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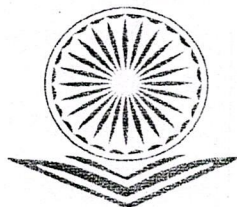
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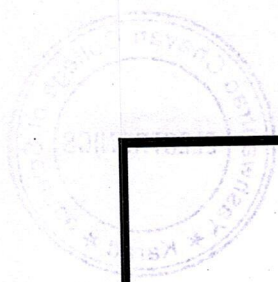
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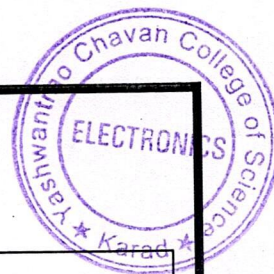

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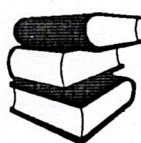
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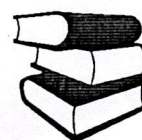
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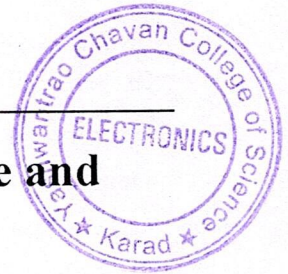


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19. Virtual Teaching (use of ICT) in science and Technology for Higher Education

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Abstract

Integration of data, Communication, and Technology (ICT) will assist teachers within the universal requirement to replace traditional teaching methods with science-technology-based teaching and learning tools and facilities. In India, ICT is taken into account together of the most elements in transforming the country into future and further development. The Ministry of Education, through the newest Education Blueprint (2013-2025), insights the importance of technology-based teaching and learning into the Colleges' national curriculum. This study aims to research teachers' perceptions of the effectiveness of ICT integration to support the teaching and learning process within the classroom. A survey questionnaire was done by Govt. by distributed randomly to a total of 101 teachers from 10 public secondary Colleges in Delhi, Mumbai and Bangalore, and across major cities of India. The data for this quantitative research were analyzed for both descriptive and inferential statistic. The results indicate that ICT integration has great effectiveness for both teachers and therefore the students as well. Findings indicate that teachers' well-equipped preparation with ICT tools and facilities is one among the most factors within the success of technology-based teaching and learning.

Keywords: ICT integration; Teaching and learning; Technology effectiveness; Education; India

Introduction

In this 21st century, the term "technology" is an important issue in many fields including education. This is because technology has become the knowledge transfer highway in most countries. Technology integration no wadays has gone through innovations and transformed our societies that has totally changed the way people think, work and live (Grabe, 2007). It was also found that professional development training programs for teachers also played a key role in enhancing students' quality learning. For the future studies, there is a need for consideration of other aspects of ICT integration especially from management point of view in regard to strategic

Principal

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planning and policy making. In this paper we will discuss how ICT is affecting Indian education system and how it's helping to fill the gap between instructor/ Teacher and Student. The paper arranged as follows: Section 2 describes the objectives and literature survey of the study. Research hypothesis and difficulties is in Section 3. Data collection and analysis is in Section 4. Result and discussion in Section 5 and conclusion is in Section 6.

Literature Survey

First, Integration of Information, Communication, and Technology (ICT) in education refers to the use of computerbased communication that incorporates into daily classroom instructional process. This is aimed to reduce the digital gap amongst the Colleges. The second policy focuses on the role and function played by ICT in education. Besides that, another policy stressed on the use of ICT for accessing information, communication and as productivity tool (Chan, 2002). However, infrastructure and facility of ICT is then needed to supply to the Colleges throughout the nation. For example, results of a research show that in Kenya, some Colleges have computer but this could be limited to one computer in the office only. Even in Colleges with computers, the student-computer ration is high. In addition, the report continues revealed that the Colleges with ICT infrastructure are supported by parents' initiative or community power (Chapelle, 2011).

In most Colleges, technical difficulties sought to become a major problem and a source of frustration for students and teachers and cause interruptions in teaching and learning process. Also many Colleges used peer-tutoring systems. As what has been discussed, there are many factors to enable the use of ICT in classroom teaching and learning. Begin with policy, follows by the supplement of all the ICT hardware and software facilities, continued by readiness and skills of teacher to integrate it into pedagogical process (Agbatogun, 2012). The main purpose of this study is to analysis the effectiveness of ICT integration in. Specifically, this study aims to identify; (I) the effectiveness of ICT integration form teaching and learning perspectives and (II) the effective elements of ICT integration in teaching in public Collegess in Delhi Public Colleges.

Objectives of the Study

The major objectives of this study are to find out:

- Whether there is any difference in the opinions of the students and teachers about the use of ICT in enhancing the learning of the students of mathematics



- Whether there is any difference in the opinions of the students and teachers about the use of ICT in improving the mathematical problem solving skills.
- Whether there is any difference in the opinions of the students and teachers about the use of ICT in motivating and making the students interested in learning mathematics

Abbreviations and Acronyms

Teachers' Belief on Technology-based Teaching and Learning

A high budget has been placed in order to provide the equipment needed by teachers to improve the education system. Despite all the efforts, most of the countries are facing similar problem whereby the teachers are not maximizing the usage of the technology provided (Albirini, 2006). It shows that, the major barrier of the implementation was the teachers' belief as the teachers are the person who implements the change in their teaching and learning process. Moreover, previous research (Cassim & Obono, 2011) shows that the correlation of teachers' belief and the use of ICT are high. Furthermore, a research by Chien, Wu and Hsu (2014) has shown that students in Colleges are having high expectation on ICT integration in classroom as the new generation are born and grown with technologies and could be define as the digital – native phenomenon. The younger the students, the higher their expectation are on ICT integration in classroom. It also proved that the integration of ICT is mostly dependent on the personal factors which define as self-perceptions. Results of a previous research (Cox & Marshall, 2007) shows that teachers only need a traditional – centered approach when developing ICT skills in the classroom. The teachers are having high confidence and competency in using ICT in classroom even though it does not represents the types of ICT used.

Data Collection and Analysis

The investigator deployed an online survey form to collect the data about the use of ICT in the teaching learning practice of mathematics from the college and university student sand teachers. The online survey was conducted among the target population using Google Form, a freely available online platform powered by Google. The URL of the online form is <https://forms.gle/CuLeMqHzigwNyGEs8>. This online form was distributed among students and teachers using the socialmedia and email. To test the hypotheses there were threetest items in the survey form. The test items are as followings:

Item 1. The use of ICT enhances teaching and learning of mathematics.

- Agree

- Strongly Agree
- Neutral
- Disagree
- Strongly Disagree

Item 2. The use of ICT improves student's problem solving skills.

- Agree
- Strongly Agree
- Neutral
- Disagree
- Strongly Disagree

Item 3. The use of ICT motivates and makes students interested in learning mathematics.

- Agree
- Strongly Agree
- Neutral
- Disagree
- Strongly Disagree

Total 112 online responses were received. Out of the 112 responses, 30 responses were submitted by the teachers and 82 responses were submitted by the students from different College and universities from India. Most of the responses were obtained from college and University of Solapur University. The data obtained from online survey is presented in the Figure 1 and Table 1.

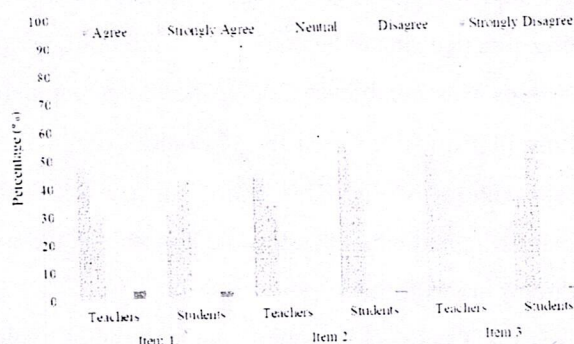
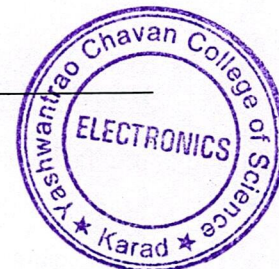


Figure 1. Graphical Representation of Opinion of Students and Teachers for the Each Question.



	Response	No. of Students	Percentage
Students	Agree	25	30.4878
	Strongly Agree	35	42.6829
	Neutral	15	18.2927
	Disagree	05	06.0976
	Strongly Disagree	02	02.4390
	Total	82	100.0000
	Response	No. of Teachers	Percentage
Teachers	Agree	14	46.6667
	Strongly Agree	09	30.0000
	Neutral	04	13.3333
	Disagree	02	06.6667
	Strongly Disagree	01	03.3333

Table 1. Response of Students and Teachers on the use of ICT enhances teaching learning practice

Integration of ICT in the Indian Context

The main goal of ICT implementation in education proclaimed the vision and missions of the government to promote ICT in education for the following intentions:

1. To surround Colleges with dynamic and innovative learning environments for students to become more motivated and creative;
2. To enable students to gain wider range of knowledge and be able to access to internet for developing a global outlook;
3. To nurture students with capabilities of processing information more effectively and efficiently; and
4. To develop students with attitudes and capability of life-long learning.

Results of a study by Abd Rahim and Shamsiah (2008) suggest that trainee teachers in India have confidence to integrate ICT in their teaching practices. 179 confident to integrate ICT in teaching, because they can handle technical subjects and their experience enable them to integrate ICT effectively in teaching (Abd Rahim & Shamsiah, 2008; Yunus, 2007). Furthermore, only minority of teachers in India professionally know the basic of ICT.

Result

From the data obtained, it shows that teaching time are not enough for teachers to use the ICT for teaching and learning purposes with score mean of 1.97. It means there is no unhurried times provides for teachers so that teachers can at least use ICT for effective teaching and learning process. It is good if teachers are given more time to teach so that ICT integration in teaching can be a success. Most teachers agreed that all ICT tools provided for their College goes to waste with mean of 1.98 due to teachers lack of knowledge and skills in using it. Sometimes,

ICT facilities are completely provided but little access to ICT prevents teachers from using it in teaching with score mean of 2.02.

Conclusion

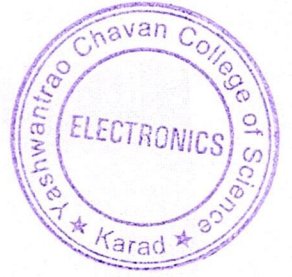
- There is no significant difference in the opinions of students and teachers on the use of ICT in enhancing teaching and learning practice of mathematics.
- There is no significant difference in the opinions of students and teachers about the use of ICT in improving the mathematical problem solving skills.
- There is no significant difference in the opinions of students and teachers on the role of ICT in motivating and making the students interested in learning mathematics

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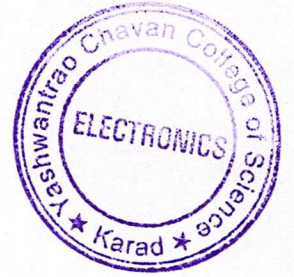
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