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Paper 3

THE ROLE OF INFORMATION AND COMMUNICATION TECHNOLOGY(ICT) IN IMPROVING STUDENTS ACADEMIC PERFORMANCE IN VARIOUS DOMAINS

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Abstract
Today, the influence of information and communication technology(ICT) in education has empowered teachers and learners by transforming teaching process from teacher-centric to student-centric. This transformation has created a wide impact in the learning process which allows opportunities for learners to improve their creativeness, analytical skills and also their communication skills. From the ancient Gurukul system till the adoption of ICT in education, the pedagogy of learning process has changed significantly over the years. Memorizing techniques in traditional approach was replaced later by interactive methods like problem-based learning, team-based learning, group discussion, flip classroom in the recent times. Even the teachers are benefitted by ICT in evaluating students performance using modern tools like MOODLE and Google classrooms. This paper recommends the use of ICT enabled teaching along with the traditional learning process and elaborates how ICT influences the learners in improving their academic performance in various domains.

Keywords: ICT, Pedagogy, academic, evaluation.

1. Introduction

Information technology has transformed the teaching profession in various aspects. It is hard to believe that information technology is playing a dynamic role in our daily routine. Usage of technology seems to be part of globalization. Computers have transformed our way of living. This is applicable to the work we do in our professional life. From smartphones to home appliances, technology is everywhere. Usage of technology seems to be part of globalization.

Today, computers have become the most valued resources in our teaching space because of its useful functions. Evolution of internet minimizes the gap between the students and the technology which helps to carry the information in research and communication in their fingertips. It also plays a vital role in preparing them for a future career in a workforce. It includes:

i. **Storage of information**
ii. **Quick data processing**
iii. **Audio-visual aids to have a better picture**
iv. **Better presentation of information**
v. **Access to the Internet**
vi. **Quick communication across the globe**

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2. Traditional Teaching Versus Modern Teaching Methodology

2.1 Traditional Teaching

Till the last decade, teachers played a vital role in sharing knowledge, make sure that everything is understood by the students and controlling the classroom, making the students to copy their notes in their class books providing information, organizing tasks and maintaining the discipline inside the classroom. The tutoring and information is based on the prescribed text books and reference books. In those days, traditional teaching methodology using blackboard and lecture was considered as formal teaching methodology. Among all, teachers had the sole responsibility in building the character of the students. The main focus on traditional learning which was also referred as back-to-basics, conventional learning or customary learning was passing in the examination.

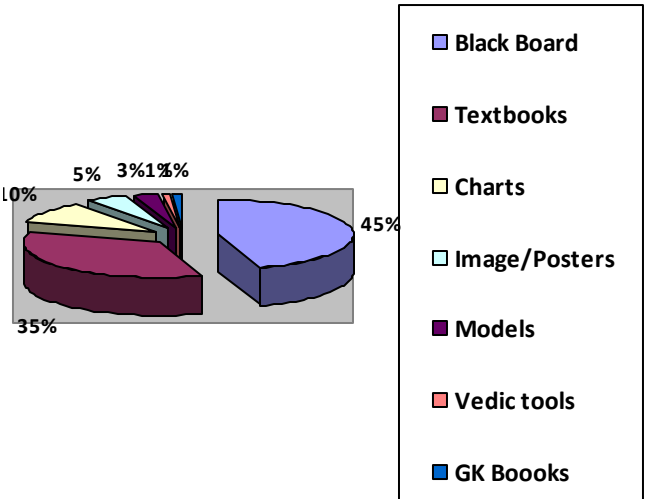

Fig. 1: Support systems of traditional learning and their Usage

2.2 Modern Teaching

[1] Information and communications technology (ICT) is an extensional term for information technology (IT) that stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals) and computers, as well as necessary enterprise software, middleware, storage, and audiovisual systems, that enable users to access, store, transmit, and manipulate information. In this 21st century, due to the radical changes in the information technology and educational system, it has become a challenging task for the teachers to familiarize themselves the use of information and communication technologies in teaching. As a result, blackboard and chalks were replaced by interactive white boards and LCD projectors. It has become an integrated part of the modern educational system. It has also influenced the students in their learning process through collaborative, problem based and activity based learning. With the invention of smartphone and tablets, physical books are replaced by ebooks. Through Interactive white boards, power point presentation and interactive videos, tutor has enhanced the way of teaching. The following are some of the ICT teaching methods:

i. **Flipped Classroom**
ii. **Quiz**
iii. **Learning Management System (LMS)**
iv. **Massive Open Online Courses (MOOCS)**

[1] "Information and Communication Technology from". *FOLDOC. 2008-09-19*

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v. **Webinars**
vi. **Interactive Lecture**
vii. **Google Classroom**
viii. **Self-learning tools (SPSS, Excel, etc.,)**

2.3 **Merits of ICT**

1. One can easily access his/her study materials through ebooks with the help of internet
2. Enhances learning and communicate, interact, clarify and discuss and clarify through blogs and discussion forums.
3. Enhances the **learning** process through objects like audio visual content
4. Better knowledge on various concepts.
5. Submission of digital assignments and immediate evaluation through LMS
6. Students will be able to access from world wide web
7. Enables self-paced learning
8. Students will be engaged with activities

3. Literature Review

[2] Today, the role of a teacher changes rapidly. They are facing many new challenges which made them to adapt to the modern way of teaching, The rapid growth in the modern technology leads to the invention of various gadgets which has become an integrated part each and every person in this globe. In the field of education, the gap between the teacher and technology has to be narrowed in order to obtain efficient teaching pedagogy using this modern technology. In order to achieve this the teacher has to update his knowledge in ICT and should know how to use it efficiently in the classroom. This study is a comparative analysis on the usage of ICT among the teachers and what is the outcome of it with respective to information sharing, Students knowledge in the subject and most importantly the score they obtain through ICT way of teaching.

4. Research Objectives

1. To find the academic transformation when ICT is used
2. To find the impact of ICT among teachers
3. To find, how ICT helps to elevate the grade

4.1 Research Methodology

This paper uses an empirical approach where survey method was used for collecting data samples. The samples include undergraduate and postgraduate students (100 numbers) and teachers(50 numbers). Altogether 150 samples were collected through various sources like questionnaires, google forms and email. SPSS tool was used to compile and analyse the data samples. The objective of the questionnaire was to create a awareness among the samples whether ICT tools helped them in improving their academic performance. In other words, it is a gender wise comparative analysis between traditional learning and ICT enabled learning to analyse which methodology of teaching (Traditional Vs ICT) is a better way to improve student's knowledge and scores.

4.2 Result and Analysis

A comparative study is made on the use of ICT tools during the lecture session by the teachers which includes programming courses, Concept oriented courses, MOOC courses.

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The study reveals that a high number teachers are influenced by ICT support tools to enhance their teaching pedagogy. The survey revealed that 76% respondents are using ICT tools whereas 24% are using conservation mode of blackboard and chalk method. This is shown in the below figure 2.

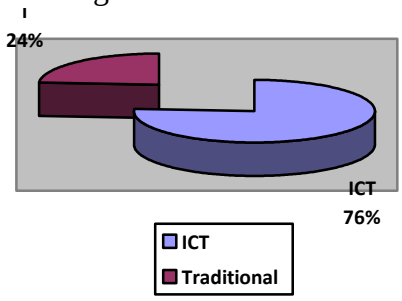

Fig. 2: ICT Vs Traditional Teaching in the Classroom

Even though ICT tools are available for the teachers, the question rises on how often they are using these tools. The analysis is made with 50 samples from various deaneries like Science, Commerce and Management and Humanities.

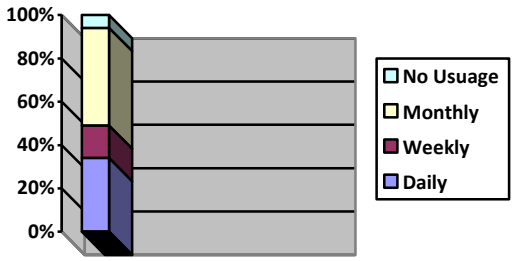

Fig. 3: Implementation of ICT Vs Traditional Teaching in the Classroom

Usage of ICT in Teaching by students

This survey also include the confidence of postgraduate students in using the ICT tool. A sample of 50 is used from various disciplines which include computer science, arts and commerce. This survey was designed based on their description and usage on ICT features which is show in the form of a table.

Table 1: Usage of ICT in Teaching by students

Activity	Percentage
Computer Knowledge which include basics of computer,gaming and MS office	95 %
Designing software : Photoshop, Flash	15%
Internet surfing : Email, Ecommerce	97%

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Search engines: google	**94%**
Downloading/Uploading	**35%**
Blogs, Forum, Chatrooms	**19%**
Developing Web page	**5%**

In this survey it is very clear that more than 90 percentage of the students are educated in the basic usage of ICT tools.

Subject wise usage of ICT tools

The final analysis is designed based on the usage of ICT across various subjects like Programming Languages, Web Designing, Mobile Application, Financial Accounting, Journalism, English, Mathematics and Statistics. The same samples of 50 teachers from various disciplines were taken for data analysis using questionnaire methodology. The results of the analysis is described in the form of a table.

Table 2: Subject wise usage of ICT tools

Subjects	Tool Used	Percentage
Programing Languages	PPT	96%
Web Designing	Designing Software	84%
Mobile Application	Mobile Gadgets	92%
Financial Accounting	Problem Solving	55%
Journalism	Digital Camera	86%
English	Communication S/w	98%
Mathematics	Matlab	92%
Statistics	R software	69%
Physics	AV	72%

With the above analysis, the results of the students were compared before and after the ICT usage. Moreover, it was found that, it gave more autonomy for the students in their learning process and it has improved in their grades which is show in the form of a table.

Table 3: Impact of ICT in Grades

Subjects	After ICT
Programing Languages	27%
Web Designing	12%
Mobile Application	14%
Financial Accounting	4%
Journalism	15%

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English	5%
Mathematics	11%
Statistics	15%

The above table shows the percentage of improvement in students grades after the use of ICT based teaching.

5 Conclusion

The conclusion is that, modern teaching creates more impact in students' academic performance than traditional way of learning and teaching. The reason is because ICT creates an active and effective learning environment to gain a better knowledge and make them to pay attention on the subjects without any distraction. It also creates an interactive platform for both teachers and students in information sharing. During this survey, teacher's gave a positive feedback on their experience in using ICT as a part of their teaching pedagogy and believe that it definitely improve the academic performance of the students. Moreover it also helps for building a successful career, in a technology savvy world

Few suggestions: Inorder to get the above said outcome we need to educate the teachers on how to use the ICT tools effectively and efficiently. Teacher must be trained and should have adequate skills in using ICT tools and related devices. The other aspect is, the institution should possess adequate infrastructure for using this modern way of teaching

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