to improve information interaction and reception. In practically every facet of life, information and communication technology (ICT) is used. Learning techniques based on modern ICTs offer many opportunities for constructivist learning because of their availability and support for resource-based, student-centered settings, as well as the capacity to tie learning to context and practise (Berge, 1998; Barron, 1998). Computer education is necessary even at the secondary school level. Successful citizens will be expected to have professional technological knowledge and a positive attitude toward technology in the coming decades. Some instances of how ICT can be used are as follows:

- To broadcast material, an internet facility or a CD-ROM can be used as sources of knowledge in a range of subjects; to assist students with special needs in communicating;
- To process administrative and assessment data;
- To facilitate video-conferences or other forms of teleconferences for exchanging ideas, information, and working creatively with others from distant geographic areas;
- To encourage teachers to communicate and exchange ideas in order to progress their careers;
- To perform internet-based research in order to enhance the educational process;
- To use online tools such as e-mail, chat, and discussion forums to enable collaborative writing and sharing of information.

### **Factors Affecting Integrating ICT**

Multiple aspects that prevent teachers from using ICT were also investigated. These obstacles are broken down into three categories: teacher, school, and system. At the teaching level, difficulties include a lack of teacher ICT abilities, teacher confidence, pedagogical teacher training, new student follow-up, and tailored training programmes. The school-level barriers include a lack of ICT infrastructure, old or poorly maintained hardware, a lack of suitable educational software, limited access to ICT, limited project-related experience, a lack of ICT mainstreaming into the school's strategy, and a rigid structure of traditional education systems, traditional assessment, restrictive curricula, and a restricted organisational structure. It is possible to make judgments about how to solve these difficulties by understanding how they affect teachers and institutions.

### **Teacher-level barriers**

- Lack of time for formal training as well as self-directed inquiry, creating ICT resources for classes, and a lack of confidence in using ICT.
- Negative past experiences with ICT, fear of embarrassment in front of students and colleagues, loss of status and an effective degradation of professional skills, classroom management difficulties when using ICT, particularly where pupil-to-computer ratios are low, lack of knowledge necessary for teachers to resolve technical problems when they occur, lack of personal change management skills, perception that technology does not enhance learning

- The inability to access, use, and maintain ICT resources, as well as a scarcity of ICT equipment.
- There is a lack of access to ICT equipment due to organisational considerations such as the placement of computers in ICT labs rather than classrooms.
- There is an absence of administrative support.
- a lack of institutional support for change implementation via leadership, planning, and the engagement of teachers and managers
- There is a shortage of training that focuses on integrating technology into the classroom rather than just teaching fundamental skills.
- Lack of motivation to modify long-standing pedagogical practises, and
- A perception of computers as complicated and difficult to use.

#### **School-level barriers**

- The expense of obtaining, using, and maintaining ICT resources, as well as a lack of ICT equipment.
- Due to organisational considerations such as the placement of computers in ICT labs rather than classrooms, there is a lack of access to ICT equipment.
- There is a lack of technical assistance.
- There is a lack of administrative support.
- lack of institutional support for change implementation through leadership, planning, and the engagement of teachers and managers
- There is a shortage of training that focuses on integrating technology into the classroom rather than just teaching fundamental skills.

#### **Review of Related Literature**

The review of related literatures shows that the achievement of instructional objectives is largely dependent on the factors influencing teachers' attitudes about using ICTs into the teaching learning process. Teachers' acceptance and integration of technology into their classrooms is influenced by elements such as support, money, training, and infrastructure at the school level. Professional development for teachers is critical to the successful integration of computers into classroom instruction. ICT-related training programmes improve teachers' computer skills while also affecting their attitudes toward computers and supporting instructors in reorganising their technology tasks and understanding how new technology tools impact student learning.

According to Sandholtz and Reilly (2004): Teachers' technical abilities are an important element of ICT integration, but they are not prerequisites for effective classroom technology usage. They claim that training programmes that focus on ICT pedagogical training rather than technical difficulties and good technical assistance assist instructors in integrating technology into their classrooms.

According to Becta(2003, p.10) : Five elements impact the possibility of appropriate ICT learning possibilities developing in schools. ICT resourcing, ICT leadership, ICT teaching, School leadership, and general teaching are all topics covered in this course. "If there is a shortage of technical assistance accessible at a school, it is likely that technical maintenance will not be carried out on a regular basis, resulting in a higher risk of technical breakdowns,"

Lau and Sim (2008) investigated the amount of ICT adoption among 250 Malaysian secondary school teachers. Their findings found that older teachers are more likely than younger teachers to employ computer technology in the classroom. The main explanation for this might be that senior teachers who have extensive expertise in teaching, classroom management, and computer skills can readily integrate ICT into their lessons.

Russell, Bebell, O'Dwyer, & O'Connor (2003) discovered that new instructors who were more adept with technology than older teachers did not use ICT in their classrooms. New teachers may focus on how to utilise ICT rather than how to incorporate ICT into their teaching, according to the study.

US National Center for Education Statistics, 2000: Teachers with less experience in teaching were more likely to integrate computers in their instruction than teachers with more experience, according to the United States National Center for Education Statistics. According to the report, teachers with less than three years of teaching experience use computers 48 percent of the time, teachers with four to nine years of teaching experience use computers 45 percent of the time, teachers with ten to 19 years of teaching experience use computers 47 percent of the time, and teachers with more than 20 years of teaching experience use computers 33 percent of the time. This gap might be due to the fact that new teachers have more expertise with technology.

Wong and Li (2008) investigated the factors that affected transformational ICT integration in eight Hong Kong and Singapore schools. According to the findings, effective

ICT transformation is affected by leadership's support of cooperation and experimentation, as well as teachers' commitment to student-centered learning.

### **Purpose of the study**

The purpose of the paper was to determine the factors that face by the teachers in integrating ICT in their schools. Some of the important factor which are mentioned in the literature are lack of classroom, teacher's skill, lack of training, poor administrative support, poor school funding and poor fit with the ICT curriculum.

### **OBJECTIVES**

1. To find out the critical factors which have impact on the effective use of ICT in secondary education.
2. To identify the gaps in the expectation and actual satisfaction levels of teacher in the use of ICT in secondary education.

### **OPERATIONAL DEFINITIONS OF KEY TERMS:**

**Factors:** The influencing factors are those factors that can affect some features of target objects.

**Teachers:** In the present study, teachers refer to the teaching personnel teaching at secondary level. In this study it is delimited to the teacher's secondary school, Dhenkanal.

**Teaching Learning:** Teaching-learning process refers to the formal mode of interaction between teachers and students in a suitable atmosphere.

**Integrated ICT:** ICTs indicate the use of different digital communication and technologies in the field of education. It covers every aspect of educational technology which are used in education to make the teaching faster and learning easier.

**Perception:** The ability to see, hear or become aware of something through the senses.

### **Scope and Delimitation:**

The present study was delimited to the teachers of secondary school of Dhenkanal district only. It is delimited to the perception of teachers towards the factors affection ICTs in teaching-learning process only.

### **Materials and Methods**

#### **Methods:**

A questionnaire-based study was carried out in a secondary school in Odisha's Dhenkanal district. The respondents were teachers from the Dhenkanal district who were selected randomly. A list of factors important to ICT use in education was included in the

questionnaire. Following a thorough literature analysis, these variables were found. The questionnaire was divided into 3 sections. The responder was prompted to fill out the demographic information in the first section. In the second section, the responder was asked to rate the relevance of each of the given variables on a Likert scale (from 1 to 5). The respondent was asked to rate their degree of satisfaction with existing ICT in their institution on a scale of 1 to 5, in the last section of the questionnaire.

### **Population and Sample:**

All the teachers teaching in secondary schools, Dhenkanal were the population of the present study, out of which 32 teachers were taken into account randomly taking into consideration to their sex and locality. However, from each urban and rural 16 teachers were taken including both male and females.

### **Procedure of Data Collection**

After preparing the sample frame of the present study, the investigators met with the selected secondary schools from Dhenkanal, and collected data by giving field visit personally.

### **Statistical Technique Used:**

In order to analyze the obtained data appropriate statistical techniques were used. In order to compare the mean scores of the attitude of teachers in relation to their sex, stream and teaching experience, parametric statistical technique 't'-test was used.

### **Major Findings**

The findings of the study revealed some of the challenges such as; computers were inadequate, there was high work load in integrating ICT in teaching and learning, lack funds which posed a challenge in integrating ICT in teaching and learning, lack of interest among teachers presented a challenge in the adoption ICT in teaching and learning, lack of opportunity for ICT training in the school causing a challenge to the adoption of ICT in learning and teaching in the school. These findings concurs with a study carried out by on the main barriers and possible enablers of ICTs into secondary teacher which also indicated lack of resources, inadequate training, insufficient technical support, lack of time and visions concerning technology integration learning and knowledge. This shows that such challenges are experienced elsewhere and therefore strategies need to be put in place to curb them.

The study found that adequacy of internet connectivity influenced adoption of ICT. A total of 32 teacher trainers reported that adequacy of internet connection influenced adoption of ICT in the colleges to a very large extent whereas 30 teachers reported that adequacy of

internet connection influenced adoption of ICT in secondary teacher to a large extent. The administrators confirmed that limited availability of internet connection impedes the adoption of ICT for delivery of the curriculum content in the teaching and learning process.

The study revealed a myriad of factors influencing integration namely; the training of personnel on ICT influenced adoption of ICT, adequacy of computer software influenced adoption of ICT in the process of teaching and learning, adequacy of storage was another factor that influenced adoption of ICT infrastructure for the process of teaching and learning, maintenance of ICT infrastructure also influenced adoption of ICT infrastructure in the colleges, and adequacy of internet connectivity influenced adoption of ICT. The study also found that teacher workload was another factor that influenced adoption of ICT infrastructure and presence of ICT policy affected adoption of ICT in teaching and learning process. Most of these studies pointed out ICT infrastructure as the major challenge in mainstreaming ICTs in education. The problem is exacerbated by the fact that most of the institutions had computers as the only available for ICT infrastructure.

### **Conclusion**

The objective of the study was to investigate the elements that influence teachers' attitudes on incorporating ICT into the classroom and learning environment. A questionnaire-based survey was conducted at secondary school in a Dhenkanal district of Odisha, India. It was revealed from the study that computers were inadequate, there was high work load in integrating ICT in teaching and learning, lack funds which posed a challenge in integrating ICT in teaching and learning, lack of interest among teachers presented a challenge in the adoption ICT in teaching and learning and lack of opportunity for ICT training in the school causing a challenge to the adoption of ICT in learning and teaching in the school.

### **References**

- Barron, A. (1998). *Designing Web-based training*. *British Journal of Educational Technology*. 29(4), 355-371.
- Berge, Z. (1998). *Guiding principles in Web-based instructional design*. *Education Media International*, 35 (2), 72-76.
- Kozma, R. (2005). *National policies that connect ICT based education reform to economic and social development*. *Human Technology*. 1(2), 117-156.
- Lau & Sim. (2008). *Exploring the extent of ICT adoption among Secondary school teachers in Malaysia*. *International Journal of Computing and ICT Research*, vol. 2, no. 2, pp. 19-36. Retrieved Nov 2, 2011 from <http://www.ijcir.org/volume2 number2/article 3.pdf>.
- Russell, M., Bebell, D., O'Dwyer, L. and O'Connor, K. (2003). *Examining teacher technology use: Implications for preservice and inservice teacher preparation*. *Journal of Teacher Education*, vol. 54, no. 4, pp. 297-310.



- Sandholtz, J. H., & Reilly, B. (2004). *Teachers, not technicians: Rethinking technical expectations for teachers. Teachers College Record, 106(3), 487–512.*
- U.S. Department of Education. National Center for Education Statistics. (2000). *Teachers' tools for the 21st Century: A Report on teachers' use of technology.*
- Yuen, A; Law, N and Wong, K. (2005). *ICT implementation and school leadership case studies of ICT integration in teaching and learning. Journal of Educational Administration. 41(2), 158-170.*
- Wong, E.M.L. & Li, S.C. (2008). *Framing ICT implementation in a context of educational change: a multilevel analysis. School effectiveness and school improvement, 19(1), 99-120.*