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PROCEEDINGS

*One Day State Level Seminar on
The Role of ICT in Quality Education
Date: 20th April 2017*



Organized by
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Manora, Dist. Washim**

Dnyanopasak Shikshan Prasarak Sanstha, Manora

M.S.P. Arts, Science & K.P.T. Commerce, College, Manora, Dist. Washim

(NAAC Accredited 'B' Grade)

Internal Quality Assurance Cell (IQAC)

Organizes

One Day State Level Seminar

On

The Role of ICT in Quality Education

Date: 20th April 2017

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MESSAGE

It gives me a great pleasure that IQAC of M.S.P Arts, Science and K.P.T Commerce College, Manora is organizing a One day State Level Seminar on "The Role of ICT in Quality Education", on 20th April 2017, which is the relevant topic to improve the Quality of Education in Higher Education.

Information and Communication Technologies (ICT) have become common place entities in all aspects of life. The world is moving rapidly into digital media and information, the role of ICT in Education is becoming more and more important and this importance will continue to grow and develop in 21st century. Technology has the capacity to promote and encourage the transformation of education.

The effort in holding this seminar is really commendable to motivate the institutes to improve and sustain the quality of education.

I wish the event all success and congratulate the organizers for this initiative.

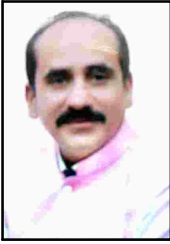

(Murlidhar Chandekar)

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
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MESSAGE

I am happy to know that IQAC of M.S.P Arts, Science and K.P.T Commerce College, Manora is organizing a One day State Level Seminar on "The Role of ICT in Quality Education", on 20th April 2017.

I hope that the deliberations by the learned speakers are bound to bring well meaning, thoughtful prepositions which will be of long term relevance. I am, therefore, sure that the seminar will be meaningful, relevant, interactive and credible worth remembrance and will be the best platform for dealing with all issues related to the field.

I extend my best wishes for successful organization of the seminar.


(Dr. Ajay Deshmukh)
Registrar

To,

The Principal,
M.S.P.Arts,Science and K.P.T.
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ARVIND D. INGOLE
PRESIDENT

DR. N.S THAKARE
PRINCIPAL

MAHADEO THAKARE
SECRETARY



Message

Arvind D. Ingole
President
Dnyanopasak Shikshan Prasarak
Sanstha, Manora

I am extremely happy to know that the internal Quality Assurance Cell of our college has organized a One day State Level Seminar on **The Role of ICT in Quality Education** on 20th April 2017 and to commemorate the academic event the organizing committee is publishing proceeding in an online Journal (Special Issue). I congratulate the Principal and the Convener for providing a platform to academic fraternity to come together and share their views to attain excellence in Higher Education.

Education is key to success in any field. This is an era of globalization and to compete with the world, it is essential to keep pace with time. The IQAC of any college is supposed to chalk out and carry out the academic programmes to ensure excellence in education. This is really a good effort of the IQAC of the college to undertake a venture to organize a State Level Seminar.

I wish all the best to all the participants and the convener good luck and grand success for the event.


(Arvind D. Ingole)



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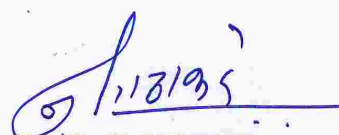


From Principal's Desk

I heartily welcome you all to this One Day State Level Seminar on '**The Role of ICT in Quality Education**' organized by Internal Quality Assurance Cell of the College on 20th April 2017.

It has always been the vision of the institute to develop good and responsible citizens. So to fulfill this dream, we want to try our level best. Organizing this seminar is also a step towards the attainment of these goals.

This event will provide a platform to the Principals, IQAC Coordinators, and teachers to share their views and come up with new ideas for the qualitative improvement of the process of ICT in education.


(Dr. N. S. Thakare)

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TEACHING ENGLISH VOCABULARY THROUGH ICT

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Introduction:

Words are the currency of communication. Listening, speaking, reading, and writing are the interlinked areas of communication. A strong vocabulary can improve all areas of communication. Vocabulary is the first and foremost important step in language acquisition. Why is vocabulary learning so important? In order to understand a text, one must understand the words that represent the ideas or concepts. Studies show that there is a high correlation between vocabulary knowledge and reading comprehension. We also know that there are degrees of vocabulary knowledge, from “never heard this word before,” to “know this word and can use it in different contexts”. The proficiency of a person in language is directly determined by the vocabulary he has. Vocabulary is more than a list of words, and although the size of one’s vocabulary matters, how to use it matters most.

The purpose of this paper is to focus on how English vocabulary can be taught effectively through the use of ICT. The paper also discusses different tools of ICT that can be incorporated in the teaching of vocabulary items in a language classroom. Vocabulary includes single words, phrases, collocations, and strategic vocabulary, as well as grammatical patterning, idioms and fixed phrases. Therefore, teaching English vocabulary by means of the tools of new technologies and the modern learning methods seems to be the most challenging job. Vocabulary is a necessary element for all communication. The learners of the language encounter vocabulary problems every day. It is a big task before them to be able to acquire ample number of words from the language, and also to retain them forever. Being a language teacher, it is

our responsibility to help students to develop a rich vocabulary inventory.

Learning English is a great opportunity for a student because it is required in an international world. The knowledge of English has many advantages that help in the economic, cultural, political, and social aspects of life. A strong vocabulary enables a student to speak with greater precision with other people. Words can be employed as the currency of communication. A large vocabulary is necessary to improve all areas of communication such as, listening, speaking, reading and writing. Improved vocabulary, consequently, improves the learner’s academic and social confidence, and also the competence. Traditional methods of teaching vocabulary have many drawbacks. They are not only slow but unable to create long lasting effects. Therefore, in this age of information and technology, the greatest tools we can give to our students for success in their life, are the tools of ICT. ICT brings change, not only in their education, but more specifically in their life. A rich vocabulary and the skills for using this vocabulary can definitely play a miracle in their life.

The teacher of English as a second language has several challenges before him during teaching English vocabulary. However, with the help of new technology and modern teaching methods it becomes an easy task. It becomes possible to make the correct connections between the form and meaning of words when understanding the second language. It also becomes easy while producing a language, to use the correct form of a word for the meaning intended. ICT tools help the learners and the teachers to face these challenges. With the help of ICT students can acquire a critical mass of words

for use in both understanding and producing the language. They can remember the words overtime. They can recall them readily. They can develop the strategies for coping with gaps in word knowledge, and also to deal with unknown words or unfamiliar words with their uses. Thus, ICT can help them to take responsibility themselves for the expansion of vocabulary.

English has hundreds of thousands of words. Therefore, teaching vocabulary may seem a very difficult task. However, the teacher of English should always remember that an average native speaker uses around only five thousand words in his every day speech. Similarly, students do not need to produce each and every word they learn. It is enough that they should just recognize some of them. So, while teaching vocabulary, teacher should carefully select the words that particular a student uses and needs frequently. Once the teacher has chosen what to teach, the next important step is to consider how he should teach it. Here, the teacher can use ICT tools as an efficient way. With the help of these tools he can achieve the target of teaching vocabulary efficiently.

ICT makes the teaching of vocabulary easier to comprehend and assimilate. However, a teacher can only pay attention towards his methods only when he is completely dedicated to his profession and if his profession is his passion. Similarly, to adopt the ICT tools, a computer with necessary software and a LCD projector should be available. Using modern methods with ICT, the students can learn English in the same way as they learn their mother tongue, whereas, by traditional methods they learn English word by word through their mother tongue. But, if the teacher uses ICT as a teaching method for a particular group of students, they are likely to learn more quickly. Furthermore, using a variety of teaching methods will help students from being bored and learn in a new and exciting way. Today, we have great possibilities in terms of ICT tools as teaching methods, visual and listening aids, seating arrangements, etc. With this freedom in teaching, a

teacher can use a large number of ideas during his classes and he can put into practice a lot of new ideas and activities. In order to motivate the students and to make the learning process as effective as possible teacher can make the effective use of ICT tools. Let us discuss the different tools a teacher can use in teaching vocabulary.

ICT Tools for Teaching Vocabulary:

As we know, any new lesson of English begins with a large or small number of new words, which students are supposed to learn, to be able to understand, and speak and write about it themselves. However, it is difficult for them to learn all the necessary words. If they learn it by heart mechanically, probably they will not remember it after a certain time. It is natural that after two or three weeks new learnt words are forgotten. So, in order to remember them and activate new vocabulary students need some new method or technique. ICT is immensely helpful in this regard. Let us see, how vocabulary can be taught with the help of ICT. The process of enriching the vocabulary can be hastened by

- ▶ Motivating the students to compose and edit on screen, using word processing software such as dictionary and thesaurus.
- ▶ Showing them short films or documentaries without audio and asking to guess and discuss the dialogues they expect.
- ▶ Using video camera or mobile to make a short film in order to make a documentary or advertisement. They may also be asked to write a script for the same.
- ▶ Creating online book communities for the students to encourage reading skill.
- ▶ Integrating the use of ICT tools in teaching language.

We can use various ICT tools for developing the vocabulary of the students. Many of the web-based activities and computer-based applications are essentially helpful in this regard. Some of them are:

Puzzles:

A plethora of websites provide online puzzles on English words. Students may be suggested to solve them. This may help then to recall and remember a large number of words for a long time. For instance, <http://www.studystack.com/> (hangman, crossword puzzles, matching and word games) this website provides many interesting puzzle games and crosswords in English. Teacher can encourage the students to solve them individually or in groups.

Flashcards:

Flashcards can be used to introduce new words to the students. There are many sources available on the internet freely. Following are the websites for creating and sharing flashcards:

<http://www.quizlet.com/> (study groups, flashcards, space race game, scatter game)

<http://www.flashcardexchange.com/> (the world's largest flashcard library)

<http://www.muchobeets.com/> (picture flashcards)

It has been observed that the words introduced through Flashcards are imprinted on the students' minds for a long time. This is one of the best ICT tools to develop the vocabulary.

Mind maps:

Mind maps are also very useful in developing vocabulary. Teachers can ask students to create a mind map on a certain essay, poem or story. This will encourage the students to remember a large number of words. There are softwares which can be used to create effective mind maps.

Online Concordancer:

A Concordancer is a piece of software that searches a corpus (a collection of texts in electronic form) for a selected word or phrase and presents every instance of that word or phrase in the centre or the computer screen, with the words that come before and after it to the left and right. A node word

is a selected word, appearing in the centre of the screen. A concordance is the lines of text illustrating the search word, the node. A concordance can be used to:

1. Compare the language use – standard English/Scientific English, written/spoken.
2. Analyze the language in books, readers, and course books.
3. Analyze usage – when it is appropriate to use obtain rather than get?
4. Examine word order.
5. Explore word families.
6. Explore collocations.
7. Understand differences in meanings and patterns; find genuine examples ...

We can find more ideas on

<http://www.teachingenglish.org.uk/think/articles/concordancers-elt>.

Online Dictionaries:

There are many dictionaries available online. We can encourage the students to refer them. <http://www.dictionary.com> is a very useful portal which provides access to a number of online dictionaries. The habit of frequently referring a dictionary consequently develops the vocabulary.

Games podcasts:

Students may be suggested to play spelling games / quizzes / games based on grammar. They are freely available on Internet. Some of the useful websites are:

<http://www.freerice.com>

<http://www.spellingcity.com>

<http://www.puzzle-maker.com>

“Free Rice” is a program that presents a word and four answer choices on the screen. For each correct answer, the United Nations World Food Programme donates 10 grains of rice to countries in need. This game adjusts its difficulty level based on the

response, filling a bowl with rice as the player adds to his or her score. As a class activity, the teacher can project the website on screen and guide students in playing the game for 5 minutes daily. It will definitely improve their vocabulary. Similarly, “Spellingcity”, improves the students’ accuracy in writing the spellings of the words. “Puzzle-maker” is yet another platform for recalling appropriate words for a phrase or synonym.

Videos:

A large number of videos on English language learning are readily available on Youtube and other websites. They are also very useful in developing vocabulary. Some of the useful links are given here:

<http://www.visual.merriam-webster.com/index.php>

<http://www.visualthesaurus.com/>

<http://www.visuwords.com/>

<http://www.youtube.com/>

Students can watch and download these videos freely. They can learn correct pronunciation of the new words. This audio visual tool improves their vocabulary very fast. Even, it is very interesting to watch the dramatization of a poem or story on screen.

Conclusion:

Thus, to conclude, we can say that ICT has various implications in teaching language, especially in the

area of developing the vocabulary of the students. With the help of different ICT tools, a teacher can literally do miracle in the class. In closing, we can say that teachers should go digital with word learning. These ICT tools when used with specific strategies and technology, it will support the wide reading, direct instruction, active learning, and interest in words that we know are essential to vocabulary development. In a digital world, knowing how to use the tools and resources available online is a part of becoming a strategic learner. This paper provides a useful and evocative jumping off point for integrating technology and media into the students’ vocabulary learning experience. With the tools of ICT, doubtlessly, teaching of vocabulary will not only be very interesting but effective and fast also.

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ROLE OF INFORMATION AND COMMUNICATION TECHNOLOGY IN RESEARCH

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Introduction:

Today almost every office desk in India has a PC and government's computer policies shows its sincere efforts to reach out to every village in the country. For a nation like India which is geographically big and culturally and linguistically so varied, computer technology has proved to be a great tool of overall development. Successful efforts are made at government as well as non-government level to use this technology for the benefit of the Indian society.

The use of ICT has become more common during the last two decades with the existence of the Internet and the World Wide Web. The Internet is fast becoming the largest collection of information in the world. Finger *et al.* (2007) stated that —the evolution of computer technology can be described in terms of 'yesterday', 'today', and 'tomorrow'. This is helpful in reminding us where we have been and where we are today, and for alerting us of the importance of adopting a future perspective. In support of this view Forcier and Descy (2002) commented:

"Any lasting changes and reforms will need to be preceded by a vision of what future learning environments will be like. What expectations will be placed on the learner? What will the role of the teacher be? What will the physical structure of the learning environment be?"

Finger *et al.* (2007) also mentioned that the term ICT has recently become more widely used globally to replace earlier terms such as 'technology learning' and 'information technology'.

Several definitions have been given to explain and

interpret the acronym ICT and the one given below seems to be the closest: 'ICTs is a generic term referring to technologies that are used for collecting, storing, editing and passing on (communicating) information in various forms.'

Research is a way of examining practice. Research is undertaken within most professions. More than a set of skills, it is a way of thinking: examining critically the various aspects of your professional work. It is a habit of questioning what you do, and a systematic examination of the observed information to find answers with a view to instituting appropriate changes for a more effective professional service. The word research is composed of two syllables, *re* and *search*. '*re*' is a prefix meaning again, a new or over again and '*search*' is a verb meaning to examine closely and carefully, to test and try, or to probe. Together they form a noun describing a careful, systematic, patient study and investigation in some field of knowledge, undertaken to establish facts or principles. Research is a structured enquiry that utilizes acceptable scientific methodology to solve problems and create new knowledge that is generally applicable. Scientific methods consist of systematic observation, classification and interpretation of data.

Characteristics of Research:

Research is a process of collecting, analyzing and interpreting information to answer questions. But to qualify as research, the process must have certain characteristics: it must, as far as possible, be controlled, rigorous, systematic, valid and verifiable, empirical and critical. We shall see the various steps of research and role of ICT in each of the steps and measuring its quality.

1. Formulating the Research Problem:

While formulating the research problem, we carry out a survey and discuss with our supervisor and team partners. Even we google to collect information on the same problem. Now, let's look at the main steps that are usually taken to conduct a research. The first two steps in any research activity are 1. Identifying your own world view and situate your research for evaluation. 2. Problem Identification by Literature review and design of research questions.

Research starts with an idea that researcher has, and now to conduct a research, that idea needs to be converted into a proper research question. ICT has to come in first stage while the researcher needs to discuss the ideas with others to get better user involvement.

2. Extensive Literature Review: A literature review discusses published information in a particular subject area, and sometimes information in a particular subject area within a certain time period. A literature review can be just a simple summary of the sources, but it usually has an organizational pattern and combines both summary and synthesis. Literature reviews provide you with a handy guide to a particular topic and can give you an overview or act as a stepping stone. For scholars, the depth and breadth of the literature review emphasizes the credibility of the writer in his or her field. Literature reviews also provide a solid background for a research paper's investigation. Comprehensive knowledge of the literature of the field is essential to most research papers.

For reviewing literature, we have to collect relevant literature. This was very difficult and time consuming when there were only print journals and books available. For this purpose researchers have had to visit various libraries, have had to stay there for months to collect the literature. After 1990s, it became very easy to search the literature on a single click at your desk. Even some articles can be asked for from its authors by mail which are not available online.

CiteSeer is a public [search engine](#) and [digital library](#) for scientific and academic papers, primarily in the fields of [computer](#) and [information science](#), that has been replaced by **CiteSeer^X**. Many consider it to be the first academic paper search engine. It became public in 1998 and had many new features unavailable in academic search engines at that time. **CiteSeer^X** shares its data for non-commercial purposes under a Creative Commons license.

ResearchGate and **Academia.edu** are social networking platforms whose primary aim is to connect researchers with common interests. Users create profiles on these services, and are then encouraged to list their publications and other scholarly activities, upload copies of manuscripts they've authored, and build connections with scholars they work or co-author with. Academics use Academia.edu to share their research, monitor deep analytics around the impact of their research, and track the research of academics they follow.

PubMed comprises more than 27 million citations for biomedical literature from MEDLINE, life science journals, and online books. Citations may include links to full-text content from PubMed Central and publisher web sites.

3. Developing the objectives: Objectives are the goals you set out to attain in your study. They inform a reader what you want to attain through the study. It is extremely important to word them clearly and specifically. Objectives should be listed under two headings: a) main objectives (aims); b) sub-objectives. The *main objective* is an overall statement of the thrust of your study. It is also a statement of the main associations and relationships that you seek to discover or establish. The *sub-objectives* are the specific aspects of the topic that you want to investigate within the main framework of your study.

4. Preparing the Research Design including Sample Design: In this phase of research there has to be active Participant Involvement. The researchers has to have proper Survey Design ,

correct Sampling and have to sort out all Statistical issues for conducting Qualitative/Quantitative Research.

In the following ways ICT Tools can be used by researchers for qualitative research.

- As a medium of communication ICT tools provide powerful communication channels mostly text based but increasingly enhanced with moving and still images and sound, thus competing fairly with the traditional medium of interaction. Researchers can log into any of these channels and practices, either for studying the way people use computer mediated communication in cultural context or can utilize these to interact with participants by initiating a discussion.
- As a network of computers-Internet, the most popular and powerful ICT tool, breaks all boundaries and makes physical distances between people disappear thus providing a platform like online communities, blogs and discussions forums to reach out to people all across the globe for collective and collaborative research with seamless possibilities for the researcher to utilize this space particularly for collecting information.

5. Collecting the Data: Data can be collected by surveying, interviewing and sampling. The qualitative research process starts with a Questionnaire / Survey Design. Survey can be created using ICT tools web, Word Processors (WP), Spreadsheets and now most popular online tools like google-forms and surveymonkey.com, and can be distributed using email and discussion boards.

The data collected using one or many such online tools needs a proper database structure for storage and retrieval thus tools like relational databases (SQL Server, ORACLE etc.) ; open sources databases using MySQL and Access, Flatfile database using Spreadsheet, wikis, GIS [Google earth, Google Maps, Flickr, ArcView/explorer]) can

be used. In high sophisticated laboratories almost all the instruments are computer aided.

6. Analyzing the Data: Data Analysis is a an area where a lot of works is being done and a huge collection of open source tools are available for researcher e.g. for Relationship mapping techniques like Herring or fish bone mind maps, SWOT Analysis, PMI, Venn etc. software like Inspiration, kidspiration, smart ideas, Cmap, Mindmapper, freemind would be useful and also the open source Online tools available at

1. www.gliffy.com/,
2. www.mindmeister.com,
3. www.drawanywhere.com/

An open source statistical software programming language like R is found very useful by researcher. For preparing Graph using Spreadsheet, digitizer, for typical data analysis using Calc or excel, preparing Checklist (any Word Processor , Spreadsheet) and Mashing tools like intel mash up is now very common.

If you have conducted a large quantitative survey, this section may contain tables, graphs, pie charts and associated statistics. In the earlier days, all these practices were carried out manually and were very lengthy and hectic. Use of computers made it so easy and time saving. The preliminary data analysis like table, graphs, charts, mean, mode, median, percentage etc. can be carried out by using MS Office in general and Excel in particular. But for high computational research like standard deviation, standard error, ANOVA, Chi-square, regression, variation, correlation, etc. can now be calculated online. For this, some of the websites are

1. www.mathportal.org/calculators/statistics-calculator,
2. www.easycalculation.com/statistics,
3. <http://homepage.stat.uiowa.edu/~mbognar/applets/bin.html>,
4. www.alcula.com/calculators/statistics,
www.calculatorsoup.com/calculators/statistics.

If you have conducted a qualitative piece of research this section may be descriptive prose and various computer aided tools are available. Images of the objects can be grabbed by using camera fitted with some software. Various drawing tool kits are available to draw the correct and proportionate diagrams.

7. Preparation of the Report or Presentation of Results: Formal write ups of conclusions reached. The final step in the process of any research activity is Writing up Research by Research Reporting Guidelines advised using the word processors.

To make the research outcomes reach maximum numbers of stake holders proper planning for printing, mailing and/or posting on community forums plus translation is required. Making research results accessible to various audiences through website, Research Portfolio, Newsletter, and other Community reports is now a common practice. Presenting research at Conferences/ Seminars and thus making findings known to users should be planned. Events happening across the globe on the theme of research can be found out easily today through Internet.

Bibliography: Web pages, as with journal articles, books, encyclopedias and other material consulted while researching, need to be properly cited in a bibliography, a reference list or a list of works cited. There are a lot of Citation & Style Guides online which provide more information on citation.

Publication Abstracting and Indexing: Once you published your work in any journal it can be cited by the other authors across the world. The quality of research you published and journals is measured and that is called author's metrics and journal's metrics respectively. For abstracting and indexing various agencies are available. You can calculate the h-index yourself, or let one of these databases do it for you. Remember that they only gather information from the journals they index.

Scopus is the largest abstract and citation database of peer-reviewed literature: scientific journals,

books and conference proceedings. Delivering a comprehensive overview of the world's research output in the fields of science, technology, medicine, social sciences, and arts and humanities, Scopus features smart tools to track, analyze and visualize research. Use the Author Search tab to conduct an author search then select the correct author. An author profile opens with detailed research information, including his/her h- index number along with the h-Graph. Scopus only includes articles published after 1995 when calculating the h-index.

Web of Science, You can do an author search or use the Author Finder. If your name is common you will need to do a lot of refining using topics, institutions, and years. When you have a good list of articles, use Create Citation Report to see the h-index.

Google Scholar provides an h-index for an author only if the author has created a user profile for themselves. GS also calculates the h-index and i10 index, listing the articles used to arrive at those numbers. i10 is the number of articles receiving at least 10 citations from other authors.

Microsoft Academic Search, Search for the author's name. You may be offered a choice between people with the same name, but working at different institutions. You are provided an h-index and the articles used to arrive at that number. The other databases listed here also provide basic statistics like number of articles published per year, number of citations to the journal each year, and number of references made each year.

- [Journal Citation Reports](#)
- [CiteScore](#)
- [Eigenfactor.org](#)
- [Google Scholar Metrics](#)
- [Scopus Journal Analyzer](#)
- [SCImago Journal & Country Rank](#)

Merits of use of ICT in Research

1. Linkages: ICT and the Internet have also enhanced linkages between research institutions at

national, regional and international levels. Most universities now operate elaborate campus wide area networks and have gateways to other similar institutions facilitating collaboration and exchange of research and development information.

2. Check on Plagiarism: In scientific writing, plagiarism is perhaps the most serious and the most widely recognized ethical lapse. It can occur in many forms and some of the more subtle instances, while arguably unethical in nature, may be raised to the level of research misconduct by federal agencies such as the National Science Foundation (NSF) or the Office of Research Integrity (ORI). ICT enable us to check degree of plagiarism as number of free online plagiarism checkers are available viz., www.grammarly.com/plagiarism, <http://plagiarisma.net/>, www.duplichecker.com/, www.paperrater.com/plagiarism_checker.

3. Citation tracking or citation analysis: This is an important tool used to trace scholarly research, measure impact, and inform tenure and funding decisions. The impact of an article is evaluated by counting the number of times other authors cite it in their work.

Demerits of use of ICT in Research

1. Missing of writing skills: As plenty of literature is available on internet, there is a threat that researchers may copy it and paste. This may lose the writing skills of the researchers.
2. Volatility: Information should be easy to obtain or access. Information kept in a book of some kind is only available and easy to access if you have the book to hand. The information and data on internet is not available for longer time; that is sometimes cached. Sometimes the domain of the website is expired and therefore researchers can't find it back for verification by reviewer.

Conclusion: Thus , there are some innovative tools available today that support researchers in the entire

research process i.e. researcher can get help to Search intelligently, assess the quality of search results, help in recording, organizing and producing information using online notecards, and also help in formatting the bibliography in MLA, APA, or Chicago/Turabian whichever style that is required. So hopefully now you see that ICT plays a full role in any type of research undertaking you may embark on or in understanding the results of research studies related to your area of interest.

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IMPACT OF ICT IN EDUCATION

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ABSTRACT

ICT can be used for providing education to the people who are not able to come to school due to various constraints. ICT can play great role in formal and non formal forms of education. The paper examines certain important issues related with the effective implementation of ICTs in all levels of education and provides suggestions to address certain challenges that would help in the implementation of ICTs in education and simultaneously increasing Quality of education. Many teachers are reluctant to use ICTs, especially computers and the internet. Some of the reasons for this reluctance include poor software design, scepticism about the effectiveness of computers in improving learning outcomes, lack of administrative support, increased time and effort needed to learn the technology and how to use it for teaching, and the fear of losing their authority in the class room as it becomes more learner-centered. In terms of using internet and other ICT as a resource for lesson preparation, most of the teachers interviewed, admitted to never or rarely using it, while very few used the internet to gather information sporadically or regularly

Keywords: ICT, Computer, Internet, World Wide Web, Teleconferencing, Radio, T.V

Introduction

To accurately understand the importance of ICT in Education there is need to actually understand the meaning of ICT. ICTs stand for *information and communication technologies* and are defined, for the purposes of this primer, as a —diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information.

The Internet is a driving force for much development and innovation in both developed and developing countries. Countries must be able to benefit from technological developments. To be able to do so, a cadre of professionals has to be educated with sound ICT backgrounds, independent of specific computer platforms or software environments. Technological developments lead to changes in work and changes in the organization of work, and required competencies are therefore changing. Information and communication technology (ICT) has become, within a very short time, one of the basic building blocks of modern

society. Many countries now regard understanding ICT and mastering the basic skills and concepts of ICT as part of the core of education, alongside reading, writing and numeracy. One of UNESCO's overriding aims is to ensure that all countries, both developed and developing, have access to the best educational facilities necessary to prepare young people to play full roles in modern society and to contribute to a knowledge nation. Maintaining a capacity to advise national governments on the use of technology in schools and, in particular, on the optimal balance, given local circumstances, between ICT and older educational technologies and assisting countries in developing educational software and materials that reflect their own national and regional cultures are key components of the Organization's strategy to achieve the *Education for All* goals

ICT TOOLS:

There are various ICT tools available which can be utilized for the knowledge creation and dissemination in the modern world. Tools include

Radio, T.V, Internet, Mobile phone, Computer, laptop, tablets and many other hardware and software applications. Certain ICT tools like laptops, PCs, mobile phones, and PDAs have their own implication in Education. These devices can be used in imparting education and training for teachers and students. Many of the ICT tools are much hyped but have not given fruitful results till now. Use of radio for pedagogical practices has been very much popular in past and is still in use in India by IGNOU. But One-to-many broadcast technologies like radio and television are seen as less revolutionary ICTs in education, as their usage is seen as reinforcing of traditional instructor-centric learning models, unlike computers, which many see as important tools in fostering more learner-centric instructional models. Successful ICT initiatives meet three intertwined objectives: availability, access, and demand. Educational ICT tools are not for making educators master ICT skills themselves, but for making educators create a more effective learning environment via ICT. Teachers can utilize ICT tools to get benefits from using these tools in the areas of content, curriculum, instruction, and assessment. ICTs include fixed-line telephony, mobile telephony, newspapers, radio, television, radio trunking, very small aperture terminal (VSAT), computer, and internet must be accessible to rural public as per

their demand.

E-LEARNING IN CONTEXT

E-learning refers to the use of ICTs to enhance and support teaching and learning processes. It is the instructional content or learning experiences delivered or enabled by electronic technologies and it incorporates a wide variety of learning strategies and technologies. E-learning ranges from the way students use e-mail and accessing course work online while following a course on campus to programmes offered entirely online (Commission on Technology and Adult Learning, 2001; OECD 2005). It is thus an alternative solution, which enlarges accessibility to training and becomes essential to complement the traditional way of teaching (i.e. face-to-face).

E-LEARNING TECHNOLOGIES

Functionally, e-learning includes a wide variety of learning strategies and ICT applications for exchanging information and gaining knowledge. Such ICT applications include television and radio; Compact Discs (CDs) and Digital Versatile Discs (DVDs); video conferencing; mobile technologies; web-based technologies; and electronic learning platforms. This section discusses what these ICTs entail and their pedagogical, technical and cost implications.

PEDAGOGICAL, TECHNICAL AND COST IMPLICATIONS OF E-LEARNING TECHNOLOGIES

e-learning technologies	Pedagogical implications	Technical implications	Cost implications
TV/Radio	Effective use of TV/radio depends on three key moments in the application: before, during and after the viewing session and give instructions, explanations, questions or evaluation before and after each moment	Equipments are needed depending on the objectives and the scope of the training application, which includes audiocassette, video camera, PCs, editing software, distribution channel and receiving and displaying equipment.	Costly in terms of TV/radio production, which includes, animation and graphic designers, hardware, access to the broadcast network

CD/DVD	<ul style="list-style-type: none"> • Simulation for self-study • Used with the presence or remote support of the trainer 	Hardware that meets their specifications - graphic screens, MPEG2 cards, CD or DVD reader and appropriate software	Costs are higher than for printed materials - replication downloading free products or buying ready-made products can lower the costs.
Web-based technologies	<p>Permanent accessibility (24 hours, all days of the week), speed, direct communication,</p> <p>links to related topics and up-to-date notes.</p>	<ul style="list-style-type: none"> • Fast computers with sound cards and reliable Internet connection are required. • The following team is needed for implementing web-based training: (a) Instructional designer familiar with computer delivered instruction; (b) A programmer or author to use the authoring tool; (c) A graphic artist; (d) A subject matter expert; (e) A webmaster for maintaining the programme on the server. 	Hardware, technical expertise and Internet subscriptions costs
videoconferencing	<ul style="list-style-type: none"> • New pedagogical methods required to provoke interaction • Require small groups • Both trainers and learners require some basic training 	Required equipment : (i) Sound proofing and controlling the lighting conditions; (ii) Audio-visual peripherals – TV monitor or video projector, camera(s), microphone(s) and sound playback; (iii) Videoconferencing codec (Rollabout) (iv) Multimedia PC (with PCI-based as well as software based videoconferencing codec) and (v) More bandwidth is needed for higher-quality images	There are two types of costs: setting up the videoconferencing system and operational costs.

e-learning platforms	<ul style="list-style-type: none"> • Adding and changing content as course is progressing. • Template for inclusion of course content. • Support multimedia presentation of course content while others are text based. • Complex structuring of content allowing for multiple links and cross-reference possibilities. 	(i) Server platform hardware requirements; (ii) Client platform hardware requirements; (iii) Operating system/cross platform; (iv) organization/ registration/ administration; and (v) The learning content should be in standard formats that can easily be stored, accessed and distributed. Such formats include HTML, PDF, RTF, GIF, JPEG and MPEG.	<ul style="list-style-type: none"> • Hardware cost implications • Cost for maintenance • Operational costs (technical and administrative support) • License fee (annual fee)
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ICTs help improve the quality of education

Improving the quality of education and training is a critical issue, particularly at a time of educational expansion. ICTs can enhance the quality of education in several ways:

- ▶ by increasing learner motivation and engagement,
- ▶ by facilitating the acquisition of basic skills, and
- ▶ By enhancing teacher training. ICTs are also transformational tools which when used appropriately, can promote the shift to a learner-centered environment.

ICTs such as videos, television and multimedia computer software that combine text, sound, and colorful, moving images can be used to provide challenging and authentic content that will engage

the student in the learning process. The teachers strongly felt that the visual aural combination if integrated judiciously with the textbook and syllabus, can work wonders in getting across abstract concepts and logics to the children in a short span of time. The potential of each technology varies according to how it is used. Haddad and Draxler identify at least five levels of technology use in education: a) Presentation b) Demonstration c) Drill & Practice d) Interaction e) Collaboration

Conclusion

Therefore this paper is an attempt to present the important issues that must be addressed by both pre-service teacher's education and in-service teacher professional development programs if schools and other educational institutions are to fully exploit the potential of computers and the Internet as educational tools. In terms of using internet and

other ICT as a resource for lesson preparation, most of the teachers interviewed, admitted to never or rarely using it, while very few used the internet to gather information sporadically or regularly. The teachers particularly felt that they had both access and training inadequacy and hence were unable to utilize internet and other facilities. More teachers were comfortable however, with using computers as an individual than as a teacher. A positive find is that all those teachers who are not well versed with the computer and other technology, expressed keen interest in undergoing training for the same. They felt that if trained, they would be in a position to make use of resources available in the school. Support of school administrators and, in some cases, the community, is critical if ICTs are to be used effectively. In addition, teachers must have adequate access to functioning computers (or other technologies) and sufficient technical support. Shifting pedagogies, redesigning curriculum and assessment tools, and providing more autonomy to local schools all contribute to the optimal use of ICTs in education. Very few strong examples of integration of ICT into classroom teaching learning is visible, though some schools do use the audio visual aids and integrate teaching of some lessons. Largely however, even where ICT is used in the classes, it is usually as an information source and not a part of core learning process.

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THE IMPORTANCE OF ICT FOR QUALITY EDUCATION IN DEVELOPING INDIA

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ABSTRACT

Information and Communication Technology (ICT) can be utilized for the education sector. Education includes online, distance and part time education. There are unlimited applications of ICT in the real world. In his paper emphasis is on the education field. Traditional Non-formal education system process includes activities like admission, personal contact programmers, exam for any course in a university or institution. In this process ICT can play a effectively great role in all the activities by providing a lot of benefits to students, teachers, parents and universities itself. ICT can be used rural area education to the people who are not able to come to school due to various constraints. ICT can play great role in formal and non formal forms of education. The paper examines certain important issues related with the effective implementation of ICTs in all levels of education and provides suggestions to address certain challenges that would help in the implementation of ICTs in education and simultaneously increasing Quality of education.

Keywords: ICT, IT, Education, MIS, Quality Education, Rural area

1. Introduction

Information Technology (IT) has become a buzzword while talking about technology and its applications. IT is used in various business and management functions but not in the improving the quality of education. Quality of education has been issue of concern in the absence of standard parameters of to measure the quality. The hardware, software, methods how required or used in acquiring, storing, processing and displaying data and information is collectively known as Information Technology (IT). Also on other hand, many developments and achievements took place in communication technology sector after and Second World War. Hardware, know how, programs and the methods used in ensuring that message is transmitted correctly, efficiently and cost effectively and collectively known as Communication Technology (CT). Both of these technologies became complementary to each other means progress in one alone is not much beneficial. Hence IT and CT started moving together and a new term was coined named as Information and communication Technology (ICT). Usage of ICT is one of the way by which India's large population

base can be effectively reached. Moreover in enhancing the quality and delivery of services through ICT-especially in case of developing relations with citizen- Government will be better positioned [17]. Passive learning occurs when students use their senses to take in information from a lecture, reading assignment, or audiovisual. Traditional lecture is not an effective learning environment for many of our students because so many students do not participate actively during a traditional lecture [16].

2. ICT application for quality improvement in formal and non-formal education:

ICT applications are becoming indispensable parts of contemporary culture, spreading across the globe through traditional and vocational education. In Indian scenario, mainly education system has three tiers primary (including nursery and preprimary), high school or secondary level (High and senior secondary levels) and the college or higher level (including college, university levels). In all these levels of education ICT can be utilized for better teaching learning process and improving quality of education. Using multimedia in education results

in the increasing productivity and retention rates, because people remember 20% of what they see, 40% of what they see and hear, but about 75% of what they see and hear and do simultaneously [15]. Interactive whiteboard helps teachers to structure their lessons, supports collaborative learning, can help to develop student's cognitive skills, enables ICT use to be more integrated into classroom. Government of India has announced 2010-2020 as decade of innovation. Reasoning and critical thinking skills are necessary for innovation [3]. Multimedia projector and computer can be used to teach phonetics and pronunciation. Lessons, poems & lectures by eminent scholars stored in computers or other ICT tools can easily be shown to the students time and again anywhere. Such type of teaching and learning retains for long time in the minds of the children. At high school level subjects like History, Geography, Political science, Physics, Chemistry, Biology, Physical education etc are taught.

Lessons in these subjects can easily be taught by showing small movie related with the subject to create interest among the students. Such type of movies and related multimedia material is easily available at academic repositories and from various related sites with the help of Internet. Internet is basic tool which can be utilized by teachers and students to find any information on any topic. This type teaching-learning makes the environment very interactive and is liked by students. Educational and practical CD's available in the market make this task easier to implement. At college level various facilities like computers, Electronic Board, Educate [1] facility initiated by various state Governments, MM projector and other peripheral devices related with teaching learning process are easily available. All such instructional material may be uploaded at the University portal and CDs of those lectures may be provided to the students instead of printed or hard copy material. Online fees payment system can also be made on the portal of concerned University or Institute. Students will be saved from a lot of

hardships they face in depositing fees, attending PCPs, taking exams and many more. Exam results in such cases may be provided online on the same day as same is happening in case of online exams and entrance tests. Advantages of utilizing such tools include saving of lot of paper work and help the environment making it pollution free. This will also bring transparency in the whole system of functioning.

3. ICT for Content development and administration

ICT can be utilized for the major areas which are content and administration. In this area certain initiatives have been taken at state and centre levels. For content development in India certain initiatives have been taken for creating digital repositories and learning objects. Delhi Government has been a pioneer in using ICTs for better administration of the education system. The Department of Education, Government of Delhi, having a lot schools, teachers and students under its administrative jurisdiction has developed a comprehensive and functionally effective Web-based and GIS-based Management Information System (MIS). Employee Attendance Report also facilitates an objective inspection, as the attendance of all the schools are on display for the purview of the officers of the Department [13]. With the help of such a transparent system everyone including citizens, schools, zonal offices, district offices, regional offices, and various branches at the headquarters can share information using the Web-enabled software. Information for all stakeholders—students, teachers, and administrators—is available online through the Directorate's Web site (edudel.gov.in) this includes information on admissions, mark sheets, teacher attendance, transfers, and pay slips etc.. United Nations Educational Scientific and Cultural Organization (UNESCO) [14] has published a summary of case studies conducted in nine countries in different parts of world and most of these studies reflect the necessity of having multi-prong strategies for teacher education and to improve their expertise.

Existing Open and distance education systems use different technology options for delivering content-Educate, other TV and Radio channels [6]. All these options use ICT. A local area network at school level can enable automation of a variety of processes.

4. ICT and teachers Training

In the modern world of ICT there is decentralization of knowledge source. Technology is only a tool and it must be utilized only to remove the barriers and challenges present in the existing system. ICT provides opportunities to complement on the job training and continuing education for teachers in a convenient and flexible manner. Use of ICTs in education requires major shift in the way content is designed and delivered. New technologies cannot be imposed without enabling teachers and learners to understand these fundamental shifts. Ongoing training is necessary for the trainers in institutions and organizations who are engaged in the design of curriculum, teaching materials and delivery of ICT-enabled education [9]. ICT is applied in their teaching practices as well as for delivery for these trainings. In order to implement ICT-driven distance education programmers, the teachers must first understand and be comfortable with the technologies. They must be given opportunities for acquisition of a new knowledge. This can begin by promoting computer-training programmers for teachers. Use of ICTs for teacher training has been recognized by the governments of most South Asian countries and teacher training programmers like Intel Teach across India, Pakistan, and Sri Lanka; Microsoft Shiksha in India; and several other initiatives in Nepal and Bhutan are focused on using ICTs for training teachers [12]. The International Society for Technology in Education (ISTE) has created the most comprehensive set of ICT standards for teachers, students, and administrators. The training batches duration may be on weekly or fortnightly basis by expert in ICT and its implementation for education. In teacher training colleges, computers and the Internet can be used to increase teachers basic skills of teaching and subject related knowledge by accessing the

resources that can later be used in classrooms teaching.

5. Solutions of applying ICT for learning

At present, ICT in school education is strictly limited to a handful of elite schools. Beyond that, it's just a computer lab that's held apart from the conventional educational process [10]. Though computers came to Indian classrooms in the year 1984-85, the level of adoption of modern technology in the teaching and learning process has been limited and uneven [11]. Various ICT tools must be available and it must be accessible at demand. Many schools have limited resources for buying books, stationery, furniture and other classroom materials. Role of private sector providing services in such sectors may be taken into account. ICT hardware and software are not designed as per educational purposes rather they are designed for general purpose. One first thinks about the available technology and then a try is being made to apply it into education field, but if we look at in reverse way then possible outcomes may be more useful and may give good results. As per latest tradition only special subject like IT or ICT is available and that is also optional one there is need for to have basic knowledge of computers and IT to utilize various ICT tools to be used for teaching learning. Only computer teachers would not be able to carry this important mission of being agents of change. To sort out infrastructure problems for providing ICT education in schools one can split the screen in half vertically and at two sets of an application can be displayed and used by two users (students) simultaneously. Computer Programmers at various levels of quality parameters can be used to control, manage and put strict discipline in the campuses through use of computer application for Curriculum development, Teaching and learning, Research and extension, Governance and leadership, infrastructural facilities and use of expert system in suggesting intelligent decisions to top management in policy making and other important areas in higher education.

Conclusion

Quality in education through ICT and its awareness among stakeholders will have positive impact on the society. ICT can be helpful in quality and standards of education by implementing it in various phases of education. ICT can be employed in formal and Non-formal types of education and would eventually make the learners employable and socially useful part of the society. By employing ICT in teacher training can save a lot of money of the Government. Moreover a lot of qualitative improvement can be seen as resource persons for the training can be best of the world. By employing ICT in administration can help in solving the problem of Absenteeism of students and teachers. Good quality content is one of the major issues and directly affects the standards of education and quality. By overcoming the certain challenges involved in the process of education can help a lot in this side. Conclusively a lot of quality improvement is possible after careful and planned implementation of ICT in education by various stakeholders.

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THE ROLE OF ICT IN TEACHING-LEARNING AND EVALUATION

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ABSTRACT

ICT stands for Information & Communication Technology. The use of ICT in teaching-learning and evaluation process is a relatively new phenomenon. The effective integration of this technology into classroom practices poses a challenge to teachers.

This empirical study aimed at finding out the factors influencing use of ICT to make teaching learning effective in higher institutions of learning in India and identifying the innovations that ICT has brought into teaching-learning process, particularly in higher institutions of learning in India. The findings of this study revealed that teaching community had a strong desire to integrate ICT into teaching-learning and evaluation processes. The innovations that ICT has brought in teaching learning process include:

E-learning, e-communication quick access to information, reduced burden of keeping hardcopy, networking with resourceful persons, etc. However, the presence of all these factors increased the chance of excellent integration of ICT in teaching-learning and evaluation process. Globalization and innovations in technology have led to an increased use of ICTs in all sectors including education. Uses of ICTs in education are widespread and are continually growing worldwide. It is generally believed that ICTs can empower teachers and learners, making significant contributions in teaching, learning and evaluation process

Keywords: ICT, Teaching-Learning-evaluations, Effective, Higher Institutions of learning

What is ICT?:

ICT is an electronic means of capturing, processing, storing, communicating information. ICTs are generally not considered central to the teaching, learning and evaluation process. However, there appears to be a mismatch between methods used to measure effects and the type of learning promoted. The use of ICT in the classroom teaching-learning and evaluation is very important. It provides opportunities for teachers and students to operate, store, manipulate, and retrieve information, encourage independent and active learning, and self-responsibility for learning such as distance learning, motivate teachers and students to continue using learning outside college hours, plan and prepare lessons and design materials such as course content delivery and facilitate sharing of resources, expertise and advice. This versatile instrument has

the capability not only of engaging students in instructional activities to increase their learning, but of helping them to solve complex problems to enhance their cognitive skills. The broad definition of ICTs includes computers, the internet, telephone, television, radio and audio-visual equipment. ICT is any device and application used to access, manage, integrate, evaluate, create and communicate information and knowledge. Digital technology is included in this definition as services and applications used for communication and information processing functions associated with these devices.

ICT can be also be defined as “anything which allows us to get information, to communicate with each other, or to have an effect on the environment using electronic or digital equipment”. In early education, the term ICT could include computer

hardware and software, digital cameras and video cameras, the Internet, telecommunication tools, programmable toys, and many other devices and resources

The literature suggests at least three reasons why ICT matters in education. First, ICT already has an effect on the people and environments that surround young children's learning. Second, these technologies offer new opportunities to strengthen many aspects of e education practice. Third, there is support and interest across the whole education sector for the development and integration of ICT into education policy, curriculum, and practice. However, there is a clear consensus in the literature that the introduction and use of ICT education should be grounded in a clear understanding of the purposes, practices, and social context.

The Importance of Using ICT in Teaching-Learning and Evaluation Process

Several studies argue that the use of new technologies in the classroom is essential for providing opportunities for students to learn to operate in an information age. It is evident, that traditional educational environments do not seem to be suitable for preparing learners to function or be productive in the workplaces of today's society. She claimed that organizations that do not incorporate the use of new technologies in institutions cannot seriously claim to prepare their students for life in the twenty-first century. This argument is supported by Grimes who pointed out that "by teaching ICT skills in higher educational institutions the students are prepared to face future developments based on proper understanding". Uses of technology can help students and teachers to develop the competencies needed for the twenty-first century". ICT originally is applied to serve as a means of improving efficiency in the educational process. Furthermore, it has been shown that the use of ICT in education can help improve memory retention, increase motivation and generally deepens understanding. ICT can also be used to promote

collaborative learning, including role playing, group problem solving activities and articulated projects. ICT allow the establishment of rich networks of interconnections and relations between individuals.

ICT technology has the power to change the ways students learn and professors teach and evaluate. This technology can "revolutionize" the learning process. In other words, ICT extend "teachers and students capabilities, and their well determined use can transform roles and rules in the classroom. Many people recognize ICTs as catalysts for change; change in working conditions, handling and exchanging information, teaching methods, learning approaches, scientific research, and in accessing information. Teachers could use ICT to facilitate learning, critical thinking and peer discussions. It recognized that technology-based teaching may not be essential in all classes but generally it is most facilitative as a result of providing relevant examples and demonstrations; changing the orientation of the classroom; preparing students for employment; increasing flexibility of delivery; increasing access; and satisfying public demands for efficiency. "The whole purpose of using technology in teaching is to give better value to students". This better value should also impact the learners/students performance. ICT holds much promise for use in curriculum delivery. Thus, technology can effectively improve teaching and learning abilities, hence increasing learners performances. ICT has the means to aid in the preparation of learners by developing cognitive skills, critical thinking skills, information access, evaluation and synthesizing skills. In addition, ICT provides fast and accurate feedback to learners. It is also believed that the use of ICTs in education could promote "deep" learning and allow educators to respond better to different needs of different learners The use of ICT in the classroom teaching-learning and evaluation is very important The use of ICT in the classroom teaching-learning and evaluation is very important. ICT-supported learning environments could be beneficial to a constructivist

teaching approach. The use of ICT in the classroom teaching-learning and evaluation is very important. The main purpose of the Strategy for Information and Communication Technology Implementation in Education is to provide the prospects and trends of integrating information and communication technology (ICT) into the general educational activities. There are some unavoidable facts in the modern education;

1. ICT has been developing very rapidly nowadays. Therefore, in order to balance it, the whole educational system should be reformed and ICT should be integrated into educational activities.
2. The influence of ICT, especially internet cannot be ignored in our student's lives. So, the learning activities should be reoriented and reformulated, from the manual source centered to the open source ones. In this case the widely use of internet access has been an unavoidable policy that should be anticipated by college authorities.
3. The presence of multimedia games and online games by internet has been another serious problem that should be wisely handled by the educational institutions. The students cannot be exterminated from this case. They can have and do with it wherever and whenever they want. Meanwhile, most parents do not have enough times to accompany and control their children. So, the students have large opportunities to do with multimedia games or online games or browsing the negative and porn sites. Having been addicted, the students will have too little time to study, and even do not want to attend classes.
4. The implementation of ICT in education has not been a priority trend of educational reform and the state paid little attention to it. Therefore, there should be an active participation, initiative and good will of the

schools and the government institutions to enhance ICT implementation at school.

5. The teachers should be the main motivator and initiator of the ICT implementation at schools. The teachers should be aware of the social change in their teaching activities. They should be the agent of change from the classical method into the modern one. They must also be the part of the global change in learning and teaching modification.

Aim and objectives of ICT implementation in education:

- 1) To implement the principle of life-long learning / education.
- 2) To increase a variety of educational services and medium / method.
- 3) To promote equal opportunities to obtain education and information.
- 4) To develop a system of collecting and disseminating educational information.
- 5) To promote technology literacy of all citizens, especially for students.
- 6) To develop distance education with national contents.
- 7) To promote the culture of learning at educational institutes (development of learning skills, expansion of optional education, open source of education, etc.)

Can the use of ICTs help improve the quality of education?

Improving the quality of education and training is a critical issue, particularly at a time of educational expansion. ICTs can enhance the quality of education.

ICTs are also transformational tools which when used appropriately, can promote the shift to a learner-centered environment. ICTs such as videos, television and multimedia computer software that combine text, sound, and colorful, moving images

can be used to provide challenging and authentic content that will engage the student in the learning process.

The teachers strongly felt that the visual aural combination if integrated judiciously with the textbook and syllabus, can work wonders in getting across abstract concepts and logics to the children in a short span of time. The potential of each technology varies according to how it is used. Haddad and Draxler identify at least five levels of technology use in education:

(i) Presentation (ii) Demonstration (iii) Drill & Practice (iv) Interaction (v) Collaboration.

Conclusion:

The rapid growth in ICT has brought remarkable changes in the twenty-first century, as well as affected its adoption and integration by teachers in teaching-learning process. The effective integration of technology into classroom practices poses a challenge to teachers

Therefore this paper is an attempt to present the important issues that must be considered by educational institutions regarding ICT as a resource for teaching, learning and evaluation process. Most of the teachers admitted to never or rarely using it, while very few used the internet to gather information periodically or regularly.

Teachers must have adequate access to functioning computers or other technologies and sufficient technical support. Redesigning curriculum and assessment tools, and providing more autonomy to colleges for optimal use of ICTs in teaching, learning and evaluation process. Very few strong examples of integration of ICT into classroom teaching learning is visible, though some institutes do use the audio visual aids and integrate teaching of some lessons. Largely however, even where ICT is used in the classes, it is usually as an information source and not a part of core learning process. The findings of this study indicate that teachers and students have strong desire for the integration of

ICT into education but they encountered many barriers to it. For successful integration of ICT into teaching-learning process, it can be concluded that the factors that positively influenced teachers and administrators use of ICT in education include teachers attitudes, ICT competence, computer self-efficacy, teaching experience, education level, professional development, accessibility, technical support, leadership support, pressure to use technology, government policy on ICT literacy, and technological characteristics. However, the presence of all factors increases the probability of excellent integration of ICT in teaching-learning process.

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USE OF ICT IN TEACHING – LEARNING PROCESS

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ABSTRACT

There has been a global technological impact and scientific development largely. This development has widespread impact on every aspect of human life. Naturally so called the education system is also affected by the technological progress. The technological devices and programs however are mostly framed keeping in view requirements of the teacher and adopted as an aid in classroom teaching. ICT has initiated new possibilities into the classroom. It has sowed a seed to create awareness among the people about its usage in a spell-bound manner in terms of acquisition of knowledge. However the influence of ICT has offered new avenues in showing the remarkable development in the process of teaching and learning in Indian class-room situations.

Introduction :

Today we are living in the era of information technology which is also called as the age of information technology. This has influenced almost all walks of human existence including present teaching – learning and other activities. Educational technology comprises all kinds of modern media, methods and materials that are used for development of experiences. Its aim is to make teaching – learning very effective, efficient and interesting. In the past all teaching mostly depended on communication between the teacher and the student which was in the form of printed materials and textbooks. But today the students prefer to learn more from pictures, television, recorded words, programmed lessons, conferences etc. Therefore the role of the teacher, as well as function and importance of course have been challenged. ICT is considered to be most valuable tool to enhance teaching and learning experience of both teachers and learners. ICT is a tool which helps teachers and learners to access to different types of media.

The Information and Communication Technologies is an Umbrella that includes communication device or application like radio, cinema, television, mobiles, computers etc. It is described as the technology to support the effort of conveying information and communication particularly in the

area of education. The use of ICT can be made through computer, internet, e-mail, interactive multimedia, LCD projector, interactive whiteboard, video conferencing etc. ICT gives unlimited scope for the teachers and learners to communicate with the people worldwide, it gives exposure to variety of languages, opens up an opportunity of using online learning applications and inculcates independent learning capacity to the student and make their work more easy and professional.

Audio-visual aids in teaching-learning process :

This aid may be described as aids that facilitate the understanding better in a teaching-learning situation. Teacher takes help of some instructional aids to teach more efficiently and successfully. Audio – Visual aids are effective tools in the hands of teacher to impart good education. These aids cover up audio, video and audio-visual aids. Visual aids pertain to the sense of sight, audio aids to the sense of hearing and the audio-visual aids to both the sense of sight and of hearing. Among them, the sense of sight is more important because most of the knowledge is acquired by it.

These aids are CD, DVD, tape recorder, e-book, graphics, pictures, charts which are used to motivate and create interest among students. The main purpose of using these Audio – Visual aids is to enable the teachers to make his teaching effective

and interesting. Technology integrated into the highest education system ICT helps teachers learn how to use the computer as a tool to teach various subjects.

Distance learning via Internet make access to open education to students everywhere. This helps for making course material available online, and using Internet as the communication tool. Multi-media classroom which enable the teacher to make it totally different from normal classroom. In this the role of the teachers and students changes. The teacher plays the role of coordinator. The computer software will teach students the knowledge that teachers are supposed to teach using software to develop writing skills by using a word processor. A basic word processor can support those who cannot have control on a pencil. Computer games can be used to develop spelling skills.

Conclusion :

We can see that the extensive use of ICT in teaching

and learning process provides new opportunities for students in the era of globalization. It will enhance the richness and quality of education both in and off camps. The use of ICT in education not only improves classroom teaching learning process but also provides the facility of e-learning. The most important benefit of ICT is to bridge the knowledge gap in order to improve the quality of higher education. It provides opportunities to communicate more effectively and to develop literacy skills. There is only the need of wider use and innovative application of the ICT by learners and teachers.

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TECHNO TOOLS MADE TEACHING LEARNING ENGROSSING AND ENTERTAINING

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ABSTRACT

Information and Communication Technology has brought tremendous revolution in every sphere of life. Education that is considered the most essential field on which the progress of humanity depends on has also embraced ICT to enhance the process of teaching learning. The use of ICT in teaching facilitates the teachers to explain the intricacies in a lucid way. It also gives an opportunity to the learners to fathom the complicated subject with ease and fun. The present paper deals with some of the methods that are blended judiciously to make the process of teaching and learning Engrossing and Entertaining. The researcher has propounded some of the techno tools which are ICT enabled to make teaching learning Engrossing and Entertaining.

Keywords: ICT, Teaching, -Learning, Learners, Engaging, Entertaining, Fun, Desire and Curiosity Teachers and Language Learning Software.

Introduction:

With the advent of Information and communication Technology, the world has literally become a global village. The surge of information is available on the tip of the fingers. It has wiped geographical and physical boundaries owing to virtual concept. ICT has started playing a dominant role in the field of education. The teachers have begun using various techno tools which come under the purview of ICT to make teaching learning engaging and engrossing from the perspective of teachers and learners. ICT has proved wonder tools in the process of teaching learning to make it flexible and conducive. Teaching learning is made fun full exercise while using techno tools such as Power Point Presentation, Screening of the movie or documentary based on syllabi, Language Learning Software, Videos, Recorded Lectures, Compact Disc (CD), Pen Drive and Blog etc.

Power Point Presentation:

It is one of the most effective tools of ICT that enables the teacher to immediately attract the attention of the students. It catches visual senses of the students. It makes the students attentive in the

classroom. Once the students are motivated to listen .The task of the teacher becomes easier. PPT arouses desire and curiosity among the learners to listen the lecture of the teacher with rapt attention. The important points of the topics are highlighted and they are stressed on the screen succinctly and on the basis of these compact points the teacher can deliver the lectures covering the whole topic. This helps both the teacher and the students to converge on the focal points. PPT also give space for discussion in the interval of the slides. Lecture with the help of PPT is economical and a lengthy topic can be illustrated convincingly and conveniently in a short span of time. Pictures in PPT assist to elucidate complicated and subtle points with relatively ease than the traditional lecture method. Moreover lecture with PPT is quite engaging and entertaining for the students.

“Students prefer PowerPoint lectures. They rated lectures with PowerPoint slides more highly than those without slides (Drouin, et al. 2013), also giving higher ratings to their course and self-efficacy (Suskind 2005) and to their instructor (Nouri 2005) when their lectures used PowerPoint.”

Screening of the Movie: Now -a - days the pathetic trend has been set among the students to attend minimal classes. Therefore it is high time for the teachers' fraternity to make analysis of their pedagogy of teaching. They have to make certain changes in their pedagogy as they should understand that they are dealing with the students who are techno savvy. The students of today's generation are more interested in watching something rather than reading. However we as teachers realize the importance of reading so we have to cultivate among them the habit of reading. So first of all the teachers have to devise the way to attract the students to the classroom and the best way to do so is to show them the movie based on the syllabi. For example if the students have been prescribed the lesson "*The Selfish Giant written by Oscar Wilde*" in Compulsory English so the teacher can show them the short animated movie. It will create interest among the students to listen to the dialogue and will grasp the subject matter with the help of pictures to a great extent. A short documentary can also be screened for the students depending upon the subject. This sort of ICT enabled teaching will certainly create interest among the students. It will give them sensory satisfaction and gradually the teachers can inculcate the habit of reading in the students. After the screening of the movie, the question can be asked to the students in order to know their level of understanding. But the teacher has to design judiciously how many lectures should be devoted to screening of the movie based on syllabi and how may to traditional classes as the traditional method cannot be totally discarded. Both the traditional and ICT enabled teaching methodologies should be combined intelligently to produce output in teaching learning.

Language Learning Software: As far as learning the English Language as a second language is considered for the students at Under Graduate Level, Language Learning Software is quite useful. It gives varied exercises to the Learners that are ordinarily not possible to provide them in traditional

classroom. While learning any language four primary exercises are extensively essential-Listening, Speaking, Reading and Writing. The Language Learning Software gives ample practice to the learners in the form of innumerable exercises based on various situations for example- **Introducing Oneself.** This particular exercise renders the learners to listen and practice the sentences which are normally used in day to day life to introduce oneself. LLS assists the learners to speak the foreign language with correct pronunciation. They can also record their own voice and check their pronunciation and sentences formation. The students can do the practice independently sitting in the language lab according to their convenience. The teacher can also record his lecture on any topic and assignments can also be given to the students to solve. The teacher can check the assignment of the students during the class in the Language Lab and can provide feedback to the students if have any. The students really enjoy learning the English Language with the help of Language Learning Software. It also gives the exercise of reading to the students for example the teacher can give them the assignment of reading a paragraph to the students. Each student reads the given paragraph aloud, his voice is recorded and then the teacher can check his reading exercise and can point out the faults committed by him so that he can make improvement in his reading. Apart from listening, reading and speaking, writing practice can also be done by the students, the Language Learning Software provides various layout of writing such as formal and informal letters, reports mail, advertisement and curriculum vitae etc. The learners can learn drafting skills with the help of such exercises. The teacher can also check their assignments sitting on his master personal computer. LLS encourage independent learning. It is generally found in the traditional classroom the students feel tedious after the lapse of 50 to 60 minutes but in the language lab their hours of learning improves as they enjoy this kind of learning. The activities in the language lab are full of fun and enjoyment.

“They come in the language lab empty handed and leave the language lab with heads full of learning with fun and enjoyment.”

Videos:

The students feel dull and drab studying from the textbook the printed words dearth in pictures. But ICT has provided a very effective tool at the hand of the teacher. Desire and curiosity of the students can be awakened by showing them short videos on the theme of the lesson, the teacher has made a plan to teach. This changes the mood of the students and they are mentally prepared to learn something. In a lecture of 50 to 60 minutes short videos can be shown to the students for 10 to 15 minutes in the beginning, middle and at the end of the lecture, in the beginning to arouse their keenness, in the middle to explain the concept and at the end to recapitulate the whole lesson. This type of ICT enabled classroom while delivering a lecture has become quite lively and engrossing. The span of students' attentiveness and interest is comparatively larger than the traditional classroom.

Video allows us to introduce any aspect of real life into the language learning environment, contextualizing the learning process (Sherman, 2003:1)

Recorded Lectures:

In today's generation of students a new kind of phenomenon is quite prevalent that they are always eager to have something additional. Therefore the teacher can fulfill their desire by providing them the supplementary knowledge apart from the regular and routine classes. Whatever topic has been taught in the classroom in addition to this the recorded lecture of renowned and eminent personalities on the same topic can also be played in the classroom in order to broaden the horizon of the students. This ICT enabled tool allows the students to listen the recorded lecture innumerable times and as per their convenience once they are given the address of the site on which these lectures are available. The students can play the lecture on their android

mobiles as they have the access of Wi-Fi in the college campus as well on the computers in the library and language lab. They can also play the recorded lectures at their homes and their workplaces as this is the age of internet which is available freely in college campus as well as at workplaces and at cheap rates from the mobile stores. This exercise initiates independent learning among the students and takes learning out of the traditional classroom.

Compact Disc, Pen Drive and Blog:

As all are quite aware now -a -days that study material are readily available in compact disc. The teacher can also prepare his own study material for the students and can store it in the pen drive. The teacher can take various drills of the students in the ICT enabled classrooms with the help of CDs. Once the teacher has taught any topic of grammar in the traditional classroom using chalk and talk method. Then he can employ the techno tools in order to make the teaching learning engrossing and entertaining by playing a CD on the projector. It is quite fascinating and attractive for the students as it catches their attention immediately-colorful screen, pictures, voice and texts. A large number of exercises are given in the CDs for the students to solve and even they can check their answers with explanation. The teacher can play the same topic on the CD which has been previously taught in the classroom it will reinforce their previous knowledge. The students really enjoy this kind of class because they are not supposed to write anything but only they have to give the answers orally one by one according to their turn and the teacher monitors and guides them when they feel any confusion. Once or twice in a week they students can be taught in the smart classroom with the help of CDs. The teacher can prepare his own study material and store it in the pen drive and teach them in the smart classroom. Here the teacher has to type his material and has to make his text attractive in order to attract the attention of the students. Typing the text and highlighting the important points are

indeed time consuming but the teacher can post the same study material in his blog. It has twofold advantages the same study material can be used in the classroom for teaching and can also be post in the blog of the teacher. The students can see the blog of the teacher and can take the study material from their and it is available for them anywhere at any time provided they have internet connectivity which is readily available at college campus and workplaces quite easily. The Blog provides the opportunity to the students to develop independent learning and the students can share the blog of his teacher with his friends studying in different colleges and at distant places as it has already been said that the whole world has become a globe village due to ICT. Knowledge can be shared and disseminated.

Conclusion:

The above mentioned techno tools which are ICT enabled are really wonder gadgets if they are combined judiciously along with the traditional method of teaching. They will certainly enhance the process of teaching and learning. The ICT enabled

tools provide conducive and congenial ambience of learning. But the teacher has to be always on his toes to upgrade and update his knowledge as far as teaching is concerned. He is not merely a teacher who has to get mastery over his subject apart from that he has to look for various ways and means to make teaching ICT enabled. So it will not only make his teaching engrossing but also entertaining and the students will totally enjoy his class which is different from the traditional classroom it will be smart classroom where the students will become smart.

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USE OF ICT IN COMMERCE EDUCATION

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ABSTRACT

Modern technology has effected our lives. Information communication technology has open avenues of learning for the students. It has removed traditional way of teaching and open a new ways of learning teacher find comfortable with modern devices like computer, power point presentation in teaching learning processes. ICT has benefited not only teacher but also teacher in updating knowledge. Students are using watup, blogs to circulate information; knowledge and other educational things. The present paper intends to explore the use of ICT in commerce education and its benefits in teaching learning process.

Keywords : ICT ; Commerce Education; Teaching introduction, Learning process.

We live in the age of science technology use of technology has effected our life. It has made our life easy and comfortable. Use of ICT in education has replaced the traditional method of teaching teacher find themselves comfortable in using ICT in teaching learning process rather than traditional method of teaching. Students use various means of technology to receive education.

21st Century is marked with emergence of knowledge based society were in ICT plays and important role. Use of ICT in education can be broadly categorized in the following ways.

- 1) ICT as a subject (i.e. computer studies)
- 2) ICT as a tool to support traditional subject (Power point presentation)
- 3) ICT is the medium of knowledge exchange.

Use of ICT in commerce education has facilitated and improved the quality of education. It has proved beneficial not only for the teacher but also for the learner (students)

Benefits of ICT in Commerce Education :

- 1) Easy to access course materials : Course material can be uploaded on a course website and the students can study at a time and location they prefer.
- 2) Student motivation : computer based instruction can give instant feedback to

students and explain correct answers. This can give students motivation to continue learning.

- 3) Wide participation : Learning material can be used for long distance learning and are accessible to wider audience.
- 4) Improved students writing : It is convenient for students to edit their written works on process which can in turn improve the quality of their writing.
- 5) Subjects made Easier to learn : Many different types of educational software are designed and developed to help students to learn commerce subjects.
- 6) Differentiated Instruction : Educational technology provides the means to focus on active student participation and present differentiated questioning strategies. It broadens individualized instruction and promotes the development to personalized learning plans.

ICT Technologies in the class room :

Various types of technology devices are used in class room to make teaching learning process make effective. These devices include, computer, internet connection, wireless microphone, clickers, smart phone, digital cameras, LCD projectors etc. with the help of these devices, teacher can demonstrate new lesson present new materials; like

new programme and show new website teacher who can download the study materials from various side. Due to ICT students can gain knowledge from every part of the world. They can acquire knowledge related their subject at their home. Teacher can design their own web pages which help the student to prepare their assignment; similarly. Blogs prepare by the teacher make the student able to dialogue with their teacher about their study computer, internet connection, microphone, LCD projectors, T.V. are used to impart knowledge.

ICT in commerce education :

- 1) Close co-ordination, facilitation overall guidance and direction to the activities of the media centres set up by UGC in various universities.
- 2) Dis-semination of educational programmes through both the broadcast and non broadcast modes.
- 3) Production of educational programmes (especially video and audio) and related support material and setting up of appropriate facilities for this.
- 4) Research related to optimizing the effectiveness of programmes.
- 5) Providing a forum for the active involvement of academic and other scholars in the creation of appropriate educational programmes.
- 6) Studying promoting and experimenting with new technique/technology that will increase the reach and / or effectiveness of educational communication.

Information technology can play an important role in the commerce education teaching and learning process of the student. The term describes the use of computer based technology and the internet to make information and communication services available to wide a range of users. ICT are hardware and software that enable society to create, collect, consolidate and communicate information in multimedia formats and various purposes. The term is used broadly to address a range of technologies, including telephones and emerging technology devices. Central to these is the internet, which provides the mechanism for transporting data in a number of formats including text, images, sound and video.

Conclusion :

Use of ICT has changed traditional method of teaching. Teacher find themselves in using ICT in their teaching learning process. It has opened new ways of learning for the students. Teachers can impart based knowledge to students due to use of ICT students are using technological devices mobile phone, internet, C.D. D.V.D. gain knowledge.

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ROLE OF ICT IN LEARNING THROUGH LIBRARIES

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ABSTRACT

Libraries have always been out looked as the essential part of the education in the nation building. ICT has its impact on almost all the disciplines especially in the field of library and information services. New technology provides several materials, media and modes of storing and communicating the information. This paper highlights the changing scenario of the role of ICT in the learning process through libraries and the use of internet as well as benefits of internet in academic libraries.

In the modern age Libraries have become multimedia due to adoption of technological advances and changing nature of their services. If we look into the past we notice a drastic change in the role of libraries imparting education. The growth of ICT has greatly influenced the methods and formats of information. The libraries have now begun to transfer from manual operations to electronic system. They are also beginning to become even more service centered than before and bring higher levels of learning support and research support to the users.

Today the concept of education is undergoing a tremendous change. This is because of continuous advancement in the field of Science and Technology. Another related reason is the expanding task of providing education to more people. It has become evident that conventional system of education is unable to cope up with the complexity and magnitude of the problem. Those who cannot get higher education by formal channel they have option to get informal education through continuing education programme. Continuing education is related with the lifelong learning process. And this could not be restricted up to any College, University or any educational institute, as it is beyond the boundaries of that. Here libraries based on ICT can help the voluntary learners. Public, Academic as well as special libraries could help people for their continuing education. In the recent years computer has changed the whole process of information handling.

Internet serves as a backbone and connects the various sources of information irrespective of their locations. Internet is a live channel of communication between computers. It is configurations of smaller networks and other connected machines spanning the entire globe. Now the internet information super highway is accessible anywhere with time, interest and curiosity. Information on internet and opportunities to use it are growing at a rapid rate. The internet and other information technology have brought drastic changes in the library functions. In the last sixty years of library, automation libraries have travelled a long road from punched card processing system to present digital libraries.

Libraries play a vital role in imparting education to all. They have passed through several developments to reach its present stage of dynamic centres of knowledge. Changing needs of society and the technology have forced the librarians and the information specialists to develop and adopt new technologies to build their resources and services to cater the need of users.

Information Communication Technology (ICT) may be defined as a combination of computer and telecommunication techniques which makes possible new systems and products to help people at work in education and at home. It is the application of a wide variety of electronic technologies to the information handling activities. In the domain of library information service, it

means the use of various technologies such as computer, telecommunications, word processing, micrographics, reprographics, video recordings and other electronic devices for the storage, retrieval, reproduction and dissemination of information in a library environment.

Libraries which were considered once only as the storehouses of knowledge have now got a new outlook in the modern information communication technology era. It can be used in library and information science to support technical functions associated with technical processing and circulation work.

In future people will be differentiated on the basis of information. Those who lack resources of information will lag behind. In global village instant messaging, social networking and chatting will be important. Developing countries have to accept the policies of the developed countries to survive in the competition of globalization. Libraries often consume a lot of time in the adoption of new technology, because the speed with which technology changes is very confusing. New innovations in computers, networking and software resulted in information to be created and distributed with low cost and without the need of complex programming skills that were needed. As result more and more information is becoming available from what might have otherwise being inaccessible sources. Due to ICT the world is becoming global village which is changing into the national information infrastructure. This creates an entirely new form of information dissemination.

The worldwide librarians made their catalogues available online which have Online Public Access Catalogues (OPAC) generally available free of cost these are useful for finding books not available locally to identify and select books for local acquisition, bibliographic data verification and to search holding of periodical and monographs. These can be accessed through telnet, gopher and the World Wide Web. Many OPAC's have full text databases; libraries can use these databases to

queries from patron. With the emergence of ICT the areas of library expanded worldwide. The available information present in the library can be feed to homepage and made available to users anywhere.

ICT has provided new media, new modes of storing and communicating information. ICT brought many services to library to speed up their activities. It helps to remove barriers of communication, distance and time. The advances in technology will continue to improve the effectiveness of libraries. It helps to transfer data through communication network like internet anywhere. It provides enormous search speed and facility. It helps to strengthen communication and collaboration among research, government and educational institutions.

Education system is entering into information age and fast developments of Information and Communication Technologies change the way we think the way we live and the way we work in an academic environment. The changes lead to use of computers as integrate and inevitable part of universities. This situation necessitated networking of these computers within the departments to ensure exchange of data and information as departments eventually required connecting each other through compose networks with the advance of networking technology all the smaller network called the internet. It is no need to mention here the interaction of internet have totally revolutionized the academic scenario and the academicians who earlier were fringing it very difficult to obtain information about their topics of interest now are encountered as ironical situation of selecting the right information from the deluge of information.

In India the introduction of National Information Center (NICNET) in 1977 can rightly be termed as the first major attempt towards networking at the national level afterwards. Various networks in different spheres like railways, finance etc. emerged and has shown a significant bearing on the quality of public service in the country. So far as academics is concerned. Education and Research Network

(ERNET) India has made a significant contribution towards networking between educational institutions in the country. Particularly by bringing internet and establishing nationwide network to connect academic institutions across the country. ERNET India has mixture backbone of terrestrial and satellite based wide Area Networks and it has 14 pops (points of presence) at the education and research institution spread across the country.

Now access of information and knowledge in electronic form is constantly available, easily updated and convenient to use. The library and information landscape has transformed with the onset of the digital era and today's academic institutions' libraries have changed their roles to serve as 'Knowledge Centers' with priority on value added electronic information services.

Faculties and researchers at university worldwide gather and interpret data, advocate new ideas and extend new knowledge. This work is sometimes shared with other scholars and researchers as working papers, technical reports, and other forms of prepublication work. Although this scholarship may eventually show up in a peer-reviewed journal or book, some may not. This preprint culture is strongest in the technical and science disciplines. This literature is often difficult to find and even more difficult for librarians to collect systematically, manage and preserve. Different type of research output which is intellectually good for community is an asset for parent organization as well as scholarly community. It should be digitized and preserved in electronic format. Thus it plays a

significant role in acquiring storing maintaining and disseminating knowledge to the society.

The academic library should maintain a large collection of electronic databases, e-journals, e-books and other e-resources in support of teaching and research needs of the staff and students of the academic institution. The main benefit of the e-resources to its users is to open new vistas for teaching and research. Although to acquire and organize the electronic resources is costly as well as challenging but it will be a crucial element of the future's academic libraries. The electronic resources may be accessed in a variety of ways but the internet/world wide web has been preferred to get e-resources' easy access. These resources should be well organized and must be available on campus and the remotely resources available via the online catalogue and the library website through www for the users of the academic library.

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ROLE OF ICT IN STUDENT'S PROGRESSION :WITH SPECIAL REFERENCE TO WASHIM DISTRICT

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ABSTRACT

Internet is one of the strongest tools to impart education. ICT has a direct role to play in the education sector. The government of India has announced 2010-2020 as the decade of innovation with special focus on ICT enabled education and acquiring ICT skills for students. "Information & Communication Technology" (ICT); the three different words put together to promote information via communication with the help of technology. Education with computer literacy is very essential for development right now because in order to implement ICT, people should know its purpose and why it is being implemented. The present research paper throws light on how important is the use of ICT tools for student's progression in Washim district.

Keywords: ICT, tools, education, rural development.

Introduction:

Education is one of the strongest medium to develop the nation. ICT is one of the rapid developing technological fields in the global society. India has achieved tremendous development in the field of education. Among the developing countries India reached a significant position in the development of ICT. ICT is the fastest medium for communication from the perspective of information technology, India is most widely known for its impact on global markets in the software and services sector. The global ICT industry is fast changing as a result of emerging technologies, economic, social and business trends. It always needs professionals who are technically trained to deal with ICT tools, systems and information sources.

Currently, NAAC has also embarked on revising its Assessment and Accreditation framework which is more ICT enabled and is expected to come into effect from July, 2017.

Hypothesis:

Worldwide research has shown that, ICT can lead to improve students' learning and better teaching methods. The new government policy has some advantages and disadvantages. As far as Washim district is concerned, most of the colleges are located

in the rural area. So, the benefits and barriers or advantages and disadvantages of this policy are hypothesized in this paper while dealing with colleges and students in rural area.

Methodology: A questionnaire method is used to find out the role of ICT in college going student's progression. This systematic, theoretical method is applied for the particular analysis of a problem. Data has been collected from college teachers from Washim district. It helps to collect reliable data with its standardized results. The main aim of this study is to find out the real scope of ICT education for rural area students.

Objectives: The main function or the objective of this method is to collect data from the respondents, who are generally scattered colleges in the rural area. This paper gives ideas of the exact position of ICT tools and its use in the mostly rural populated area of Washim district. It aims to find out if ICT tools should be implemented to all colleges then it surely can attract student's attention. And ICT tools help to make subject easy to understand. In short, ICT tools are helpful for student's progression.

What is ICT?

"ICT is technology that supports activities involving information".

"The scientific, technological and engineering

disciplines and the management techniques used in information handling... and associated social, economic and cultural matter". (British Computer Society)

"Information Technology is an organization's collection of information resources, their users, and the management that oversees them; includes the IT infrastructure and all other information systems in the organization". (Turban et al)

"ICT is short for Information and Communication Technology; it is the study or business of developing and using technology to process information and aid communications". (webopedia.com)

Interpretation of Data :

Worldwide research has shown that ICT can lead to improve student's learning and better teaching methods. The data of Washim district collected by questionnaire method is interpreted in the following paragraph.

It is shown that most of the colleges have internet facility for teachers and students. Many of the teachers have computers at home and they use it on most days. The role of teacher is vital. The important aspect is involvement and interest of teachers. But, it is found that most of the teachers haven't received ICT training. Yet, they can handle some ICT tools. They use it for personal use, college administration, finding information on the internet and developing teaching resources. Percentage of using ICT tools for teaching purposes cannot found in a vast range. Its use while completing curriculum is helpful but there are problems of resources.

In the rural area like this, English is a burden over students. Therefore, for some students and teachers, it is difficult to handle ICT tools. But everywhere, there is a satisfactory result over its impact on students. And most of the teachers are agreed with its importance over student's progression.

Results:

In result, I found certain advantages and disadvantages of ICT. They are as follows.

Advantages:

- 1) ICT tools are very effective and attract student's attention.
- 2) Students can easily understand the topic more effectively.
- 3) ICT tools are helpful for enhancing and understanding the concerned subject.
- 4) Teachers are able to create interactive classes and make the lessons more enjoyable, which could improve student's attendance and concentration.
- 5) Teachers can easily explain complex instructions and ensure student's comprehension.
- 6) Images can easily be used.
- 7) Students feel friendly with using softwares and hardwares.
- 8) It helps for record keeping, research work, institutional uses, presentations, examination results, communication, teaching-learning activities, ppt etc.

Disadvantages:

- 1) Setting up the devices can be very troublesome.
- 2) Too expensive to afford.
- 3) Hard for teachers to use with a lack of experience using ICT tools.
- 4) Institutions are located in rural area.
- 5) No proper infrastructure.
- 6) Teachers have to give extra time and sometimes without any extra payment.
- 7) Educational softwares are mostly in English language.
- 8) There is a lack of computers and related resources.
- 9) There is much more like; language problem, electricity, financial problems, lack of trained

teachers, lack of knowledge and skills, teachers is burdened with multiple tasks, etc.

Suggestions:

Today, ICT has made it possible to cover a large distance in very small time. It has broken all bonds of cost, distance and time. As far as rural area is concerned, there should be complete setup in every department with broadband facility. Standard teaching material should be developed. Every classroom should be equipped with projectors and LCD sources. There should have specialized short term training courses for teachers. Students are friendlier with mobile apps, so, such apps should be used to serve the students in enriching, enlightening the students and thus equipping them with the necessary knowledge for building successful careers. Students should be made aware of the affective use of these powerful devices. There should have more ICT related grants from UGC and Universities. Government should provide electricity according to the institutions timings.

Conclusion:

The national policy of ICT for education needs more attention in rural area. It is a great opportunity to

rural area students to improve their educational, employment and knowledge on world technological developments. They have the real chance to get employment related education through computer technologies. Online learning activities facilitate more effective education and offer significant benefits over traditional methods. There is a lot talent available in rural area, the only thing they need is facilities. India is developing as a knowledge economy and it cannot function without the support of ICT.

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THE ROLE OF I.C.T IN LEARNING AND TEACHING

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ABSTRACT

Information Communication Technologies are the power that has changed many aspects of the lives. The impact of the ICT on each sector of the life across the past two-three decades has been enormous. The way these fields act today is different as compare to their pasts. Across the past twenty years the use of ICT has basically changed all forms of endeavour within business governance and off-course education !

As world is moving rapidly towards digital information the role of ICTs is education becoming more and more important and this importance will continue to grow and develop in 21 century. This paper highlights various impacts of ICT on contemporary higher education and also discusses potential future developments. The paper argues the role of ICT in transforming teacher-centered learning to competency based learning. It also explores some challenges in higher education like cognitive tutors, need for developing a model, collaborative authoring etc.

Introduction

To accurately understand the importance of ICT in Education there is need to actually understand the meaning of ICT. ICTs stand for *information and communication technologies* and are defined, for the purposes of this primer, as a —diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information. ICT permeates the business environment, it underpins the success of modern corporations, and it provides governments with an efficient infrastructure. At the same time, ICT adds value to the processes of learning, and in the organization and management of learning institutions. The Internet is a driving force for much development and innovation in both developed and developing countries. Countries must be able to benefit from technological developments. To be able to do so, a cadre of professionals has to be educated with sound ICT backgrounds, independent of specific computer platforms or software environments. Technological developments lead to changes in work and changes in the organization of work, and required competencies are therefore changing. Gaining in importance are the following competencies:

critical thinking, generalist (broad) competencies, ICT competencies enabling expert work,

What is ICT?

ICT is an acronym that stands for “Information Communication Technologies”. Information and communication technologies are an umbrella term that includes all technologies for the manipulation and communication of information. ICT considers all the uses of digital technology that already exists to help individuals, business and organization. It is difficult to define ICT because it is difficult to keep up the changes they happen so fast.

ICT is concern with the storage, retrieval, manipulation, transmission or receipt of digital data. The definition taken from the guidance in the QCA schemes of work for ICT is

“ICTs are the computing and communication facilities and features that variously support teaching, learning and a range of activities in education.”

The followings are the aim and objectives of ICT implementation in education:

- 1) To implement the principle of life-long learning / education.

- 2) To increase a variety of educational services and medium / method.
- 3) To promote equal opportunities to obtain education and information.
- 4) To develop a system of collecting and disseminating educational information.
- 5) To promote technology literacy of all citizens, especially for students.
- 6) To develop distance education with national contents.
- 7) To promote the culture of learning at school (development of learning skills, expansion of optional education, open source of education, etc.)
- 8) To promote the culture of learning at school (development of learning skills, expansion of optional education, open source of education, etc.)\

Role of ICT in Higher Education:

1. To increase variety of educational services & medium
2. To promote equal opportunities to obtain education & information.
3. To develop a system of collecting & disseminating educational information.

Change In The Way of Learning:

We discussed ICTs are cause to make a move from a teacher centered learning to competency based learning. Universities are also responsible to make supporting changes in the way students are learning.

Traditional way of learning is based on Transmissive modes. Use of ICT in education also affects the way students learning. The following points are particular forms of learning.

a. Students Centered Learning:

With the help of technologies it is possible to promote transformation of education from teacher

centered inst. To students centered inst. e.g. 1) Increased use of web as a source. 2) Internet users can select the experts from whom they will learn. 3) Process will become problem – based learning. 4) The proliferation of capability, competency and outcomes oriented curricula.

ICTs in education acts as a change agent. It supports independent learning. Students become immersed in the learning process by using ICT.

b. Supporting Knowledge Construction:

The emergence of ICTs as a learning technology unknowingly insists to think on alternative theories for learning.

The conventional teaching process has focused on teachers planning and leading students through a series of instructional sequences to achieve desired outcome. This way of teaching follows the planned transmission of knowledge though some interaction with the content as a means to consolidate the knowledge acquisition. It depends on the process of personal understanding. In this domain learning is viewed as the construction of meaning rather than memorization of facts. Use of ICTs provide many opportunities through their provision and support for resource based, student centered learning. It acts to support various aspects of knowledge construction and as more and more stud. Employ ICTs in their learning process, the more pronounced impact of this will become.

*** The Impact of ICT on place ‘When’ & ‘Where’ to learn:**

In the past, there was no or little choice for students in terms of method & manner in which

programs have been delivered. Students typically being forced to accept what has been delivered. ICT applications provide many options & choices in the same case.

a. Any place learning:

The use of ICT has extended the scope of offering programs at a distance. The off-campus delivery was

an option for students who were unable to attend the campuses. Today, many students are able to make this choice through technology – facilitated learning settings. e.g.

1. In many instances traditional classroom learning has given way to learning in work-based settings with students able to access courses and programs from their workplace. The advantages of education and training at the point of need relate not only to convenience but include cost savings associated with travel and time away from work, and also situation and application of the learning activities within relevant and meaningful contexts
2. The communications capabilities of modern technologies provide opportunities for many learners to enroll in courses offered by external institutions rather than those situated locally. These opportunities provide such advantages as extended course offerings and eclectic class cohorts comprised of students of differing backgrounds, cultures and perspectives.
3. The freedoms of choice provided by programs that can be accessed at any place are also supporting the delivery of programs with units and courses from a variety of institutions. There are now countless ways for students completing undergraduate degrees for example, to study units for a single degree, through a number of different institutions, an activity that provides considerable diversity and choice for students in the programs they complete.

b. any time learning:

In case of geographical flexibility, technology, facilitated educational programs also remove the temporal constraints. It is the good opportunity for stud. To undertake education anywhere, anytime & any place.

1. Through online technologies learning has become an activity that is no longer set within programmed schedules and slots. Learners are free to participate in learning activities when time permits and these freedoms have greatly increased the opportunities for many students to participate in formal programs.
2. The wide variety of technologies that support learning are able to provide asynchronous supports for learning so that the need for real-time participation can be avoided while the advantages of communication and collaboration with other learners is retained.
3. As well as learning at anytime, teachers are also finding the capabilities of teaching at any time to be opportunistic and able to be used to advantage. Mobile technologies and seamless communications technologies support 24x7 teaching and learning. Choosing how much time will be used within the 24x7 envelope and what periods of time are challenges that will face the educators of the future

CONCLUSION:

The role of ICTs in the education is recurring and unavoidable. Rapid changes in the technologies are indicating that the role of ICT in future will grow tremendously in the education.

1. By observing current activities and practices in the education, we can say the development of ICTs within education has strongly affected on
 - a. What is learned?
 - b. How it is learned?
 - c. When & where learning takes place
 - d. Who is learning and who is teaching.
2. ICT also focuses modification of the role of teachers. In addition to classroom teaching, they will have other skills and responsibilities. Teachers will act as virtual guides for students who use electronic media.
3. Ultimately, the use of ICT will enhance the

learning experiences of students. Also it helps them to think independently and communicate creatively. It also helps students for building successful careers and lives, in an increasingly technological world.

Therefore this paper is an attempt to present the important issues that must be addressed by both pre-service teacher's education and in-service teacher professional development programs if schools and other educational institutions are to fully exploit the potential of computers and the Internet as educational tools. In terms of using internet and other ICT as a resource for lesson preparation, most of the teachers interviewed, admitted to never or rarely using it, while very few used the internet to gather information sporadically or regularly. The teachers particularly felt that they had both access and training inadequacy and hence were unable to utilize internet and other facilities. More teachers were comfortable however, with using computers as an individual than as a teacher. A positive find is that all those teachers who are not well versed with the computer and other technology, expressed keen interest in undergoing training for the same. They felt that if trained, they would be in a position to make use of resources available in the school.



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IMPORTANCE OF ICT IN TEACHING, LEARNING AND EVALUATION

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ABSTRACT

ICT stands for Information and Communication Technologies. ICT which is now broadly used in the educational world. Teacher, Student, administrator and every person related to education are using ICT on a tremendous scale. The teacher uses ICT for making teaching learning process painless and motivating. A proficient teacher has numerous skills and techniques for providing successful teaching. So development and increase of skills and competencies of teacher required knowledge of ICT. In the current era, education demands more cognizance of a teacher about ICT and skills to use ICT in the teaching – learning process. Continuous and Comprehensive Evaluation (CCE) helps students as well as teachers to bring into play more technology for making teaching -learning more gorgeous for the betterment of our upcoming generation. Teachers must know the usage of ICT in their subject areas to help the learners for learning more efficiently. So, the knowledge of ICT is very much essential for the teachers. This paper analyzed about the essentialness of ICT in teaching, learning and evaluation.

Keywords: Teaching, Learning, Evaluation, ICT, Student, Teacher.

The process of teaching-learning has become more student centric and its aim is to produce skilled workforce. The traditional approaches and methods of teaching-learning have witnessed a reformative transformation and its place is occupied by ICT tools such as online smart-boards, projectors, laptops, android systems, PCs, online lectures, tablets, cellular phones, e-readers, web resources and many other software and hardware devices. The use of ICT tools and resources is highly increased in recent years, even the central focus is to promote such learning by reaching at every nook and corner of the country. To implement this type of teaching-learning programme, highly qualified and well qualified man power is required.

Today's age is the age of information and technology (IT). Every aspects of life are interrelated to science and technology. The massive flow of information is emerging in all fields throughout the world. Now information and technology is extensively using in educational field for making teaching -learning process flourishing and attractive for students and teacher both. Teaching any topic with the help of ICT is very helpful to the teacher as well as students. A teacher can use as many resources as he/she has available at hand. This creates curiosity among

students and causes to change their habits of learning. Students can get a complete understanding of any topic if they are taught the same with the help of ICT. It increases the level of confidence of students and their learning can be tested at the end of class by asking some questions, distributing handouts for the homework or they can be said to prepare a seminar or short presentation on the topic.

Today, education has transformed into thorough process covering all parts of life- social, political, cultural, national, etc. This is the era of information and communication technology (ICT) which made transmission and spread of information most trustworthy and easiest. The Indian education system is attempting to impart the overall development of individual and society and enabling the teaching-learning community to compete the global market with sustainable growth and development. Teaching-learning and evaluation is the base and center of our education system. The monitoring agency like National Assessment and Accreditation Committee, more popularly known as NAAC often emphasizes and signifies the process of teaching-learning and evaluation.

According to UNESCO (2002) "ICT is a scientific,

technological and engineering discipline and management technique used in handling information, its application and association with social, economic and cultural matters". Teachers are at the core of any living society. Technologies play an important role in training programme of teachers. Students accesses knowledge and information through TV, digital media, cable network, internet and social media i. e. Facebook, Twitter, Whatsapp, Linkedinn, Wechat etc. ICT is very significant for teacher in this Century. Without proper knowledge of ICT teacher cannot execute in his/her classroom and it could not be said to be a complete one.

ICT helps teachers in preparation for teaching. In order to introduce ICT to teacher different methods and strategies are applied. ICT prepares teacher for the use of their skills in the real classroom situation and also make students for their future occupation and social life. Typically, ICT is used independently from the subject matter. ICT is a medium for teaching and learning. It is a tool for teaching and learning itself, the medium through which teachers can teach and learners can learn. If the teacher is highly equipped with technology, the student will also be equipped with technology. It removes the traditional method of teaching and prepare teacher to apply modern method of teaching. ICT plays an important role in student evaluation. Nowadays, we can see the universities in India have also been adopted the system of online valuation. Even, we have to provide our personal information to the offices online with the help of email. So, we can say ICT is store house of educational institution because all educational information can safely store through ICT. ICT helps Teacher to communicate properly with their students. So ICT bridges the gap between teacher and students. ICT helps Teacher to pass information to students within a very little time. ICT helps Teacher to design educational

environment. ICT helps Teacher to identify creative child in educational institute.

ICT helps Teacher to motivate students and to grow their interest in learning. It also helps Teacher for their personal support (knowledge, attitude, skills). Teachers learn most from their own networks (learning from others) with the help of ICT.

Conclusion:

Teaching occupies an honorable position in the society. ICT helps the teacher to update the new knowledge, skills to use the new digital tools and resources. Teachers will become effective by using and acquiring the knowledge of ICT. ICT is one of the major factors for producing the brisk changes in our society. It can change the nature of education and roles of students and teacher in teaching learning process. Teachers in India now started using technology in the classroom. Laptops, LCD projectors, Desktops, EDUCOM, Smart classes, Memory sticks are becoming the common media for teacher. So we should use information and communication Technology in in the current era because only teachers can create a bright future for students.

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ROLE OF ICT IN TEACHING-LEARNING WITH SPECIAL REFERENCE TO SMT V. N. MAHILAMAHAVIDYALAYA, PUSAD: A CASE STUDY

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Introduction:

At present, in terms of number of institutions and students, India has the third largest higher education system in the world. It will not be wrong in saying that there is mushroom growth of colleges and universities in India. But when there is the issue of 'Excellence and Efficiency', we Indians are nowhere in the global map. At the same time, it is always a matter of pride for us that we have a glorious tradition of quality in higher education. In the fourth century we had a world renowned university at Nalanda where students from all over the world came there to seek knowledge. This university not only generated graduates but also brought forth responsible human beings helpful to the society. Therefore we can say it with great pride that quality concept has deep roots in our education system.

Present Scenario in Higher Education:

Since independence, India has shown tremendous growth in higher education. Today globalization of economy has led to the globalization of higher education. As the foreign universities open their centres and carry out the aggressive market, there is a great risk of losing our brilliant students who can afford to buy the education of foreign universities. Knowing this threat and demand of better quality graduates, many commissions and committees which were set up to discuss this issue, recommended the improvement of quality in higher education. Knowing the importance of quality in higher education, NAAC has been established to develop appropriate machinery for quality assessment in higher education. Among the seven criteria of the assessment, the second one- 'Teaching, Learning and Evaluation' gets maximum score at college level

assessment. Hence by maintaining quality and adopting innovative teaching and learning methods, the colleges can score well.

Role of ICT in Higher Education:

In an age of computer technology, ICT - Information and Communication Technology is becoming the crucial part of education system. This ICT enabled teaching and learning covers wide area. It includes communication devices or applications like T.V., mobile phones, World Wide Web, computer systems, satellite and so on. ICT in higher education can be used for developing course material, delivering and sharing contents and ideas, communication between the learners and the teacher. Traditional, an age old teaching method of chalk and talk can be replaced by ICT like video conferencing, power point presentations, animations, video clips, AV aids, and LCD projectors. At one click, the learners can obtain and share the world knowledge and enhance the horizon of their knowledge. This method modifies the learning ability of students and also helps the teachers to elaborate new concepts very effectively; So ICT changes the view of learning. ICT supports the learning environment to the students where the teachers become facilitators, coaches and mentors.

Along with the 'role of ICT in teaching and learning', the research paper also highlights and presents the case study of the college regarding the role of ICT in the teaching and learning process.

Ours is Women's college, established in 1989 with the motto 'Education for Women' in remote and rural areas. The college runs the faculties of Arts, commerce and Home-Science at graduation level and M.A. in Sanskrit, Home

Economics and History. Near about 60% students comes from rural and remote areas to seek education. In the short span of 27 years, the college has shown quantitative as well as qualitative progress, and the college has been reaccredited with 'B' level.

Role of ICT in 'Teaching and Learning' at College Level:

A Case Study:

Apart from the major traditional teaching method with the use of board, chalk and talk, the college has introduced ICT enabled teaching learning process in the faculties of Arts, commerce and Home Science. In the faculty of Arts, AV aids, video clips, have been used as teaching methods. In the syllabus of B.A. English literature, the drama of Bernard Shaw 'Pygmalion' and in the syllabus of B.A. III year English literature Shakespearean Roman Play 'Julius Caesar', novel of George Orwell 'Animal Farm' have been prescribed for detailed study. Apart From the textbook reading in the class, the dramatization of these plays have been presented with the AV aids and video clips. The students enjoy these presentations very effectively. Even the teachers of other subjects like Music, Home Economics use this technology for effective teaching and learning. In the faculty of Home science, 'Seminar' presentation is a part of the syllabus. So the students search the topics, get the reference on 'Net' and prepare power point presentations for their seminar especially in the subjects like 'Human Development'. Even the teachers and students of commerce faculty use ICT

and organize 'power point presentation' competitions on the current issues.

Conclusion:

Knowing the very significant role of ICT in higher education, our college has also adopted ICT in teaching and learning process. ICT methods prove very effective on both sides of learners and teachers. It ensures better 'teachers-student interaction' during the seminars or power point presentations, and also helps to develop the personality of students. It also enables the students to gain the world knowledge and accept the challenges of this globalized world. This is the remarkable of feature of ICT enabled teaching learning that the rural students are attached to the world knowledge. These ICT enabled methods give the positive results and outcome in academics and also in practical life.

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BIOINFORMATICS IN PLANT SCIENCES: AN ICT TOOL

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ABSTRACT

Bioinformatics is the study of biological data using information tools. Bioinformatics is a combination of computer, mathematics algorithm and statistics with concept in life science to solve biological problem. The main task of bioinformatics is to manage and analyses the biological data. Bioinformatics has a number of applications in animal as well as in plant biology. Hence, the present paper design to focus on information Communication and Technology role in plant sciences research considering bioinformatics.

Key: *Bioinformatics, ICT tool.*

Introduction :

Bioinformatics allows us to come to terms with the vast amount of data being generated by the genome sequencing projects. Powerful tools are needed to organize the data and to extend our ability to analyze these complex biological systems. Understandably, the development of bioinformatics has been tightly linked to international collaboration in genome sequencing projects and to the efforts of the pharmaceutical industry in its drive for drug discovery and development. Although in its infancy, bioinformatics is already well established. For example, in studies on genome regulation and structure, bioinformatics covers many topics including: databases on regulatory sequences; the regulation of gene expression; analysis and recognition of genomic sequences; gene structure prediction; modeling of transcriptional and translational control; and large scale genome analysis. From this list, we need to assess the suitability of these applications to plant science and to assess the impact of bioinformatics on crop improvement.

Observation:

The integration of bioinformatics will influence plant science and lead to crop improvements in the following areas:

- The identification of important genes through genomics, expression analysis and functional genomics. In conjunction with the design and construction of transgenic plants this will allow new target genes to be identified that will

improve quantitative and qualitative traits in commercially important crops.

- The design of agrochemicals based on an analysis of the components of signal perception and transduction pathways to select targets, and with cheminformatics, to identify potential compounds that can be used as herbicides, pesticides, or insecticides.
- The utilization of plant genetic resources to preserve genetic diversity in agricultural species. The need for taxonomic data goes far beyond the field of classical taxonomy, and a catalogue of all species, with phenotypic and genotypic attributes is required. The core taxonomic effort gives stability to the work of regulatory, management and conservation bodies.
- Efficient utilization of biological repositories of clones, cell lines, organisms and seeds. Typically, existing repositories are not linked to each other databases. The many commercial databases and repositories are also part of the bioinformatics infrastructure but operate largely outside of the present day cooperative activities. An initiative in plant genomics has emerged. This initiative emphasizes the point that the goals of the Plant Genome Initiative will only be met through appropriate investment in bioinformatics. Along these lines, the National Center for Genome Resources (NCGR) in New Mexico has established a partnership with New Mexico State University to develop a National Biotechnology Information Facility (NBIF),

with a budget of \$8.5 million over five years. The NBIF is developing a plantspecific metabolic pathways database, and is strengthening or expanding into such fields as agricultural genomics, biological interface technology, computational biology and software development. NBIF will also provide bioinformatics support to leading agricultural research institutions. Plant scientists have an opportunity to use these resources to the full, to ensure that bench work, both in the present and in the future, can be combined with bioinformatics to fully reap the rewards of the genomics revolution.

Bioinformatics Tool

1. **Biological databases** Biological databases are archives of consistent data that are stored in a uniform and efficient manner. These databases contain data from a broad spectrum of molecular biology areas. A simple database might be a single file containing many records, each of which includes the same set of information (Xiong, 2009). Databases are composed of computer hardware and software for data management.
2. **Software and tools** Software tools for bioinformatics range from simple command-line tools, to more complex graphical programs and standalone web-services available from various bioinformatics companies or public institutions. BLAST (Basic Local Alignment Sequence Tool) is one of a number of generally available programs for doing sequence alignment. It remains the fastest means by which to identify specific sequences in large datasets and enables the rapid annotation of novel sequences. Although BLAST is the standard tool for identifying sequence similarities in large datasets, there are several options for assembling sequence datasets, the choice of which depends on hardware availability, dataset size, data format, structure and the genetic structure of the organism (Edwards and Batley, 2004).

Conclusion:

The contribution of bioinformatics to the development of plant functional genomics is already very apparent, as is its potential in other areas of fundamental plant cell biology. Its role in development of related areas such as crop protection, detection of allergenicity of genetically modified crops and systematic indispensable. With the increasingly large amounts of biological data, integration with information technology has become essential. Originally started as a specialty for storage of data and as a tool kit for analyzing data, bioinformatics now encompasses many emerging areas like, evolutionary studies, protein structure-function prediction, gene expression studies etc. It may not be long before bioinformatics becomes a hypothesis driven molecular science bridging the gap between the genome and the organism, with data providing a platform for validation and new product development. The major challenge for the plant science community over the next few years is the need to extend genomics from models to crops. In particular, a priority is the integration of genomic and agronomic data, including the disease management aspects, are important to increasing the productivity of the crop per unit area. Few concerted efforts have been made to harness the large historic repositories of information relating to crop phenotypic traits available from variety trailing and the literature, to provide a functional link with the underlying genomics. Despite the pitfalls, there is no doubt that bioinformatics is a field that holds great potential for revolutionizing biological research in the coming decades.

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IMPLEMENTATION OF ICT IN TEACHING LEARNING AND EVALUATION

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Introduction

Educational scenario of world is changing every day. Formal education has now totally changed by various technology and introduction of ICT. India is a country in the stage of development. New educational policy was introduced in 1986 mainly stress on ICT & its uses in actual teaching learning methods. Though ICT is not directly beneficial or an alternative for teacher. But it helps to enhance the quality of education we can rush the limits of ICT in education. This paper looks at what contribution ICT can make in teaching learning and evaluation. Learning can be made easier and pleasant through ICT. Fields where simulation is used can make any training safer and understandable. ICT enhances the orbits of knowledge of faculties as well as beneficiaries. Resources are ample for learning. Every teacher equipped with ICT can be more resourceful.

There are several factors which infuse use of ICT in teaching learning. Researchers have identified these factors. ICT makes teaching learning effective which indulges self efficiency, computer motivation, computer attitudes and resource sharing. Implementation of ICT in higher education strongly depends on teachers support and attitude. Their positive attitudes help to adopt ICT in teaching learning process.

Integration of technology mainly depends on teachers. In present scenario every teacher of higher education at institution must be computer literate and experienced teachers equipped with ICT can become immensely useful for propagation of knowledge.

ICT computer is designed to handle wide range of computer application for various purpose. Most of

senior faculties sometime are reluctant about use of ICT. They still believe in books but there should be comprehensive outlook regarding knowledge sharing and propagation.

ICT makes teaching exercise pleasant. Using ICT classroom creates interest in both students and teacher. It makes teaching a pleasant experience.

“Books and printed material are second important technology used in educational intuition. The fact that great books are a source of great inspiration to many needs no emphasis. Both in the institutions of formal education and distance education, the printed material is very powerful instructional medium and likely remain as the core medium of higher education for some time to come in spite of emergence & electronic media. Printed materials have certain advantages over other technologies. They are relatively cheap to produce and the skill required to use them is possessed by a majority of adult students. Further they provide flexibility to the students and they are portable and can be used again & again. Though it is true but one cannot rely on printed material.” (Sing R.P)

Avenues of knowledge have now become broad. Everything has totally changed now encyclopedias are less touched printed material with emergence of Google. Now information seeking with less possible time has much importance. In last few decades new subjects have to be added to curricula. One of the most essential aspects of ICT in teaching learning is multitasking. Multitasking puts high demands on teachers. Our teachers must be expert in multitasking. Changed methods of teaching and ICT based curriculum expect much more than basic teaching ability. Knowledge management expects teacher to handle various search engine, data base, graphics, simulation every concept can be visualize

properly with the use of ICT. Videos presentation, mock test, sharing of resources can make learning a complete experience having every new development in particular topic.

As a part of new development in education ICT can be used in skill development more efficiently. Educational scenario must be changed according to the need of the hour. Those who really on secured job by taking formal education are now looking forward toward vocational & skill based education. We need skilled candidate who will be beneficial for industry and to develop them as enterpruner. Minimum theory and maximum practical can develop student into confident aspiring future businessmen.

“The growing lag in technological adaptation between developed countries, the international transferability of skills acquired in developing countries educational system is approximating a limit. Statistical evidence on international migration of skilled personal from developing to developed countries since mid 1970s would bear tertiary to

such trend. As a result the developing countries can no longer hope, let alone plan to support their figure education structure simply by migration management.”(Shah S.Y)

Conclusion

ICT based education allows better interaction between students and teachers. If applied with systematic planning ICT can be Powerful means of imparting the quality education. We can have miraculous result if we accept and adopt ICT with total commitment and devotion. Changes and innovations are inevitable because if we want to match the pace with global education we must adopt ICT in our higher education system.

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ICT:-NOVEL HELP FOR BIOLOGIST TO MAKE STUDY EASIER.

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ABSTRACT

Quality and quantity of biological research in the life sciences is improving at a rapid rate. It is generating vast amounts of data on exceedingly complex regulatory systems. To manage and process this complex data, information technology and computer science play a role in today's biological research.

Keywords : Computer, information technology, Biology, DNA barcoding, database.

Introduction

Quality and quantity of biological research in the life sciences is improving at a rapid rate. It is generating vast amounts of data on exceedingly complex regulatory systems. Increasingly, more computational sciences and engineering methodologies and techniques are involved in life sciences research. Current research in life science would be almost impossible without the tools of information technology. New hardware and software are simplifying the tasks of collecting, archiving, and analyzing the complex data generated through experiments and permit investigators to make reliable comparisons among information stored in widely different formats. This paper highlights some of the uses of information and computer technology in life science.

Barcode of life

Traditionally, morphology was a key factor in describing and naming species within the field of taxonomy. This morphological approach can be very tedious and a matter of subjectivity. To solve these problems, ICT comes to the rescue of taxonomists. Through the applications of molecular biology techniques, new concepts of species are evolving. Conserved genes are used to find out the specific position of organism in taxonomy. Hebert *et al*, (2003) focused this discussion by proposing that a DNA barcoding system for animal life could be based upon sequence diversity in cytochrome c oxidase subunit I (COI) (Hebert *et al* 2003).

International consortium is set up for helping in species identification as The Consortium for the Barcode of Life (CBOL). It is devoted to developing DNA barcoding as a global standard for the identification of biological species.

The National Center for Biotechnology Information (NCBI)

The National Center for Biotechnology Information helps science and health by providing access to biomedical and genomic information. It is a large repository of literature, health, genes, proteins etc. NCBI also contains tools such as BLAST for the comparison of nucleotide or amino acid sequences so as to determine homology between said sequences. Being a repository, it also acts as a large database for nucleotide and amino acid sequences.

Phylogenetic relationship

Evolutionary history of any organisms or biomolecule plays a key role in understanding its various aspects such as its role in ecology or for biomolecule its role in vivo. Information and computer technology is also helping life science in determination of this phylogenetic relationship. For example, *Phylogeny.fr* is a free, simple to use web service dedicated to reconstructing and analysing phylogenetic relationships between molecular sequences. Data sets such as Daphne (Durka and Michalski 2012) are available in public domain to determine phylogenetic relationship between plants or animals.

Status of plants or animals

During current sixth mass extinction, it is paramount importance to conserve biodiversity. Plant invasions are considered one of the largest causes of biodiversity loss after habitat destruction alongside other changes in the global environment (Vitousek *et al.* 1997). Additionally, climate change has enabled non-indigenous species to expand into new regions where they previously could not survive (Walther *et al.* 2009). Information and computer technology is finding its application in dynamics of biodiversity. Various online data bases such as BioFlor (<http://www2.ufz.de/biolflor/index.jsp>;) and the Delivering Alien Invasive Species Inventories for Europe project (<http://www.europe-aliens.org/>;) are available in public domain which has complete information of vascular plant regarding their status, distribution and origin.

Conclusion

In today's world due to vast number, researcher activities huge data is being generated in the field of life science, and information and computer technology is becoming indispensable tool in biological research.

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REVIEW OF IMPACT OF ICT IN SOCIO-ECONOMIC SECTORS

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ABSTRACT

This paper explores the discussions on impacts of ICT for development. A number of impact areas are identified and their relationships explored in the context of their place in the social, economic and environmental. However, research has tended to focus on positive rather than negative impacts.

1. Introduction

ICT is a generic term referring to technologies which are being used for collecting, storing, editing and passing on information in various forms. ICT as an 'assisting tool'. ICT is used as a tool, for example while making assignments, collecting data and documentation, communicating and conducting research. Typically, ICT is used independently from the subject matter. ICT as a medium for teaching and learning. This refers to ICT as a tool for teaching and learning itself, the medium through which teachers can teach and learners can learn. It appears in many different forms, such as drill and practice exercises, in simulations and educational networks. ICT as a tool for organization and management in schools.

The Information Communication Technology (ICT) is considered the driving force behind the long unprecedented economic growth period of the last decade. It provided the infrastructure for economic development, helped create the knowledge society, contributed to innovation and created value for the economy. ICT includes a number of impact areas, covering the economic, social and environmental realms. The areas covered are the impact of ICT on economic performance, employment, innovation, privacy and security, education, health, citizen participation, individuals and communities, and the environment. The usual objective of an ICT impact analysis is to examine the relationship between *ICT and productivity, economic growth or employment*. Productivity measures relate a measure of output (gross output or value added) to one or more inputs. Economic growth is usually defined

in terms of change in gross domestic product. Employment refers to jobs generated through the direct and indirect impacts of ICT. ICT is changing quickly, shortening its life cycle and speeding up its obsolescence. Innovation has become the battle cry for many countries looking for job creation and better living conditions. Research is needed to use existing knowledge and to create new knowledge. It is the means for maintaining intellectual leadership. Knowledge management is the solution for sustaining a competitive edge in a knowledge economy. Higher education plays a major role in all these processes by preparing and providing the required human capacity through education, creating and disseminating knowledge to society, and directly contributing to economic development. Even though ICT being a key enabler into almost all sectors of our society, ICT research and innovation programs are today still to a large extent not integrated as part of cross sector programs and there is a need for increased interaction between developer and user of technology.

ICT & Economic Growth

This section discusses the impact of ICT on economic growth and productivity at the macro, sectoral and firm level. Effects on poverty alleviation are also considered, although the concept of poverty extends beyond the economic dimension. Following most studies on the economic impact of ICT, the paper distinguishes economic impacts arising from an ICT sector and from ICT diffusion throughout the economy. Increase in the size and productivity of the ICT sector, and associated effects such as growth in industries that provide inputs to

ICT production; The contribution of ICT services industries to aggregate labor productivity growth was typically less than for ICT manufacturing in the same periods.

ICT & Research

ICT provides the infrastructure (computers, broadband, wireless, etc), data collection and storage, processing, computing power, visualization, simulations. It helps convert data into useful information then business knowledge, presumably profitable knowledge. It helps reap collective wisdom through community collaborations such as Open Sources and community software, wikis, and blogs to enhance quantity, quality, and thoroughness. However, the collaboration needs to be structured and have well-defined orientation to be effective. It helps accelerate research and innovation with Open Sources and Open Standards.

ICT & Employment

ICT has roles in the creation of employment and self-employment opportunities. In economies increasingly dependent on ICT, individuals will benefit by having requisite ICT skills, thereby enhancing their opportunities for employment. Arguably, ICT can also lead to loss of employment as tasks are automated. In respect of the ICT sector in low income countries, telecommunications services might offer the greatest opportunities for employment creation. Only a small number of developing countries have a well-developed ICT sector. For those that do, ICT manufacturing can be significant in employment terms, sometimes involving the poor.

ICT & Innovation

Innovation is a broad concept, defined by the implementation of a new or significantly improved product i.e. good or service, or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations." Innovation can occur in all sectors of the economy, including government and higher education, and includes all forms of research and experimental development

as defined by the There are several relationships between innovation and ICT. We saw above that a key determinant of business and macro-level productivity is innovation, especially organizational change. More broadly, there is clearly a strong impact of innovation, especially R&D, on the development of ICT goods and services. ICT can be expected to have a strong impact on R&D activities in all sectors, as a general purpose technology, although there seem to be few studies in this area.

ICT with Privacy and Security

There are a number of adverse impacts of ICT on the privacy and security of individuals and organizations. They include commercial losses from denial of service attacks, data loss through theft or corruption, and disclosure of confidential data.

ICT & Education

ICT may deliver significant educational benefits by providing tools for the teaching and learning process and by providing the skills needed in a society that is increasingly reliant on ICT. ICTs motivate both teachers and students. There appears to be some consensus that both teachers and students feel ICT use greatly contributes to student motivation for and engagement in learning. Access to ICTs outside of school affects learner confidence and behavior. Students that use ICTs at home, and for personal use, also use them in school more frequently and with more confidence than students who have no home access. The location of ICTs has an impact on both effectiveness and engagement.

ICT & Health

The World Health Organization (WHO) has a broad scope for e-Health, means the use of information and communications technologies (ICT) for health." and stating that "e-health works to improve health by enhancing patient services and health systems." According to ITU, e-health ICT applications include electronic health records, telemedicine, m-health, decision support systems, e-learning and e-journals. The use of ICT as enabling complex and networked medical equipment and mentions that from an individual's point of view, the Internet can

be a useful source of information about health. There is no doubt that ICT can also have negative effects on health, for instance, occupational overuse injuries associated with computer use. Recycling of e-waste is a particular problem for some developing countries; with adverse health impacts.

ICT in citizen participation and communities

The e-participation can change the dynamics between government and citizens. There are both negative and positive social impacts of ICT use for individuals and communities. On the negative side, there is increasing concern about the impact on children of Internet use, for example, exposure to undesirable content and overuse of Internet applications such as online games; use of the Internet to disseminate images of pornography and violence against women; Internet-based crime; copyright infringement; and security and privacy concerns. Positive impacts are potentially numerous and include the ease and immediacy of communicating, finding information and accessing services. For minority groups and those who are socially disadvantaged.

ICT in Energy & environment

ICT can also play a vital role in energy conservation. In environment issues, the climate change has been the buzz word in recent days. Measurement of the relationship between ICT and the environment is a relatively new topic. High-performance Computing has been the driving force behind oil exploration and reservoir simulations. A report of the US Department of Energy on History of Innovation in Oil and Gas Industry affirmed that advanced technology such as high speed computer, remote sensing and imaging, geologic interpretation and visualization technology have helped oil and gas exploration and production smarter, farther, deeper and cleaner. There are number of positive and negative links between ICT and the environment. The scope of 'environment' was limited to aspects where ICT is likely to be a strong positive or negative factor, that is, climate change, energy use and waste. Some of the impacts of ICT on

environmental outcomes can be demonstrated using scientific knowledge and other available information.

ICT in Knowledge Management

As mentioned above knowledge management is the process of managing the knowledge cycle. ICT provides a wide spectrum of tools and means to facilitate value creation. The Intellectual Capital Management system is an effective means to preserve and disseminate the experiences and memory of an enterprise. There are a number of collaborative software tools available on the market that can help mobilize collective wisdom and knowledge to improve business performance. For knowledge acquisition we have seen the popularity of the internet, Wikipedia, on-line databases, and Intellectual Capital Management system with sophisticated database system along with advanced techniques in text mining and data mining.

Summary and issues for consideration

It is observed that by changing nature of ICT, the complexity of ICT impacts, the more general difficulties of illustrating a cause-and-effect relationship between dependent and independent variables. At a business level, there is significant empirical evidence that complementary factors, such as skills and innovation, are important in determining the degree of the impact of ICT access and use. Reflecting the complexity of measuring ICT impacts, there is a variety of methodological approaches, which are not mutually exclusive. Particular approaches appear to be generally suited to measurement of a particular type of impact. In terms of poverty alleviation, there is case study and some macro-level evidence that ICT may contribute.

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THE ROLE OF ICT IN TEACHING, LEARNING & EVALUATION

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ABSTRACT

Knowledge and information increasingly determine new patterns of national development and wealth creation. The use of computers and the WWW is essential for the further progress of education. Education for new emerging societies requires ICTs to facilitate large-scale learning needs for social and economic development. For the first time in history, information and scientific knowledge are not simply means of improving society only, but main products of the economy. ICTs and information society are concerned with the creation, acquisition, sharing, dissemination, delivery, support and recognition of knowledge. ICTs are the means for providing an access to and engaging in the continuous learning that becomes necessary for successful participation in the society development of all social groups of population.

INTRODUCTION

The Scientific and technical progress and the global spread of technologies developed in the most advanced countries of the world constitute one of the main arguments in favors of the leading role of education in the 21st century. The level of technological development is indicative nowadays not only of the economic power and living standards of a particular country, but also of the place and role of this country in the global community, and the scope and prospects of its economic and political integration with the rest of the world. At the same time, the level of development and utilization of modern technologies in different countries is determined not only by their material resources, but, to a large extent, by the degree of society's ability to produce, absorb and apply new knowledge. These achievements, in turn, are tightly linked with the level of education. These processes are largely driven by information and communication technologies, where scientific knowledge and information increasingly determine new patterns of growth and creation of wealth and present possibilities to reduce poverty more effectively.

Unavoidable facts in the modern education

There are some unavoidable facts in the modern education, which are as follows

First, the ICT has been developing very rapidly nowadays. Therefore, in order to balance it, the whole educational system should be reformed and ICT should be integrated into educational activities.

Second, the influence of ICT, especially internet (open source tool) cannot be ignored in our student's lives. So, the learning activities should be reoriented and reformulated, from the manual source centered to the open source ones. In this case the widely use of internet access has been an unavoidable policy that should be anticipated by schools authorities.

Third, the presence of multimedia games and online games by internet has been another serious problem that should be wisely handled by the educational institutions. The students cannot be exterminated from this case. They can have and do with it wherever and whenever they want. Schools, as a matter of fact, do not have enough power and time to prevent or stop it after school times. Meanwhile, most parents do not have enough times to accompany and control their children. So, the students have large opportunities to do with multimedia games or online games or browsing the negative and porn sites. Having been addicted, the students will have too little time to study, and even do not want to attend classes.

Fourth, the implementation of ICT in education has not been a priority trend of educational reform and the state paid little attention to it. Therefore, there should be an active participation, initiative and good will of the schools and the government institutions to enhance ICT implementation at school.

Fifth, the teachers should be the main motivator and initiator of the ICT implementation at schools. The teachers should be aware of the social change in their teaching activities. They should be the agent of change from the classical method into the modern one. They must also be the part of the global change in learning and teaching modification.

Aim and Objectives of ICT implementation in education:

1. To implement the principle of life-long learning / education.
2. To increase a variety of educational services and medium / method.
3. To promote equal opportunities to obtain education and information.
4. To develop a system of collecting and disseminating educational information.
5. To promote technology literacy of all citizens, especially for students.
6. To develop distance education with national contents.
7. To promote the culture of learning at school
8. To support schools in sharing experience and information with others.

Is technology changing the role of teachers?

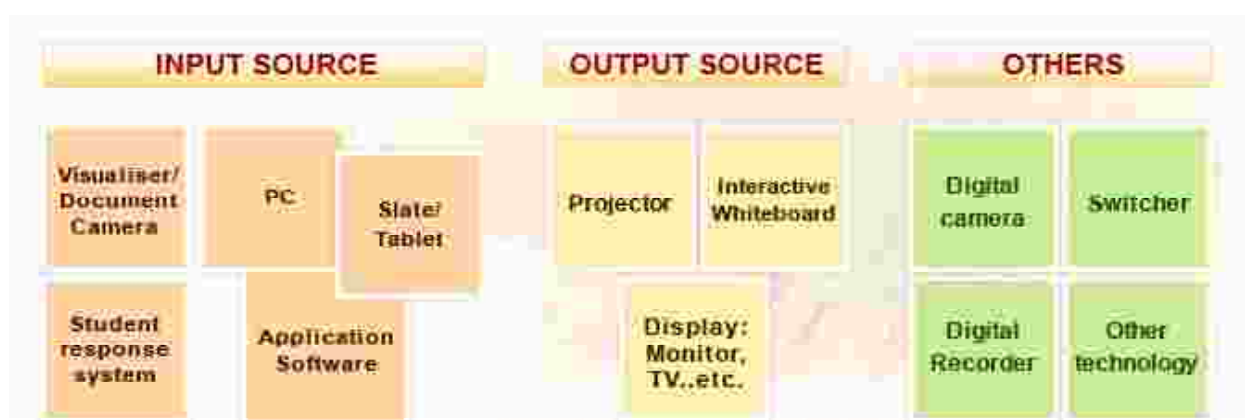
When talking about 21st century learning, there's one critical component that ties the concept together: Technology. It is technology in its many forms that is driving innovation, changing the way that students think and, as a result, changing the way that teachers teach. Digital literacy, in particular, has become one of the main priorities of 21st century education. It's a central theme of the Common Core State Standards, and a skill that many argue will be vital for students attending college and/or pursuing successful careers in the 21st century. Technology has become the norm in our nation's schools – you would be hard pressed to find districts without access to computer labs or the Internet.

Communicators

While teachers have always needed to communicate with students, the way in which they do so has evolved over the last decade. Rather than standing in front of a classroom and talking about important concepts, they are now encouraging dialogue – allowing students to question what they are learning and to think critically. This new approach to communication stimulates more direct interaction with students.

Collaborators

In addition to being good communicators, 21st century teachers must also be willing to collaborate with students in ways they haven't before. The blended learning model of instruction,



in particular, gives teachers the opportunity to work with students in small groups, giving them more one-on-one attention and encouraging them to actively engage in the learning process.

Adaptive

Like the adaptive learning programs that many school districts now use, teachers, too, must learn to adapt. 21st century education is not one-size-fits-all. In fact, having the ability to tweak curricula, change lesson plans or open up discussions depending upon the needs and interests of students can help teachers become partners in the learning process, rather than wholly separate entities.

Facilitators

One major way that teaching has changed in the 21st century is that educators have become facilitators of learning. In other words, they help students discover knowledge on their own, rather than simply imparting it. This places students in an active role and keeps them engaged and interested in a world that is rapidly changing.

Teacher usage of ICT in education

While it is important to measure the training that teachers receive to engage with ICT, training programmes do not ensure that ICTs are used in the classroom to their potential. The evidence for teacher resistance to training for and/or using ICTs can carry over to implementation in the classroom for a number of reasons including a lack of training, and a lack of institutional support mechanisms. The UNESCO-UIS Guide to Measuring Information and Communication Technologies (ICT) in Education currently explores the conceptual domain of teacher usage with four indicators: —

ED36 Proportion of primary and secondary-school teachers who teach basic computer skills (or computing) Total number of teachers who teach basic computer skills (or computing) in primary and secondary schools expressed as a percentage of all teachers.

ED37 Proportion of primary and secondary-school teachers who currently teach subject(s) using ICT facilities Total number of teachers who currently teach subject(s) using ICT facilities in primary and secondary schools expressed as a percentage of all teachers;

ED39 Ratio of learners-to-teachers of basic computer skills (or computing) Number of learners enrolled in grades where basic computer skills (or computing) are currently taught divided by the number of teachers who teach basic computer skills (or computing)

ED40 Ratio of learners-to-teachers using ICT to teach Number of learners enrolled in grades with ICT-assisted instruction divided by the number of teachers currently teaching subject(s) using ICT facilities.

However new indicators of teachers' usage of ICT in education should reflect a multitude of teaching and learning methods in an effort to relate usage patterns to impacts including learning achievement and other student outcomes. While the preceding list of indicators has been shown to be available based on data in administrative systems, new indicators demonstrating usage patterns will have to also rely on additional data sources including teacher level surveys in schools.

Expanding usage indicators using a framework of teacher competencies

One way to expand on the measurement of teachers' usage of ICT that is consistent with international policy standards for teacher training is to consider the depth and scope of the knowledge ladder, which is a set of complementary, alternative models or perspectives that together provides policymakers with an education reform trajectory in support development contained in the UNESCO ICT competency framework for teachers. Thus when looking at the usage of ICT it is important to capture the type of activities carried out by teachers with students including:

1. Lectures
2. Reading comprehension
3. Customized support to specific students
4. Search for information in books, in magazines and/ or on the Internet
5. Organizing group and collaborative work between students
6. Production of materials by students
7. Debates and presentations made by students to the whole class& etc.

Conclusion & Suggestion

The use of Information and Communication Technology (ICT) in Dutch education is lagging behind expectation and desire. Hence, the advisory 'Committee on Multimedia in Teacher Training', established by the Dutch Minister of Education, has drawn up recommendations on the design of the

learning process in the future and the role of ICT to support this process, with a focus on teacher training. The teacher training institutes are providing the teachers of the future and the committee assumes that teachers are the keyfigures in arranging learning processes. The institutes, therefore, have to anticipate new developments and prepare prospective teachers for their future role. The nature and extent to which ICT is being used in education is considered to be a result of synergy between 'top-down' and 'bottom up' processes. In the latter especially, a contribution of the teacher training institutes can be expected.

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THE ROLE OF ICT IN TEACHING, LEARNING AND EVALUATION

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ABSTRACT

ICT does not automatically add quality. There is however, growing evidence that ICT application to the core business of education can accelerate and improve learning on a number of fronts. It can also provide the means of gathering, connecting and analysing data about teaching and learning in ways that enable us to more accurately diagnose student need and evaluate programs. To apply ICT in these ways requires changed approaches by educators. This paper looks at the contribution that ICT can make to quality in teaching, learning and evaluation through improvements in cognition, pedagogies, convergence, culture, and data.

Introduction

ICT does not automatically add quality to teaching and learning. It is possible to use information and communication technologies for trivial purposes, to waste students' time with information and communication technology or even worse, to use information and communications technology for destructive or immoral purposes. We can certainly use ICT to further entrench inequalities and to favour particular groups. There is evidence in the USA, for example, that African American and Hispanic students are given more repetitive drill and practice tasks on computers and fewer sophisticated simulation applications than their white peers [Weglinsky 1998; Kreuger 2000]. There is however, growing evidence that ICT application to the core business of education can accelerate and improve learning on a number of fronts, from basic skills (Mann 1999; BECTA 2000); problem solving (Oliver and Omari 1999; Williams 1999), information management (Peabody 1996), work habits (Adnanes 1998), motivation (US Congress 1995; Allen 2000; Combs 2000; Diggs, 1997; Sherry, 2001), establishing life-long learning habits (Schollie 2001) and concepts development (Yelland 1998).

In addition, information and communication technologies are being applied to the management

of learning and to the business models of educational delivery. One recent report that evidences this trend is the USA based,

Year Four CEO Forum School Technology and Readiness Report [CEO Forum 2001]. This report links assessment and accountability with access, analysis and most importantly, alignment. These concepts will be discussed later in the paper.

Cognition

New media allow us to represent in rich and diverse ways. This is not simply a matter of learning styles although diverse learning styles can be supported by ICT. New media enable us to traverse the boundaries of art, science, language and senses. They allow us to represent and simulate experience. ICT allows us to accelerate or decelerate processes for purposes of understanding. Just as an experiment allows us to reproduce, represent or test a pattern of activity in the physical world, multimedia allows us to represent and experiment in a 'virtual' world – transferring control and concept to the learner in new ways. We can improve safety, for example, using technology (the difference between a flight simulator and learning in the air) so that the concepts are transferred, confidence is built through simulated experience and skills are developed, long before the risk has to be taken.

ICTs support us in bringing together aesthetic as well as scientific considerations, allowing us to overlay knowledge and meaning with skill and competence. We can, for example, enable students to design in ways that demonstrate perspectives difficult to create in classroom spaces, that reveal new ways of seeing; we can bring serious research more easily into creative writing or we can incorporate story treatments into science using multi-media to enrich and stimulate better learning outcomes (Williams 1999).

We can, in short, use ICTs to qualitatively improve cognition by conceptualizing more creatively, improving teachers' knowledge and by tailoring learning resources to meet the particular needs of a child at every stage of his or her education.

Pedagogies

It has been widely recognized that harnessing the power of modern technologies for learning purposes requires that appropriate learning strategies be developed that harmonize effectiveness in learning with the technology role. This recognition underpins the Ufl/National Grid for Learning relationship, and a general interest in fostering innovation in learning strategies (Kearns & Papadopoulos 2000:77).

ICTs provide many opportunities to more easily use a variety of pedagogies. As a tool, ICTs can support didactic or facilitative approaches, collaboration and interaction across time and distance, enquiry or interrogation, open or closed research, lock step or mind-map. Online technologies support and make easier constructivist approaches, just as they make behaviorist approaches easier. The capacity of ICT to deliver information or to communicate with a mass of students in quite individual ways opens up the possibility of tailoring pedagogy to the needs of a student in time and place without the limitations imposed by peer groups. This provides the opportunity for software that utilizes, for example, multiple intelligence theory.

Convergence

We are experiencing convergence on many fronts

(Wise 1999, 248), fuelled by information and communications technologies. Technologies themselves are converging. Medical technologies are converging with educational technologies (for example, the application of brain scanning to educational purposes, of chemical impact on the brain to behavior modification) online technologies are converging with offline technologies (through, for example, the use of XML), digital technologies are interacting with media, with publishing industries, with entertainment, distribution and production industries. Such convergence has profound implications for the organization, management and conception of education and educational delivery.

Inevitably, convergence is also occurring within the curriculum, across traditional subject areas, most of which were classified (and thereby conceptualized) in the eighteenth and nineteenth centuries. In the last thirty years new subjects have been added to curricula – subjects such as media studies, ecology, computing studies, creative writing, environmental studies. As useful as these subjects might be, the continual addition of areas of study to timetables and the already crowded curriculum will not serve as a useful model for the future. In the end, if we are to achieve quality outcomes for the students of the future, we must use ICTs to assist us to manage the convergence.

Responses to convergence

Multi-skilling is one response. Knowledge management, using the organizing capacity of digital technology is another. Alignment is another.

Multi-skilling seeks to layer skills over knowledge areas, constructing a matrix that brings together, at the point of an educational outcome, both subject knowledge and discipline, with other skills or competencies (such as problem-solving, information technology skill, high level literacy skill or team skills). Multi-skilling places high demands on teachers, who must themselves be multi-skilled in order to manage the multi-skilling demands of a

curriculum. Information and communication technologies play a significant part in multi-skilling because they provide enabling tools to speed processes and link knowledge.

Knowledge management brings search engines, thesauri, 'see also' and 'see' algorithms to link databases, texts, graphics, formulae and logic trees that by-pass the 'silos' of traditional subject thinking – assisting students in making connections across many areas of study and creating new domains of knowledge specifically for groups of students. Digital curriculum content can be built to capture some of this convergence. This is illustrated in the appended matrix for productions by the Sydney-based Open Training Education Network – Distance Education (OTEN-DE) of a prototype Physics Unit (Dobbs 2001).

Convergence is a significant opportunity and challenge for educators. We must meet the challenge and find ICT applications to assist us in managing convergence more effectively than we have in the past because the world itself is convergent as well as divergent; we need to educate for both.

Alignment

Alignment is an emerging concept in education facilitated by information and communication technology. Schools can only be effective in enhancing teaching, learning and helping students achieve well-defined educational objectives when the standards, objectives, teaching, curriculum, resources, technology use and assessment are all aligned. The content and methods of assessment must be aligned to measure standards and objectives. Technology provides valuable tools to align the system to promote student learning by providing a means to monitor alignment and communicate these initiatives to the public (CEO Forum 2001:13).

This records the conscious application of a business model to education. Certainly, in the past we have sought consistency in education. We have allocated resources according to priorities and we have sought

to have Math teachers ensure, for example, spelling within their subject area rather than expecting a mother-tongue language teacher to ensure mathematics words are spelled properly. The emerging notion of alignment, however, does more than this. It does more because technology now provides the tools to enable us to more precisely align, and to measure the extent and quality of that alignment.

In a recent visit to the USA, the author observed the Oklahoma VISION project, initiated by the State of Oklahoma in partnership with Intel, Dell, Microsoft and a number of content providers. At the moment teachers in Oklahoma are restricted in what they teach by the available and approved textbooks. This project seeks to return responsibility and accountability to teachers for how learning is achieved. It also brings content producers into the accountability framework.

Culture

Finally, it is important to view our use of and assumptions about ICTs through a lens of culture. The Delores Report made a couple of predictions about online content and information technology use.

It seems that the differences will be chiefly between societies that will be capable of producing the content and those that will merely receive the information without taking a real part in the exchanges (Delores 1996:65).

There is no doubt but that individuals' ability to access and process information is set to become the determining factor in their integration not only into the working environment but also into their social and cultural environment (Delores 1996:172).

This paper began by stating that ICTs do not have to be used to educationally liberating, or even moral, ends. It is fitting it conclude with a further reminder of the obvious. ICTs do not have to privilege one culture over another. Educators almost universally use the book as a tool, adapting it to the needs of particular cultures. We need also to use ICTs

universally in education, without adopting the economic and cultural assumptions that have driven its rapid globalization.

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ICT IN LIBRARY AND COST BENEFIT ANALYSIS

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Introduction :

Information and Communication Technology infrastructure is an important resource of a modern library or information centre. ICT is the electronic means of capturing, processing, storing and communicating information. The advancement of science and technology has made a tremendous improvement and changed almost all walks of life. Especially, the magnetic word Information technology has been chanted in all corners of the global arena and been incorporated in organizational, managerial, developmental and marketing sectors. The services rendered with the help of ICT are faster and more effective. Moreover, it creates faith and confidence about the products and services of an organization among its customers.

The cost-benefits analysis is one of the effective tools in the hand of management for the proper functioning, growth and development of any organization.. There are basically two types of organization i.e. some are for the earning of revenues and others are for the welfare of the society. Education fall in the second category. The cost-benefit analysis of such institution can be measured in terms of the services they render to the users. In India, the cost of providing various library services to its users and managing their resources is a very important aspects, but a very few libraries have the detail picture of their cost-benefits analysis.

Webster(1981) cited a number of sources of cost increase, due to which economic and financial pressures on most libraries have grown enormously in the last few years. He also identifies some methods of cost-benefit analysis in a library. The cost benefit analysis can now be calculated by determining the total usage of resources by all the users during a specific period of time and then

evaluating it by some standard methods of cost benefit analysis.

Definitions :

In an academic environment, the term ICT or Information Communication Technology is more commonly used. It is generally used both as singular and plural nouns. There are various definitions for ICT and a few that are relevant to this study are described here.

In the UNESCO training module for ICT, Information Communications Technologies(ICT) are described as the technologies that enable society to create, collect, consolidate, communicate, manage and process information in multimedia and various digital formats for different purposes, i.e., computing and telecommunications technologies like the personal computer, CD-ROM, cable TV, cellular phones and the Internet (David,2001).

ICT and Libraries :

Libraries which were considered only as the storehouses of knowledge, have got a new outlook in the modern Information Communication Technology era. The activities which were carried out manually in libraries with so much of pain and strain are being carried out smoothly with the help of ICT with greater effectiveness. Library organization, administration and other technical processing have become easier and more quantum of work can be done in relaxed mood. ICT, which is the basis for the MBO, generates more results at a given time.

Need and Importance :

The concept of cost-benefit analysis is now increasing day by day and applied to all the areas of the library. Besides, welfare activities libraries also

use the resources of the organization/ institution and also see the associated cost and benefits to the organization/ institutions. The concept of cost-benefits analysis has now starts taking practical shape in these days. The planning commission has already decided about the feasibility studies for the various welfare and social projects of different institution/organization.

Narayna(1991) explained the concept of cost-accounting, different types of cost etc,. He explained the model of cost-effectiveness and cost-benefits analysis. He-found certain limitation while applying cost-effectiveness and cost benefit analysis to libraries.

The cost benefit ratio are helpful for evaluated the total cost benefits of ICT, which include all economic and non-economic, internal and external benefits. According to it, an ICT giving a higher output per unit of capital employed is to be preferred over project giving a lower output. However, a broad decision on ICT acceptability on welfare grounds by looking to the different welfare aspects associated with it. The cost-benefit analysis helps determining the cost of ICT in a library by taking into account various costs i.e. NETWORK COSTS, Website development cost, user cost and miscellaneous projects costs and compare it with the benefits arises from these activities for a particular period of time. The lack of national ICT strategy and inadequate ICT skills leads to the slow rate of polices of ICT sector, which create the need of its cost analysis.

Impact of ICT :

In the tradition type of services the students have had no choice but to accept what & how learning has been imparted in the classroom. The institutions have also been traditional. ICT options have changed the perspective. Now we have many options & choices to access the knowledge. Due to ICT we can get in information anytime& anyplace.

ICT has the potency of expanding pool of teacher & reducing the cost of education. The ministry of human resource development has alreadylounched the national mission on education thought ICT at a large scale.

Tools of ICT :

- Computer
- Internet
- Digital camera
- Webcam
- Smart Card
- Scanner
- E-Book
- Printer
- Electronic Journals
- E-Mail

ICT And Cost Benefit Analysis :

The cost of ICT has been changed so much in the last decade. The custom duties for software imports were reduce 112 percent 1991 to merely 10 percent in the times. The development of the JCT in the recent years due to declaration of IT-sector is one of five National priorities. The training of the relevant staff, who are using ICT enables services for optimum utilizations of resources through innovative collaboration, which results evaluate of cost-benefit analysis of the library,

The assessment of staff and manpower related with ICT is another thing to take into consideration for the cost-benefit analysis of different types of libraries and institution by taking into account their job-description, job-specifications, job analysis,etc.

The cost-benefit analysis also necessary in these days due to greater participations of library users and key stakeholders, i.e. individual, government, Private sector, manpower, NGO's with ICT industry.

Conclusion :

In India, there is no standard pattern or procedure of cost-benefit analysis is being followed by libraries. By using ICT with a view to work out unit cost of various objects, services and functions. The cost benefit analysis of ICT in India not being done at all. Continuous increase in the cost have practically brought the growth and development of ICT to a standstill. Cost benefit analysis can be implemented both in traditional and knowledge organizations, which includes the innovations in ICT which are always looked upon with great expectation.

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THE ROLE OF ICT IN QUALITY EDUCATION

The Role Of ICT In Best Practices

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ABSTRACT

In this paper I tried to present a glimpse and nature of ICT, its importance & its mandatory need for education, which is indispensable. Education since bygone ages is a very essential part of the human reformation. It is only through education we are living in the age of virtual reality. It is only power of education that can change the mind of person. Education has changed the face of the world, but If we observed minutely then we find out education, itself has gone through many more changes. Each and every country, culture and continents has different mode of education. In our nation if we peep into the Vedic Age then we find out "Guru Kul System" of education, if take a tour of Arabian culture then we traced down "KhankaiSyetem" and in Western world we can find advance system of education. All these system tried to make their teaching and learning process more attractive and lively by available resources. They attempted to character building by various ways. But today we are breathing a very "HiTech" world. Many ages known by technology of their time therefore present age is called age of the computer, android and robot. Today all segments of human life is controlled by the advance tools and technologies. So our education system has gone through a drastic change. We are applying modern means of the technology in the education system to quench the thirst of knowledge to this techno savvy new generation.

Introduction

ICT is a generic term referring to technologies which are being used for collecting, storing, editing and passing on information in various forms (SER, 1997). A personal computer is the best known example of the use of ICT in education, but the term multimedia is also frequently used. Multimedia can be interpreted as a combination of data carriers, for example video, CD-ROM, floppy disc and Internet and software in which the possibility for an interactive approach is offered (Smeets, 1996). ICT, stands for the Information and Communication Technology. To accurately understand the importance of ICT in Education there is need to actually understand the meaning of ICT. ICTs stand for information and communication technologies and are defined, for the purposes of this primer, as a diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information. ICT permeates the

business environment, it underpins the success of modern corporations, and it provides governments with an efficient infrastructure. At the same time, ICT adds value to the processes of learning, and in the organization and management of learning institutions. The Internet is a driving force for much development and innovation in both developed and developing countries. Countries must be able to benefit from technological developments. To be able to do so, a cadre of professionals has to be educated with sound ICT backgrounds, independent of specific computer platforms or software environments.

Usage and integration of ICT

Usage and integration of ICT in the education system ICT, if appropriately used can assist in addressing the key educational challenges, e.g. eLearning and m-learning technologies and alternative delivery systems for access; rich and interactive digital content to improve quality;

assistive technologies to contribute to equity; and the inclusion of ICT skills in the curriculum and the use of ICT to support 21st century learning can increase relevance. Outside of the education and training institutions, ICT is being put to processing of examinations in the general management of the education system using Educational Management Information Systems.

The effective integration and utilization of ICT depends on the capacity of the system to perform and execute activities of planning, implementation and evaluation. Institutional capacity depends on adequate and skilled human resources, strategic leadership, financial resources, infrastructure, and programme management and on a conducive external environment. A comprehensive capacity audit of the education sector would need to be done to determine the capacity gaps and needs, but a cursory assessment revealed that although government commitment is high as evidenced by the policies and strategies, organizational structures and culture, lack of skills in critical areas, lack of strategic vision and planning, insufficient financial resources and inadequate infrastructure hamper the ability of the sector to integrate and use ICT effectively.

Information and Communication Technology (ICT) is a principal driver of economic development and social change worldwide. Nevertheless, technology alone can only be an enabler, not driver of development. Further, use of Information and Communication Technology (ICT) in developing countries is seen as an effective way to improve the population's life and well-being. In particular, ICT applications on the education system might change the future of the underdeveloped world fundamentally through the connections to 'the flat world' (Friedman 2005). However, there are some challenges which the developing world faces in its efforts to adopt ICT in the education sector. These challenges are limitations related to cost, internet access, trained staff and adequate policy. This paper discusses the use of ICTs in education in developing

countries with a focus on India. The paper highlights the use of ICTs in education, the benefits and roles of ICTs in education, Integration of ICT into classrooms is not enough to impact student learning. That said, specific applications of ICT can positively impact student knowledge, skills and attitudes, as well as teaching practices, school innovation, and community services"

Roles of ICTs in Education

ICT is increasingly becoming a more and more powerful tool for education and economic development. Unwin (2009) contends that "ICT can be a catalyst by providing tools which teachers use to improve teaching and by giving learners access to electronic media that make concepts clearer and more accessible". Thus, ICT is used for capacity development and citizen empowerment. Ultimately, ICT can enhance educational opportunities and outcomes for students, including students with intellectual disabilities (Anderson, 2009). As much as I agree with the literature it has always become a challenge to most learners as they are not able to access the computers as some schools could not afford them while others are locked up in computer labs in schools.

The main purpose of the Strategy for Information and Communication Technology Implementation in Education is to provide the prospects and trends of integrating information and communication technology (ICT) into the general educational activities. There are some unavoidable facts in the modern education; first, the ICT has been developing very rapidly nowadays. Therefore, in order to balance it, the whole educational system should be reformed and ICT should be integrated into educational activities. Second, the influence of ICT, especially internet (open source tool) cannot be ignored in our student's lives. So, the learning activities should be reoriented and reformulated, from the manual source centered to the open source ones. In this case the widely use of internet access has been an unavoidable policy that should be

anticipated by schools authorities. Third, the presence of multimedia games and online games by internet has been another serious problem that should be wisely handled by the educational institutions. The students cannot be exterminated from this case.

They can have and do with it wherever and whenever they want. Schools, as a matter of fact, do not have enough power and time to prevent or stop it after school times. Meanwhile, most parents do not have enough times to accompany and control their children. So, the students have large opportunities to do with multimedia games or online games or browsing the negative and porn sites. Having been addicted, the students will have too little time to study, and even do not want to attend classes. In such situation, education institutions play an important role to eradicate these problems. One of which is by facilitating the students to do edutainment or educational games. Schools can let their students be familiar with educational games adjusted by their teachers. Besides, they can also support and facilitate their students to have their own blogs in the internet. A lot of Weblog providers are free to the users, such as WordPress.

In their blogs, the students can create and write something, like an article, poem, news, short stories, features, or they can also express their opinion by an online forum provided in the internet. They are able to share experiences throughout their blogs to others from all over the world. I think it will be an interesting activity for them, and it will lessen their time to visit the negative or porn sites existed. By doing so, I think our young generation will get more and more information and knowledge by browsing in the internet. They can also create innovation in web design that it may be out of the formal curriculum content, but it will be useful for their future. Fourth, the implementation of ICT in education has not been a priority trend of educational reform and the state paid little attention to it. Therefore, there should be an active participation, initiative and good will of the schools

and the government institutions to enhance ICT implementation at school. Fifth, the teachers should be the main motivator and initiator of the ICT implementation at schools. The teachers should be aware of the social change in their teaching activities. They should be the agent of change from the classical method into the modern one. They must also be the part of the global change in learning and teaching modification.

The followings are the aim and objectives of ICT implementation in education: 1) To implement the principle of life-long learning / education. 2) To increase a variety of educational services and medium / method. 3) To promote equal opportunities to obtain education and information. 4) To develop a system of collecting and disseminating educational information. 5) To promote technology literacy of all citizens, especially for students. 6) To develop distance education with national contents. 7) To promote the culture of learning at school (development of learning skills, expansion of optional education, open source of education, etc.) 8) To promote the culture of learning at school (development of learning skills, expansion of optional education, open source of education, etc.)

Conclusion.

In this way we can understand the importance of ICTs in the education, nowadays it become the guiding force behind the modern education. And it is also the need of the present era to cop up with new challenges. It has a very vital and sustainable impact on the teaching and learning process, ICT has rejuvenated and revolutionised the modern education.

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USE OF ICT FOR THE INFORMATION SERVICES AND SMART ACADEMIC LIBRARIANSHIP

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ABSTRACT

ICT are the most influencing factors of today's information society. The main function of ICT is availability of right information to the user at the right time for appeasing his thrust of knowledge. Fast developing ICT are creating new opportunities and challenges for traditional librarianship, it changes the library into digital and virtual with universal approach. ICT has become the first need for the smart librarianship. Change is the only constant and should be accepted by the librarians to provide excellence services, round the clock to endless users by breaking the boundaries of libraries.

Keywords: ICT, ICT Tools, automation, networking, information services, librarianship, Academic Libraries,

1. Introduction

Change is the rule of nature, one who accepts the challenges of change, always proceeds on the road of success to spend smart life. Development in ICT has made a significant impact in all domains of human life. ICT has transferred the entire world into the global village. Today ICT is the vital component of information access, information dissemination and information communication across the globe. For the libraries, ICT is extremely changing the management of resources, housekeeping operations as well as the way services are delivered. ICT has empowered users to benefit many services without any human involvements. Today librarians have to accept the challenge of change and to serve as an information professional of the fast changing Hi-Tech society. Based on this the application of ICT in libraries become essential to provide the facilities of the user community.

2. What is Information and Communication Technology (ICT?)

Information Communication Technology is the technology required for information processing, in particular, to the use of electronic, communication devices and software applications to convert, store, protect, process, transmit, and retrieve information from any where, anytime. Information and

communications technology (ICT) refers to all the technology used to handle telecommunications, broadcast media, intelligent building management systems, audiovisual processing and transmission systems, and network-based control and monitoring functions. Although ICT is often considered an extended synonym for information technology (IT), its scope is broader. ICT has more recently been used to describe the convergence of several technologies and the use of common transmission lines carrying very diverse data and communication types and formats.

3. Application of ICT in Academic Libraries-

ICT has changed the traditional methods of library activities and services providing new dimensions for teaching, learning and research in higher educational institutions. With the help of ICT tools, it is possible to store, retrieve, disseminate and organize information by creating websites and databases. Information is now published both electronically and by print making it accessible to users according to their demands. It is important to assess.

Now a days there are several information communication technologies for various housekeeping, management and administrative functions of the library, different electronic and

digital media, computer aided electronic equipments, networks and internet has provided significant role in retrieval and dissemination of information and playing a vital role for upgrading of libraries main of them are:

- **Library Automation-** Automation is the concept of reducing the human involvement in all the library services so that, user can get the desired information with the minimum efforts. Main areas of the automation can be classified into two organization of all library i.e. databases and all housekeeping operations of the library.
- **Library Networking-** Networking means a group of Libraries and Information Centers are interconnected for common pattern for information exchange and communication to improve the efficiency.
- **Library Management-** Management includes the activities like Classification, Cataloging, Indexing, Database creation, Database Indexing, which will positively be geared up by the use of these fast ICT developments.

4. ICT Used in Libraries

- Computers
- Internet
- Library Housekeeping software
- Consortia
- CCTV
- RFID
- Institutional Repository
- Web design
- e-resources

5. Purpose of using ICT product

- E-Mail & Document exchange
- Electronic Journals & Electronic Books
- Collect Data through Internet
- Online Data Bases

- For Career Development
- Presentation & Documents
- Manuscripts Proposal & Papers
- To Update Knowledge
- Search Web OPAC
- Discussion Forums
- Blogging
- Casual Internet Surfing

6. Use of ICT in housekeeping operations of Academic Libraries-

Broadly use of Digital technology in house-keeping operations encompasses the areas of Acquisition, Cataloguing, Circulation, Serials control and Online searching of library database (OPAC).

- **Acquisition-** Database of Collection/Retro-conversion, Document Selection, Purchase Order Preparation, Accessioning, Documents Bar-coding, Invoice Processing, Reporting.
- **Cataloguing** - Database for Catalogue, Maintain Authority File, OPAC, Export/Import Cataloguing Data, Printing of Catalogue Cards, Stock Verification
- **Circulation-**Database of Users, Member Registration, Documents Circulation and User Bar coding.
- **Fine Management-** Statistics.
- **Serial Control-** Database of Serials, Serial Selection, Ordering and Renewal, Bar-coding of loose Issues, Bindery Management, Accessioning of Bound Vol's, Reporting and Online Journals.
- **OPAC** – Online searching of library database
- **Annual Stock verification**
- **Budget Management**
- **Others-** Word Processing/Printing, Classification, In-house Scanning/Digitization of Documents, Use of RFID/Similar Technology, Close Circuit TV Cameras, Budgeting Purchase or Tender Procedure and Digitized System Administration

7. ICT-Based User Services

Some library users are adopting electronic habits, making increasing use of the new ICT including computers, the Internet, the Web, Intranet, Extranet and other technologies. As a result, library users are placing new demands on their libraries. They require access to the latest information, updated information resources and access to ICT facilities that they could use in their work.

Use of ICT in libraries enhances users satisfaction. It provides numerous benefits to library users. Some of the benefits are:

- Provide speedy and easy access to information
- Provides remote access to users
- Provides round the clock access to users
- Provides access to unlimited information from different sources
- Provides information flexibility to be used by any individual according to his/her requirements
- Provides increased flexibility
- Facilitates the reformatting and combining of data from different sources
- Libraries are also providing various ICT-based services to their user, including the following
 - ✓ Provision of Web access to OPACs
 - ✓ Electronic document delivery
 - ✓ Networked information resources
 - ✓ Delivery of information to user desktops
 - ✓ Online instructions
 - ✓ Online readers advisory services

8. Impact of ICT on Libraries and Librarians

Computer has brought in a new impact to the library and information usage. In libraries, information technology has assisted library professionals to provide value added quality information service and give more remote access to the inter-nationally available information resources. Today has highly sophisticated information technology to facilitate the storage of huge amounts of data or information

in a very compact space. Information technologies promise fast retrieval of stored information and revolutionize our concept of the functions of a traditional library and a modern information center. Recently technological developments have dramatically changed the mode of library operations and services

Modern ICT is affecting various aspects of libraries and the information profession. Advancements in ICT and the wide spread use of ICT is resulting in digital information sources and digital media replacing and becoming the dominant form of information storage and retrieval. ICT also survives and makes true rules of Library Science 'every reader his/her book/information', 'Save the time of the reader', 'Library is a growing organism'. ICT with its tremendous information sources, rapid transmission speed and easy access ensures the satisfaction of the user with complex demand, break down the distance barrier and shortened the time required and ensure the right information to the right reader at the right time. It also increases and solves the library's demand of collection development. It is really an excellent tool for the Library information centers.

9. Challenges before LIS Professionals

ICT has created complex challenges for LIS professional they have to redesign their positions to meet evolving needs. Professionals have to manage the change by adopting latest ICT, thereby improving performance. They need to improve the skills and knowledge of the new technologies to provide quality library services.

10. Major problems in implementation of digital technology

- Inadequate Finance
- Lack of Planning
- Inadequate Management Support
- Lack of Digital Technology Trained Staff
- Lack of Consultancy Service for Digital technology

- Lack of Well Accepted Standard of Library Management System
 - Lack of Less Expensive Standard Software
 - Inadequate Hardware
 - Lack of Training Facility
 - Low interest for Retro-Conversion & Bar coding
 - Lack of Awareness/ Hesitation in Users towards Digital technology
 - Low Priority to Digital technology
 - Lack of control over Library Staff
 - Lack of Motivation among Library staff
 - Frequently change in Digital technology
 - Lack of searching skill
 - Lack of knowledge in computer handling
 - Lack of knowledge in browsing e-journals
 - Limited computer literacy among library users
 - Inadequate publicity for the Digital technology based resources and services
 - Rigid Digital technology use policies implemented by the library
 - Discouraging attitude of Library professionals towards their users
 - Limitations of internet access speed
 - Limitations of online full- text Journal article
 - Lack of power supply
 - Untraceable documents
 - System is not User Friendly
 - Insufficient of E-journals
 - Insufficient knowledge of consortium
 - Information is not updated
 - Insufficient of Digital technology base trained staff.
 - electronic resources and computerized tools.
 - The concerned authorities should not grant affiliations and permissions to the academic institutes until and unless they can keep the requisite library norms.
 - Information technology may be facilitated for making network among the libraries.
 - A committee consisting of Library authority, staffs and user community may be constituted to initiate joint efforts introducing computerized service in the library.
 - Availability of information technology facilities (like internet) should be considered and encouraged.
 - The management should take in the culture of manpower development programme on Digital technology regularly for workforce.
 - E-resources training/awareness programme may be organized from time to time by the concerned authority.
 - The emphasis should be given to the accessibility and subscription of electronic information resources, locally
 - relevant digitized information resources, as well as free web based information items by libraries.
 - The management committee should take steps to take help/assistance from the UGC for the successful implementation of modern technology.
 - The library management should ensure that the amount charged for the use of digital resources in the library is cheaper than others cyber cafe so as to encourage library users in using the digital technology resources within the library premises.
 - Libraries must be encouraged to renovate themselves in the modern trends.
 - Adequate funds may be provided to libraries for their development and functioning and it should be utilized properly.
 - More computer terminals or work station
- 11. Suggestions to overcome the problem**
- The government should take steps for providing library facilities with well-equipped modern technology.
 - The administration should invest more on the acquisition of computers and other new

should be created to enable users have access to the internet.

- Different library associations such as ILA, IASLIC etc have to come forward and should organize seminars, workshops etc. to create awareness among librarians about current development in technology.
- The libraries must have to develop a collection development policy for digital resources.
- There should be developing specific criteria for adding and canceling e-resources.

12. CONCLUSION

The application of ICT tools are increasing in Academic Libraries especially in Arts, Commerce & Science colleges due to the development of technologies. An increased number of users, a greater demand for library materials, an increase in amount of material being published, new electronic formats and sources, Insufficient digital technology base trained staff, Insufficient E-journals, and e-database are some of the reasons for the growing need for implementation of Digital technology in Academic libraries of India. Thus, the mandate of the academic library in India is intact, only its role has expanded and format has changed.

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THE ROLE OF ICT IN TEACHER EDUCATION

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ABSTRACT

This paper is a description of an in-service teacher training experience that used ICT to develop a project that involved teachers (nursery and primary) and also children, parents and other members of the educational community. Its aim was to build an Internet site that would give information about school life. It's an open web space where teachers, parents and students can express and share their ideals and activities. This project is still in progress and is being developed in three interconnected phases: conception, development and evaluation. The most important issue to relate is that the technical or instrumental learning is dependent on the ideas and purposes of teachers, students and parents.

We believe that when we talk about ICT in schools and also in teacher education we shouldn't only be concerned with the 'means', that is to say, how to introduce computers or how to use a word processor and Internet resources, but also with the 'ends'. Only when we question the ends do we begin to pay attention to what we do, that is, to construct a story that is worth telling " ... to tell that we are merely tools makers (and tools users) is to miss the entire narrative aim? We are world's makers and world's weavers" (Postman, 2002: 108).

Introduction

Not very long ago, about fifteen years or so ago, just talking about the use of computers and information and communication technology (ICT) in education would make many teachers feel uncomfortable. Many feared these machines would replace them, and others believed they would mechanise human thought and relationships. Today, the situation is somewhat different and, some teachers are more enthusiastic than others. The current problem isn't the introduction of ICT in schools but how and for what purpose. We all know that a great number of teacher training schools, and also some primary and secondary schools, still don't use information and communication technology. There is no need to mention some causes because we all can think of some.

The main problem is not to find answers to the 'hows' but to find reasons to justify the use of ICT. Reasons that provide a good purpose for our efforts to learn as well as to use them in our daily personal and professional lives. As we all have surely noticed, new technology, as any other technology, bring new problems while little contributing to solving the old

problems. Why? As they have appeared in answer to new economical and social needs, they demand new infrastructures, along with new ways of thinking and organising school as well as learning and training. Research has shown that ICT as an add-on to existing practices is not an effective strategy (De Corte, 1991, 1993; Jonassen, 1996; Mendelsohn, 1991, 1991a; Papert, 1980, 1993; amongst others). New technology must be placed in stimulating learning environments. There is also the need for experts, and this lead to new possibilities of representing, dealing and communicating different kinds of information. "As Salomon (1993) points out, tools are not just implements, but also serve culturally defined purposes and require a skilled operator in order to function usefully" (Jonassen, 1996: 9).

Context and initial situation

This project took place in Manique Nursery and Primary School, in the Alcabideche council of the Cascais, municipality in the Lisbon area.

Manique is a village that has maintained some of its rural features: almost everyone knows each other and most houses still have a yard and garden. In the

surrounding area, there are some apartment buildings, and more recently, welfare housing too. The resident children attend this school.

The school population is mainly of a medium to low social-economical background. Some children with learning disabilities and behaviour disorders have been integrated both in nursery and primary school and are periodically followed-up by specially trained teachers.

There is a single nursery classroom with a nursery teacher and eight classrooms in the primary school spread out in three buildings. The main building is shared by the nursery class and it is also where the cafeteria and kitchen are, along with the multimedia and teachers meeting room.

Both nursery and primary schools are state schools and, although they share the same facilities, they are independent.

Public institutions are under the aegis of the Ministry of Education but the extra curricular activities, supervision, equipment and building maintenance are the responsibility of the municipal council. In this school, the Cascais town council has provided most information technology equipment and the computer with an Internet connection was given by the Ministry of Science and Technology. We happened to find out that when we were undertaking this project, all the primary and secondary schools of this council had computers and Internet connections. As a further incentive, this ministry provides guidance and other forms of support to those who want to develop projects related with new technology. In the school and nursery where this project took place the four existing computers (one with Internet connection) are in an extra room where they were occasionally used by some teachers and never by the students.

However, long before the project began we noticed (after spending some time with them) that the teachers showed a great deal of interest in using the existing equipment, although some lacked the

knowledge and others the know-how. The enrolment of all the teachers in an ICT training course - DidaTIC - drew our attention to the importance given to ICT, although they were hesitant about using it.

This meant that although the students were the main target computer users, we had to intervene at the teachers' level in order to encourage them to use ICT.

With this in mind, we found a common way of developing a project that would promote in-training and that would activate teacher's interest around a common purpose: creating an Internet homepage.

As teachers, we recognise that professional communication among stakeholders is a main source of practical knowledge building among teachers (Sacristyñ, 1991). Continuous teacher in-training plays an important role, because teachers are mediators of the student learning process, and along with their practices, are responsible for the students' learning process and their attitude towards knowledge.

Knowing this, we designed and proposed a project framework using two tables (logframe matrix and activity schedule) to provide everyone with a useful summary of the project. The success of this project relied mostly on the solid relational ties among stakeholders, in a constant process of reinvention, constructed by all, while the leadership was taken on temporarily by someone to ensure the achievement of common goals, in a *power with* instead of a *power over* relationship.

Project development and monitoring

With teachers

Firstly, and before we started the project, it was important to set up the conditions that would ensure its success, that is to say, create an environment of confidence and collaboration, of sharing both human and material resources, involvement and knowledge.

Furthermore we had to bring together expertise for

future possible breakdowns. Therefore, through the Didatic Project, which everyone attended, we established support links with teachers from other schools and with those who were in charge of the Didatic Project. One of them made himself available to collaborate with us.

We were fortunate to benefit from the assistance of other people who though far away, were with us through the Internet and helped us to build the pages and to process the images.

We felt the need to find a way to help the team achieve the means to understand the goals of the project, that is to say, a conceptual framework to articulate and understand the process.

We took our model from the recommendations of ITAD (Information Training and Agricultural Development) for project design and created the Logframe. According to the EC (European Commission), the Logframe allows for a precise summary of the project goals, the indicators for its measurement and the main risks or problems that can prevent the attainment of the said goals.

In this model (Project Cycle Management - Logical Framework Approach), an instrument of project design and measurement, the Logframe is a frame with four columns and four rows (in its simplest form). Vertically, it identifies the aims of the project, clarifies the causal relations and specifies possibilities and uncertainties outside the scope of the project. Horizontally, it measures the effects and resources specifying the units and the means to verify them (table 1, in the end of the paper).

Final remarks

This experience shows that it is possible with computers and Internet to develop a wide range of training activities for teachers. Moreover, this example reveals (as well as other we took part in and another's which are under development elsewhere) common features.

In the first place they highlight the importance of interaction as a means of training and knowledge

(interaction between teachers and students, between students, between them and computers and between teachers and students on the one hand, as well as external partners).

Secondly, the main role of information search, critical analyses and the production of new information made available on the Web.

Thirdly, it breaks down the barriers between the school environment and the outside, not only because sites are open to community on the whole but also because they enable diversified changes.

Fourthly, teacher training can take place at anytime because it's not constrained to individual or group class work.

Lastly, the training activity is organised around projects that are built and shared by everyone without being limited to any technical aspect.

We think this is not merely a question of personal style but of a concept of education that tries to reconcile the possibilities offered by ICT with a student-oriented pedagogy, encompassing exploratory activities, as well as in information data search and processing in projects. We know that ICT is used differently, for instance, to convey the same old curriculum with the very same pedagogic models, but using the Internet resources (like most e-learning courses that are now available).

The problem can't be focused on ICT but on their pedagogic framework (a pedagogy that enhances student-oriented, learning and critical capacities).

But along with the use of technology in school comes the need to provide youngsters and teachers with a true technological education. And as Postman puts it this will only be when they have been taught the history of the different technologies (pictorial ornamentation, alphabet, the typographic press, books, newspapers and magazines ... of computers) and of their creators, their economical, social and psychological effects and even how they have rebuilt the world and still do. They should also be taught how to read, interpret and differentiate the

different kinds of symbols of the information delivered. For instance, how do images and words differ from each other? A painting from a photo? The spoken word from a written text? Television from books?

For all this, with the technical and pedagogical learning of ICT we would need to create a technological subject to analyse how technologies invented by men “create new worlds for the best and for the worst” (Postman, 2002:219)

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ICT AS AN AID IN TEACHING ENGLISH LITERATURE

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ABSTRACT

Information and Communication Technology (ICT) in higher education can revolutionize the education sector in India, thereby making its impact felt in other areas like governance, economy and administration. The National Mission on Education through Information and Communication Technology (NME-ICT), launched in 2009 by the Central government, seeks to provide connectivity across the country. It is a project under which various schemes have been undertaken. One such scheme has been undertaken by University Grants Commission (UGC) to develop e-content for around 77 subjects at the postgraduate level, which would be put up on the web portal of the Ministry of Human Resource Development – “Sakshat”. Similarly E-library is made available to learners across the nation for teaching and learning. Today in the fast pacing world where everything is digitized, the education sector should not lag behind, because it is education which ensures the future of the citizens and the progress of the country. Use of ICT in higher education in the field of engineering, medical science, accountancy, management, business administration, computer science, information technology can be easily thought of. But what about the use of ICT tools in the so called ‘traditional’ subjects of history, literature, political science, economics and other areas of humanities? In this paper, I would focus on how use of ICT in the teaching of English literature can make it interesting for students, teachers, research scholars and how the dynamics of the subject can come alive, for study of literature is, in fact, is studying a number of subjects in multidisciplinary and interdisciplinary modes and ICT can provide a fitting platform of convergence for that.

[Keywords: ICT, Teaching, English literature]

Introduction

ICT helps teachers to prepare, produce store and retrieve their material easily and swiftly, the availability of different rich text, different topics, quizzes help in teacher's time. Despite the opportunities and facilities offered by the modern technology in assisting better teaching but they do not replace it. So far skillful teacher is the only person who is shouldering the responsibility of delivering the teaching goals. The ICT is crucial to supplement the conventional or traditional mode of education. The word 'supplement' here is important, because technology cannot replace the teacher as such. The use of ICT can supplement or add to the traditional mode. In the present context of technology and information boom, traditional mode of teaching seems monotonous and in most of the colleges and universities across the country English

literature is taught in the traditional mode where the teacher speaks for an hour or so and leaves the class. The students too get tired of the monotonous everyday routine. Moreover the importance of English literature as a subject of study needs to be revitalized. More and more students enter into fields like engineering, management, accountancy, medicine where they feel their future is secure, in terms of material needs. But English literature or English language is a subject from which one cannot run away. It is a compulsory subject in most of the courses at the senior secondary and degree levels. English literature is seen to be a 'traditional' subject and students who wish to become teachers generally take up this so-called 'traditional' field. The use of ICT in teaching English literature and language can revolutionize the way the subject is seen, taught and thought of. The role of the teacher

is of immense importance in the teaching of literature but ICT can enhance the teaching by doing away with boredom and making the students interested in what is being taught. It can motivate and keep the students engaged because ICT tools work at different levels – the students can have an opportunity to see, read, visualize, hear, ponder, discuss, interact and learn. This can be achieved through various means involving ICT.

The Scope of ICT

English literature comprises a number of sub-fields – for example, poetry, fiction, drama, criticism, literary theory, to name some of them. Each requires a different kind of study and different modes of teaching. The use of ICT can help the educator to use different modes of teaching, which will subsequently help students to keep the text or the issues involved in it, in their minds, perhaps, throughout their lives. But this depends not merely on the use of ICT but also the student and the educator. Thus in the teaching of English literature as a subject of higher studies, a combination of the old, involving the teacher and the new mode of teaching, involving ICT tools can go a long way. Moreover ICT would help in research in various fields of English literature. ICT tools would help students comprehend the text and would improve their proficiency. ICT tools can also help in making students attentive and interested.

English literature can be made appealing by the use of audio-visual devices, web resources, playing of movies or staged plays, online glossaries, dictionaries, thesaurus, etc. The use of Clicker – the Student Response System introduced under NME-ICT can enhance interaction in an English literature class. Scenes from movies can be shown and discussed. Use of slides having video, audio, images and texts – a combination can be helpful. Recitation of poetry can be played using ICT tools, use of multiple choice questions on different topics, quizzes, presentations are some of the ways in which ICT can be made effective in a literature class. Teachers would be relaxed as they would not have

to memorize and can use slides to take the discussions forward. Using blackboard would no longer be necessary; also taking of attendance of the students present which takes up 5 – 10 minutes because Clicker can do the same. Effective integration of ICT tools into the educational system is a challenging task and the success of NME-ICT depends on this, apart from other things. Ensuring quality, equity and access at the same time is a daunting task which needs to be fulfilled.

How to rejuvenate a literature class

Poetry: Through slide shows the teacher can put up the poetry on screen. The writer's image can be shown. An audio can be played where the poetry is recited, made more interesting if the poet himself/herself recites. Students perhaps may be interested in listening to the author's voice. Apart from these, poets like Blake and Rossetti whose poems have a corresponding painting, their poems can be shown accompanied by the corresponding painting or illustration. Moreover poems involving myths too can be visualized through images presented in slides by the teacher. Musical poems can be played in the classroom. Of course, the role of the teacher is the most important in making ICT effective. Hence both man and technology has to go hand in hand. Important journal articles and books can be referred to the students through the slides itself so that the teacher need not use the blackboard or spell out the names of the writers or their works. Teacher can use e-notes to give to the students it will help students as well as teacher. Students can obtain rich notes with detail information. The same notes can be used by teacher for explanation. Literature before sixteenth century and complex literary works can be made easy by using ICT. Use of various material encourages discussion and helps in creating a critical insight. This critical insight can be enhanced further if the students are given assignments whereby use of ICT tools cannot be done away with. Hence it is they who would use these tools and search for information from various sources. Moreover if poems are shown on screen, it becomes easy for

the teacher to point out relevant details and also contrast one poem with another, making literature lively and an involving exercise.

Suppose a poem like “Ode on a Gracian Urn “ can be taught. As suggested an audio can be played where it is recited. This ‘hearing’ of the poem will help making an impact on the minds of the students because it will stay on for some time and they would enjoy responding to it. To explain the music of the tabor ,Painting on the gracian urn and theme of immortality can be shown on LCD projector and music can be played to effectively let students go through a rich experience. A picture of the poet can also be shown, or different pictures in varied settings, if available, so that it can be related to his/her biography and while the pictures are played, the biographical details can be discussed by the teacher. Similarly in order to give a feel of the Romantic age, other visuals can be displayed. The combined effect of the ‘visual’ and ‘hearing’ would make students experience what is being taught. The themes, images and movement of the poem can be discussed through different slides which are innovative and effective. It will depend on the teacher how he/she prepares the slides or presentations.

Fiction: Techniques similar to those in poetry can be applied here. In addition, movies based on novels can be shown in full or some important scenes can be presented and discussed. The themes, characterization, historical context, narration can be discussed through slide shows and presentations. Youtube can be integrated—of course with caution—to introduce certain memorable scenes from movies based on novels. Through this students can be introduced to the works of great directors.

Drama: In addition the techniques mentioned already, staged plays can be shown through ICT tools and the minute intricacies of a play can be discussed. As a result the use of light, sound, stage setting and props all will come live before the

students and thus would have a lasting impact on them. This would accomplish the dual function of literature to edify and give pleasure. For instance, BBC has a great collection of Shakespeare’s plays which can be integrated in the library.

Criticism: This could be made interesting by the use of examples from literary texts and through practical exercises. The use of ICT would enable to make criticism an enriching and in depth exercise. Critics on a subject can be referred to and students may be encouraged to go through their works.

Literary Theory: This is an area which most students dread. Their fear can be done away with by the use of ICT. The theorists can be shown on screen, their interviews or recorded lectures can be played. The ideas can be applied to literary texts and hence their relevance be made clear. Examples, pictures and other such devices can be used to make students alert and attend to it with interest.

Others: Indian Writing in English, African, American literature and other such areas can be taught through ICT. History of English literature can be shown in tabular forms. Video conferencing can be facilitated so that interaction can take place among students, research scholars and teachers not just within India but across the world. This would make them aware of the literary scenario elsewhere, keep them up-to-date, bring in different points of views and interpretations and enhance their knowledge. Research scholars would be helped if through cloud computing or through other technology, resources are made available at one place. The concept of e-content undertaken under NME-ICT would be helpful. But scholarly journal articles should be made accessible at a larger scale. ICT combined with the traditional methods of teaching can make teaching and learning literature a vivid experience.

Moreover, teaching literature should not be limited to use of slides or projectors alone. The development of e-content would help students refer to relevant information on a topic. A portal can be

developed exclusively for literature. This portal can have the e-content which can be updated by academicians and research scholars with authentic information. In addition, free e-books can be uploaded so that students can have access to these as well. Links to important journals can be provided or perhaps articles on a single writer can all be listed in one place.

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THE ROLE OF ICT IN HIGHER EDUCATION

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Introduction

Information and Communication technology is a force that had change many aspects of the way we live .If one was compare Such fields as Teacher, doctor, advocate, Tourism, Travel, business, Banking, Engineering and architecture, The impact of ICT across the past two or three decets has been enormous. The ways these fields operate today is vastly different from the ways they operated in the past.But when one looks at education far less change than other fields have experienced.A Number of people have attempted to explore this lack of activity and influence.

There have been a number of factor impending the wholesale uptake of ICT in education across all sectors.these have included such factors as a lack of funding to support the purchase of the technology,a lack of training among established teaching practioners,a lack of motivation and need among teachers to adopt ICT as teaching tools. But in recent times ,factors have emerged which have strengthened and encouraged moves to adopt ICTs into classrooms and learning settings. These have emerged which have included a growing need to explore efficiencies in terms of program delivery,the opportunities for flexible delivery provided by ICTs. The capacity of technology to provide support for customized educational programs to meet the needs of individual learners.

The impact of ICT on what is learned:-

Conventional teaching has emphasized content.For many years course have been written around textbooks. Teachers have taught through lectures and presentations interspersed with tutorials and learning activities designed to consolidate and rehearse the content. Contemporary settings are now favouring curricula that promote competency and

performance.Curricula are starting to emphasise copabilities and to be concerned more with how the information will be used than with what the information is.

A. Competency and performance-based curricula:-

- 1) access to a variety of information sources;
- 2) access to a variety of information froms and types;
- 3) student-centered learning settings based on information access and inquiry;
- 4) learning environments centred on problem-centred and inquiry- based activities'
- 5) authentic settings and examples; and
- 6) teachers as coaches and mentors rather than content experts.

Contemporary ICTs are able to provide strong support for all these requirements and there are now many outstanding examples of world class settings for competency and performance-based curricula that make sound use of the affordances of these technologies many years,teachers wishing to adopt such curricula have been limited by their resources and tools but with the proliferation and widespread availabilityof contemporary ICTs,many restrictions and impediments of the past have been removed.And new technologies will continue to drive these forms of learning further.As students and teachers gain access to higher to support these quality learning setting will cotinue to grow

B.Information literacy

Another way in which emerging ICTs are impacting on the content of education curricula stems from the way in which ICTs are dominating so much of contemporary life and work.Already there has emerged aneed for educational institutions to ensure that graduates are able to display appropriate levels

of information literacy, the capacity to identify and issue and then to identify, from it. The drive to promote such developments stems from general moves among institutions to ensure their graduates demonstrate not only skills and knowledge in their subject domains but also general attributes and generic skills. Traditionally generic skills have involved such capabilities as an ability to reason formally, to solve problems, to communicate effectively, to be able to negotiate outcomes, to manage time, project management, and collaboration and teamwork skill. The growing use of ICTs as tools of everyday life have seen the pool of generic skills expanded in recent years to include information literacy and it is highly probable that future developments and technology applications will see this set of skills growing even more.

The impact of ICT on how students learn:-

Just as technology is influencing and supporting what is being learned in schools and universities, so too is it supporting changes to the students' learning. Moves from content-centred curricula to competency-based curricula are associated with moves away from teacher-centred forms of delivery to student-centred forms. Through technology-facilitated approaches, contemporary learning settings now encourage students to take responsibility for their own learning. In the past students have become very comfortable to learning through transmissive curriculum. The growing use of ICT as an instructional medium is changing and will likely continue to change many of the strategies employed by both teachers and students in the learning prominence in universities and schools worldwide.

A. Student-centred learning:- technology has the capacity to promote and encourage the transformation of education from a very teacher directed enterprise to one which supports more student-centred models. Evidence of this today is manifested in:

- 1) The proliferation of capability, competency and outcomes focused curricula
- 2) Moves towards problem-based learning
- 3) Increased use of the web as an information source, Internet users are able to choose the experts from whom they will learn

The use of ICT in educational settings, by itself acts as a catalyst for change in this domain. ICTs by their very nature are tools that encourage and support independent learning. Students using ICTs for learning purposes become immersed in the process of learning and as more and more students use computers as information sources and cognitive tools, the influence of the technology on supporting how students learn will continue to increase.

B. Supporting knowledge construction:-

The emergence of ICTs as learning technologies has coincided with a growing awareness and recognition of alternative theories for learning. The theories of learning that hold the greatest sway today are those based on constructivist principles. These principles posit that learning is achieved by the active construction of knowledge supported by various perspectives within meaningful contexts. In constructivist theories, social interactions are seen to play a critical role in the processes of learning and cognition.

In the past, the conventional process of teaching has revolved around teachers planning and leading students through a series of instructional sequences to achieve a desired learning outcome. Typically these forms of teaching have revolved around the planned transmission of a body of knowledge followed by some forms of interaction with the content as a means to consolidate the knowledge acquisition. Contemporary learning theory is based on the notion that learning is an active process of constructing knowledge rather than acquiring knowledge and that instruction is a process by which this knowledge construction is supported rather than a process of knowledge transmission.

The strengths of constructivism lie in its emphasis on learning as a process of personal understanding and the development of meaning in ways which are active and interpretative. In this domain learning is viewed as the construction of meaning rather than as the memorisation of facts. Learning approaches using contemporary ICTs provide many opportunities for constructivist learning through their provision and support for resource-based, student centred setting and by enabling learning to be related to context and to practice. As mentioned previously, any use of ICTs in learning setting can act to support various aspects of knowledge construction and as more and more students employ ICTs in their learning processes, the more pronounced the impact of this will become.

Conclusions

This paper has sought to explore the role of ICT in Education as we progress into the 21st century. In particular the paper has argued that ICTs have impacted on educational practice in education to date in quite small ways but that the impact will grow considerably in years to come and that ICT will become a strong agent for change among many educational practices. Extrapolating current activities and practices, the continued use and development of ICTs within education will have a

strong impact on what is learned; How it is learned; Who is learning and who is teaching.

The Upshot of all this activity is that We should see marked improvements in many areas of educational endeavour. Learning should become more relevant to stakeholders needs, learning outcomes should become more deliberate and targeted, and learning opportunities should diversify in what is learned and who is learning. At the same time, quality of programs as measured by fitness for purpose should continue to grow as stakeholder groups find the offerings matched to their needs and expectations.

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ICT IN THE ENHANCEMENT OF ENGLISH LANGUAGE TEACHING AND LEARNING

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ABSTRACT:

ICT tools have changed the paradigm of English language teaching learning process. So it is essential for a teacher to be familiar with modern ICT tools and use it properly to achieve the aims of English language teaching. The present paper stresses the need of ICT in teaching and learning English language.

Key words: ICT, Social media, Lingua Franca, MOOCs, ELT, ESL etc.

Introduction:

English is one of the most important languages which have played role in the process of globalization and knowledge explosion. It is the most common means of communication throughout the globe. This is why it is termed as Link language, Global language as well as Lingua Franca. In Indian context it is treated as ESL (English as a Second Language). Use of English language has become vital for better learning and earning. Therefore, it is necessary to teach English and develop English language skills among the students from school level. The government, NGOs and educational institutions are working at various levels and taking measures to ensure better ELT (English Language Teaching) and developing English language skills among the students. To teach English and develop English language skills various approaches and methods are in use in our country. But most of them are traditional, less interesting, ineffective as well as less motivating. So, it is necessary to use modern approaches and tools of ICT (Information and Communication Technology) to develop better understanding and acquisition of basic skills i.e. LSRW (Listening, Speaking, Reading and Writing) of English language among the students at school level. ICT has a lot of things to offer to both teachers and students for the enhancement of their vocabulary and improvement of English language skills. Now a day's ICT tools and approaches are

being used widely due to their convenience, omnipresence, effectiveness and being economic. Some of these approaches, facilities and tools are CAI (Computer Assisted Learning), CALA (Computer Assisted Language Assessment), CALI (Computer Assisted Language Instruction), CALL (Computer Assisted Language Learning), MALL (Mobile Assisted Language Learning) , TELL (Technology Enhanced Language Learning), Blogs, Wiki, e-mail facility, Digital libraries, multimedia, mobile learning, free and open source software and social media, MOOCs, Virtual classrooms, documentaries, Digital storytelling, Mobile Applications, i-Pads, Digital Notebooks, Tablets, Smart Phones, Recorded audio- video materials, Online spoken tutorials, Digital pronunciation dictionaries etc. Modern studies and researches show positive results of integration of ICT in the field of ELT and development of English language skills. These facilities have paved the way of individualized learning and provided freedom of learning anytime, anywhere according to needs and convenience of the learners. So, we should take proper step to integrate ICT in the field of ELT to make the learners well versed in English language skills.

The modern age is termed as the era of knowledge explosion. This explosion has become possible due to the progress of science and technology. Each and every aspect of human life

has changed due to the effects of science and technology. The use of science and technology in the field of communication has revolutionized the whole world. Use of modern technological tools has led to the rise of ICT (Information and Communication technology.) Now ICT is being used in a number of fields like, health, entertainment, games and sports, transportation, education, industries, fashion designing, textiles, agriculture etc. With a single click, we can get exchange a lot of information of the world due to the use of ICT. The field of education is not untouched by the ICT. Now we cannot imagine education without the use of Information and communication Technology. It has made exchange of thoughts, ideas, experiences and feelings easier. With the help of ICT a lot of persons can get education and training simultaneously at low cost. Now ICT is being used in all the aspects of education. Use of computers, Internet, television, radio, projectors and mobile phones, e-mail facility, online audio and video conferencing as well as new applications has made the Teaching Learning Process and Training attractive and convenient. It is also helpful in saving time, energy and money. So, we can say that ICT is playing the most important and pivotal role in Teaching Learning Process. Hence it is also playing an important role in the learning of language, especially English Language Learning.

Some of the important ICT tools and applications used in the field of English Language Teaching are following:-

- (i) **Computers:** This is the most important tool of information and communication technology and backbone of modern human life. All the modern communication process are impossible without the use of computers. It is helpful in storing, preparing, collecting and preparing of data for communication. It is helpful in the development of listening and speaking skills. It is helpful in English language speaking and listening skills.
- (ii) **Over head projector:** It is an important tool of displaying information and processes to a large number of people simultaneously. It can be used in teaching and training of personnel. Prepared forms of information are easy to display with the help of over head projector.
- (iii) **Lingua phone:** This tool is very important in language training of the students. A number of students can practice speaking and hearing drills with the help of lingua phone. It is especially useful in the training of English language listening and speaking skills.
- (iv) **Radio:** It is very useful in education and training of the students of rural areas. Many distance and open education programmes are being conducted with the help of radio. It is also useful in audio conferencing. Programmes relayed on radio are helpful in the development of language skills, especially dialogues and dramas.
- (v) **Television:** It is useful in education as well as entertainment of the people. It is found that It is helpful in developing listening skills, useful in learning situational language as well as It is highly motivating also. It is very helpful in understanding the language of mass media. A large number of students may be benefitted with the programmes of television simultaneously. Many distance and open universities are running their educational programmes on television, such as Indira Gandhi National Open University, Maulana Azad National Urdu University etc. It is an important tool of audio video conferencing. Live telecast of training and discussions are done through this.
- (vi) **Internet:** It is the most important facility of communication. All the modern communication takes place through this. It has made the communication facility very

fast, convenient, economic, and attractive. There are lots of facilities available for communication on internet. Some of them are following:-

- (vii) **(a) Social media:** Social media has become an important tool of communication. It provides a platform for sharing thoughts and ideas. Blogs are made on it. Students can add themselves with the English language learning groups and take advantage of sharing information. Lots of social sites are available on it like, Face book, Twitter, Instagram etc. It is very helpful in learning situational language.
- (viii) **(b) Online facilities for English language learning:** A lot of online facilities are available on internet for the development language skills. Some of them are e-guidance, e-tutoring, e-teaching, e-journals, e-magazines, e-books, e-library, online training, virtual classes etc.
- (ix) **(c) Online language related courses:** These courses are available on internet. Some of them are free and some of them are payable. Students can enroll themselves in these courses and get education and training easily on their own place. Some of the agencies which are providing on line courses are following MOOC, Future Learn, NPTEL, and IIT's, Concordia University etc. Students can watch online and offline videos of language learning for the enhancement of their language skills.
- (x) **(d) Feature Films in Teaching English:** Films can be used in the teaching of English language. Films may be documentaries, educational and entertainment based. These can arouse high level of motivation. It results in a most satisfying learning experience.
- (xi) **Uses of ICT for an ELT teacher:** we cannot think of better educational environment

without a better teacher. In earlier times the teacher was the focal point of education, but now the role of teachers has changed a lot. He is considered as a guide and friend of students who helps in learning, does not provides knowledge. To teach better a teacher need to be update with the changes. For this ICT helps a lot. ICT can be useful for a teacher in the following ways.

- (xii) It is helpful in the professional development of the teachers. A teacher can learn various language skills with the help of information and communication technologies. He can do various certification programmes in English language teaching run by the famous educational institutions.
- (xiii) A teacher can increase his domain of Knowledge English language with the help of e-journals, e-magazines and e-library that can be achieved only through the use of ICT. He can also participate in discussions and conferences with the experts of his English language teaching to improve his knowledge and skills ELT through audio and video conferencing.
- (i) It is helpful in the professional development of the teachers. A teacher can learn various language skills with the help of information and communication technologies. He can do various certification programmes in English language teaching run by the famous educational institutions.
- (ii) A teacher can increase his domain of Knowledge English language with the help of e-journals, e-magazines and e-library that can be achieved only through the use of ICT. He can also participate in discussions and conferences with the experts of his English language teaching to improve his knowledge and skills ELT through audio and video conferencing.
- (iii) ICT helps a teacher to learn innovative methods

of teaching. He can work with the students on various project and assignments. It also helps him in providing teaching contents, home works etc.

- (iv) He may participate in various in-service training programmes and workshops which are essential for his professional development with the help of information and communication technologies.
- (v) ICT helps a teacher to guide his students about the English language learning materials available on internet, e-books, e-journals, e-magazines and social sites like linked-in which are helpful in better learning of English language skills.
- (vi) ICT also helps him framing curriculum of English language learning. He can study curriculums ELT of different countries to study their pros and cons, challenges as well as sociological and psychological issues related to English language learners. All these

things helps him in framing a curriculum that leads to achieve the aims and objectives of English language teaching.

Conclusion: ICT has no doubt brought about tremendous change in education ,but we are yet to achieve the desired level of ICT adoption in higher education in the country. If taken maximum advantage of ICT in teaching and learning English language it can be of great use .It can help in developing language skills to a great extend.

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ROLE OF ICT IN LEARNING THROUGH LIBRARIES

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ABSTRACT

Libraries have always been out looked as the essential part of the education in the nation building. ICT has its impact on almost all the disciplines especially in the field of library and information services. New technology provides several materials, media and modes of storing and communicating the information. This paper highlights the changing scenario of the role of ICT in the learning process through libraries and the use of internet as well as benefits of internet in academic libraries.

In the modern age Libraries have become multimedia due to adoption of technological advances and changing nature of their services. If we look into the past we notice a drastic change in the role of libraries imparting education. The growth of ICT has greatly influenced the methods and formats of information. The libraries have now begun to transfer from manual operations to electronic system. They are also beginning to become even more service centered than before and bring higher levels of learning support and research support to the users.

Today the concept of education is undergoing a tremendous change. This is because of continuous advancement in the field of Science and Technology. Another related reason is the expanding task of providing education to more people. It has become evident that conventional system of education is unable to cope up with the complexity and magnitude of the problem. Those who cannot get higher education by formal channel they have option to get informal education through continuing education programme. Continuing education is related with the lifelong learning process. And this could not be restricted up to any College, University or any educational institute, as it is beyond the boundaries of that. Here libraries based on ICT can help the voluntary learners. Public, Academic as well as special libraries could help people for their continuing education. In the recent years computer has changed the whole process of information handling.

Internet serves as a backbone and connects the various sources of information irrespective of their locations. Internet is a live channel of communication between computers. It is configurations of smaller networks and other connected machines spanning the entire globe. Now the internet information super highway is accessible anywhere with time, interest and curiosity. Information on internet and opportunities to use it are growing at a rapid rate. The internet and other information technology have brought drastic changes in the library functions. In the last sixty years of library, automation libraries have travelled a long road from punched card processing system to present digital libraries.

Libraries play a vital role in imparting education to all. They have passed through several developments to reach its present stage of dynamic centres of knowledge. Changing needs of society and the technology have forced the librarians and the information specialists to develop and adopt new technologies to build their resources and services to cater the need of users.

Information Communication Technology (ICT) may be defined as a combination of computer and telecommunication techniques which makes possible new systems and products to help people at work in education and at home. It is the application of a wide variety of electronic technologies to the information handling activities. In the domain of library information service, it

means the use of various technologies such as computer, telecommunications, word processing, micrographics, reprographics, video recordings and other electronic devices for the storage, retrieval, reproduction and dissemination of information in a library environment.

Libraries which were considered once only as the storehouses of knowledge have now got a new outlook in the modern information communication technology era. It can be used in library and information science to support technical functions associated with technical processing and circulation work.

In future people will be differentiated on the basis of information. Those who lack resources of information will lag behind. In global village instant messaging, social networking and chatting will be important. Developing countries have to accept the policies of the developed countries to survive in the competition of globalization. Libraries often consume a lot of time in the adoption of new technology, because the speed with which technology changes is very confusing. New innovations in computers, networking and software resulted in information to be created and distributed with low cost and without the need of complex programming skills that were needed. As result more and more information is becoming available from what might have otherwise being inaccessible sources. Due to ICT the world is becoming global village which is changing into the national information infrastructure. This creates an entirely new form of information dissemination.

The worldwide librarians made their catalogues available online which have Online Public Access Catalogues (OPAC) generally available free of cost these are useful for finding books not available locally to identify and select books for local acquisition, bibliographic data verification and to search holding of periodical and monographs. These can be accessed through telnet, gopher and the World Wide Web. Many OPAC's have full text

databases; libraries can use these databases to queries from patron. With the emergence of ICT the areas of library expanded worldwide. The available information present in the library can be feed to homepage and made available to users anywhere.

ICT has provided new media, new modes of storing and communicating information. ICT brought many services to library to speed up their activities. It helps to remove barriers of communication, distance and time. The advances in technology will continue to improve the effectiveness of libraries. It helps to transfer data through communication network like internet anywhere. It provides enormous search speed and facility. It helps to strengthen communication and collaboration among research, government and educational institutions.

Education system is entering into information age and fast developments of Information and Communication Technologies change the way we think the way we live and the way we work in an academic environment. The changes lead to use of computers as integrate and inevitable part of universities. This situation necessitated networking of these computers within the departments to ensure exchange of data and information as departments eventually required connecting each other through compose networks with the advance of networking technology all the smaller network called the internet. It is no need to mention here the interaction of internet have totally revolutionized the academic scenario and the academicians who earlier were fringing it very difficult to obtain information about their topics of interest now are encountered as ironical situation of selecting the right information from the deluge of information.

In India the introduction of National Information Center (NICNET) in 1977 can rightly be termed as the first major attempt towards networking at the national level afterwards. Various networks in different spheres like railways, finance etc. emerged and has shown a significant bearing on the quality

of public service in the country. So far as academics is concerned. Education and Research Network (ERNET) India has made a significant contribution towards networking between educational institutions in the country. Particularly by bringing internet and establishing nationwide network to connect academic institutions across the country. ERNET India has mixture backbone of terrestrial and satellite based wide Area Networks and it has 14 pops (points of presence) at the education and research institution spread across the country.

Now access of information and knowledge in electronic form is constantly available, easily updated and convenient to use. The library and information landscape has transformed with the onset of the digital era and today's academic institutions' libraries have changed their roles to serve as 'Knowledge Centers' with priority on value added electronic information services.

Faculties and researchers at university worldwide gather and interpret data, advocate new ideas and extend new knowledge. This work is sometimes shared with other scholars and researchers as working papers, technical reports, and other forms of prepublication work. Although this scholarship may eventually show up in a peer-reviewed journal or book, some may not. This preprint culture is strongest in the technical and science disciplines. This literature is often difficult to find and even more difficult for librarians to collect systematically, manage and preserve. Different type of research output which is intellectually good for community is an asset for parent organization as well as scholarly community. It should be digitized and

preserved in electronic format. Thus it plays a significant role in acquiring storing maintaining and disseminating knowledge to the society.

The academic library should maintain a large collection of electronic databases, e-journals, e-books and other e-resources in support of teaching and research needs of the staff and students of the academic institution. The main benefit of the e-resources to its users is to open new vistas for teaching and research. Although to acquire and organize the electronic resources is costly as well as challenging but it will be a crucial element of the future's academic libraries. The electronic resources may be accessed in a variety of ways but the internet/world wide web has been preferred to get e-resources' easy access. These resources should be well organized and must be available on campus and the remotely resources available via the online catalogue and the library website through www for the users of the academic library.

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THE ROLE OF ICT [INFORMATION & COMMUNICATION TECHNOLOGY] IN LIBRARIES.

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ABSTRACT

Internet Technology plays a vital role in libraries. It can be a virtual library where the world's information resources are gathered for the use of the clientele. The authorities of surveyed libraries are asked to indicate their internet access. Information and Communication Technology [ICT] is a comprehensive concept and parallel concept with information Technology [IT] that denotes not only a single unit of technology but an assemble of technology. The emergence of it is one of the wonderful gifts of modern science and technology which has brought tremendous changes in library and information work has revolutionized the traditional concept of libraries form a store house of books to an intellectual information center. Information and Communication Technology [ICT] has transformed library services globally. Most current information are recorded in electronic format, It has also contributed immensely to the performance of Librarians in the discharge to their duties such as in cataloging, Reference services, circulation management, serials control ect. It has contributed to the library in the following specific way – Library management software, OPAC, Office operations, Networking, Electronic document, deliverer online user education or tutorials, E- reference services, Library Cooperation and resource sharing. Using ICT in libraries are also playing a very important role in facilitating access to global information and knowledge resources.

Keywords- ICT, IT, Internet , Library.

INTRODUCTION

Information and Communication Technology [ICT] is a comprehensive concept and parallel concept with Information technology [IT], that denotes not only a single unit of technology but an assemble of technologies like telecommunication equipments data processing equipments, semi conductors, consumer electronics, ect. The concept has brought a phenomenal change in the information collection preservation and dissemination scene of the world. For the profession of librarianship, this turn of the events is a blessing in disguise.¹

The emergence of IT is one of the wonderful gifts of modern science and technology which has brought tremendous changes in library and information science .Application of IT to library and information work has revolutionizes the traditional concept of libraries from a 'store house of books to an intellectual information

center' Connoting the concept of electronic library. It has opened up a new chapter in library communication and facilitated global access to information crossing the geographical limitations.²

Using ICT, libraries are also playing a very important role in facilitating access to global information and knowledge resources. ³

ICT: CONCEPT AND MEANING

ICT incorporates a range of technologies used to support communication and information. ICT includes both networks and application. Networks include fixed, wireless and satellite telecommunications, broadcasting networks. Well-known applications are the Internet, database management systems and multimedia tools. By implication, a holistic understanding of ICT necessarily includes consideration of telecommunication policies, information policies and human resource development policies.

Information and Communication Technology [ICT] is a diverse set of technological tools and resources used to communicate and to create, disseminate, store and manage information.⁴

Marcelle argues The ICT sector is heterogeneous collection of industry and service activities including information technology equipment and service, telecommunication equipments and services, media and broadcast, Internet service provision, libraries, commercial information providers, network based information services and related professional specialized services.⁵

Hemlink provides a useful and clear definition of ICT indicating, ICT are those technologies that enable the handling of information and facilitate different forms of communications. Those include capturing technologies [e.g. camcorders], storage technologies [e.g. CD-ROMs] processing technologies [e.g. application software] communication technologies [e.g. Local area Network] and display technologies [e.g. Computer monitors]⁶

So we can define ICT as the use and applications of computers, telecommunications and microelectronics in the acquisition, storage, retrieval transfer and dissemination of information.

ICT BASED USER SERVICE

Some library users are adopting electronic habits, making increasing use of the new ICT including Computers, the Internet, the Web, Intranet, Extranet and other technologies. As a result library users are placing new demands on their libraries. They require access to the latest information .updated information resources and access to ICT facilities that they could use in their work.

Use of ICT in libraries enhances users satisfaction. It provides numerous benefits to library users. Some of the benefits are⁷

1. Provide speedy and easy access to information.
2. Provides remote access to users.

3. Provides round the clock access to users.
4. Provides access to unlimited information from different sources.
5. Provides information flexibility to be used by any individual according to his/ her requirements.
6. Provide increased flexibility.
7. Facilitates the reformatting and combining of data from different sources.

Libraries are also providing various ICT –based services to their users, including the following.⁸

- Provisions of Web access to OPACs
- Electronic document delivery
- Networked information resources
- Delivery of information to users desktops
- Online instructions
- Online readers advisory services

CONCLUSION

Information and Communication Technology ICT has affected almost every sector of our life. It has brought revolutionary changes in the whole world of information. So this revolutionary change is also true in the case of libraries and information center. It has easily done their work because of ICT. Use of ICT in libraries can satisfy the maximum demand of the present technology conscious users.

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ROLE OF INFORMATION COMMUNICATION TECHNOLOGY IN HIGHER EDUCATION

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ABSTRACT

This article discusses the Roles of ICT in education. Moreover, many people recognize ICTs as catalysts for change; change in working conditions, handling and exchanging information, teaching methods, learning approaches, scientific research, and in accessing information. Now a days the role of Information and communication technology (ICT) especially internet in education plays an important role in education. Education sector can be the most effective sector to anticipate and eliminate the negative impact of ICT. Internet on the other side can be the most effective way to increase the students knowledge. Being aware of the significant role of ICT (internet) in our life , especially in the educational activities , emphases be given on ICT in supporting the teaching and learning process in the classroom , it will improve the effective and meaningful educational process. This paper highlights various impacts of ICT on contemporary higher education and also discusses potential future developments. The paper argues the role of ICT in transforming teacher-centered learning to competency based learning. It also explores some challenges in higher education like cognitive tutors, need for developing a model, collaborative authoring etc.

KEY WORDS: Implementation of ICT, online learning

INTRODUCTION

The education has vital role in building the society. Education determines standard of society. The quality education helps to empowering the nation in all aspects by providing new thoughts, ICTs are making dynamic changes in society. They are influencing all aspects of life. The influences are felt more and more at colleges. Because ICTs provide both students and teachers with more opportunities in adapting learning and teaching to individual needs, society is forcing schools aptly respond to this ICTs greatly facilitate the acquisition and absorption of knowledge, offering developing countries unprecedented opportunities to enhance educational systems, The quality education is basic need of the society. There are number of effective teaching & learning methodologies in practice. Technology is the most effective way to increase the student's knowledge. Here comes the role of ICT in the education sector. Being an academican I cannot imagine education without ICT. Nowadays ICT (specially an internet) plays imminent role in the process of integrating technology into the educational activities.

What is ICT

ICT is an acronym that stands for "Information Communication Technologies". Information and communication technologies are an umbrella term that includes all technologies for the manipulation and communication of information. ICT considers all the uses of digital technology that already exists to help individuals, business and organization. It is difficult to define ICT because it is difficult to keep up the changes they happen so fast. ICT is concern with the storage, retrieval, manipulation, transmission or receipt of digital data. The definition taken from the guidance in the QCA schemes of work for ICT is "ICTs are the computing and communication facilities and features that variously support teaching, learning and a range of activities in education."

IMPORTANCE OF ICT

- access to variety of learning resources
- immediacy to information
- anytime learning
- anywhere learning
- collaborative learning

- multimedia approach to education
- authentic and up to date information
- access to online libraries
- teaching of different subjects made interesting
- educational data storage
- distance education
- access to the source of information
- multiple communication channels-e-mail, chat, forum, blogs, etc.
- access to open courseware
- better accesses to children with disabilities
- reduces time on many routine tasks

Role of ICT in Higher Education:

1. To increase variety of educational services & medium
2. To promote equal opportunities to obtain education & information.
3. To develop a system of collecting & disseminating educational information.

ICT has been developing very rapidly nowadays. Therefore, in order to balance it, the whole educational system should be reformed and ICT should be integrated into educational activities. the influence of ICT, especially internet (open source tool) cannot be ignored in our student's lives. So, the learning activities should be reoriented and reformulated, from the manual source centered to the open source ones. Young generation will get more and more information and knowledge by browsing in the internet. They can also create innovation in web design that it may be out of the formal curriculum content, but it will be useful for their future. The implementation of ICT in education has not been a priority trend of educational reform and the state paid little attention to it. Therefore, there should be an active participation, initiative and good will of the government institutions to enhance ICT implementation. The teachers should be the main motivator and initiator of the ICT implementation at schools. The teachers should be aware of the social change in their teaching activities. They should be the agent of change from

the classical method into the modern one. They must also be the part of the global change in learning and teaching modification.

Objectives of ICT implementation in education:

- 1) To implement the principle of life-long learning / education
- 2) To increase a variety of educational services and medium / method.
- 3) To promote equal opportunities to obtain education and information.
- 4) To develop a system of collecting and disseminating educational information.
- 5) To promote technology literacy of all citizens, especially for students.
- 6) To develop distance education with national contents.
- 7) To promote the culture of learning at school (development of learning skills, expansion of optional education, open source of education, etc.)
- 8) To promote the culture of learning at school (development of learning skills, expansion of optional education, open source of education, etc.)
- 9) To promote technology literacy

Most Effective form of ICT in Education:

The use of videos came across as the most effective ICT component in our teacher interviews. It was stressed by those using and wanting to use videos in educations that creativity in presentation is just as important as the use of innovative media. Educational videos now encompass multimedia CDs, interactive games, flash and 3-D animation, slide-shows (like PowerPoint), video books, digital story-telling and many other forms that imaginatively combine visuals with text and audio that can be delivered on a range of platforms. Following current discussion forums on ICT in education, it is seen that videos can be used in a range of learning environments, such as to enhance learning in classrooms, train illiterate women on

basic life skills, teach children from nomadic tribal communities, and encourage children to make their own video films on. Commenting on the ability of video to simplify complex subjects and engage children, teachers pointed out topics with strong visual contexts – like scientific evolutionary theories, planetary movements and geographical importance.

Significance of IT in education

In the era of technology. IT aids plenty of resources to enhance the teaching skills and learning ability. With the help of IT now it is easy to provide audio visual education. The learning resources are being widens and widen. Now with this vivid and vast technique as part of the IT curriculum, learners are encouraged to regard computers as tools to be used in all aspects of their studies. In particular, they need to make use of the new multimedia technologies to communicate ideas, describe projects, and order information in their work.

IT has provided immediacy to education. Now in the year of computers and web networks the pace of imparting knowledge is very very fast and one can be educated anywhere at any time. New IT has often been introduced into well-established patterns of working and living without radically altering them. For example, the traditional office, with secretaries working at keyboards and notes being written on paper and manually exchanged, has remained remarkably stable, even if personal computers have replaced typewriters.

Any time learning

Now in the year of computers and web networks the pace of imparting knowledge is very very fast and one can be educated .One can study whenever he wills irrespective of whether it is day or night and irrespective of being in India or in US because of the boom in IT.

Collaborative learning

Now IT has made it easy to study as well as teach in groups or in clusters. With online we can be unite

together to do the desired task. Efficient postal systems, the telephone (fixed and mobile), and various recording and playback systems based on computer technology all have a part to play in educational broadcasting in the new millennium. The Internet and its Web sites are now familiar to many children in developed countries and among educational elites elsewhere, but it remains of little significance to very many more, who lack the most basic means for subsistence.

Multimedia approach to education

Audio-Visual Education, planning, preparation, and use of devices and materials that involve sight, sound, or both, for educational purposes. Among the devices used are still and motion pictures, filmstrips, television, transparencies, audiotapes, records, teaching machines, computers, and videodiscs. The growth of audio-visual education has reflected developments in both technology and learning theory.

Studies in the psychology of learning suggest that the use of audio-visuals in education has several advantages. All learning is based on perception, the process by which the senses gain information from the environment. The higher processes of memory and con

CONCLUSION:

The role of ICTs in the education is recurring and unavoidable. Rapid changes in the technologies are indicating that the role of ICT in future will grow tremendously in the education. 1. By observing current activities and practices in the education, we can say the development of ICTs within education has strongly affected on a. What is learned. How it is learned. When & where learning takes place . Who is learning and who is teaching. ICT also focuses modification of the role of teachers. In addition to classroom teaching, they will have other skills and responsibilities. Teachers will act as virtual guides for students who use electronic media. . Ultimately, the use of ICT will enhance the learning experiences of students. Also it helps them to think

independently and communicate creatively. It also helps students for building successful careers and lives, in an increasingly technological world. These are the ways of achieving an education that is authentic, accessible to all without exclusion or discrimination, modern and universally affordable, will provide each individual with the keys to diversified and virtually limitless knowledge

FUTURE SCOPE:

1. To harness the modern information and communication technologies for all. The potential of these technologies must be exploited in order to broaden the reach of basic education, particularly in the direction of the excluded and underprivileged groups; and to enhance and improve classroom teaching.
2. To replace costly, rigid and culturally alienating educational structures with less expensive delivery systems that are more flexible, more diversified and universally affordable, without ever sacrificing quality.
3. To develop basic education services accessible to all, including the poorest, illiterate adults, children outside the school

system – whether at work, in the street or refugees – through a strategy involving both the formal education system and all the alternatives offered by the non-formal sector. Basic education must become a field which is free of all forms of exclusion and discrimination.

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USE OF ICT FOR TEACHING, LEARNING AND EVALUATION

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Today's world is the age of Knowledge, Information and Technology. Every Knowledge, Information and Technology is written in English rather than in any other languages. So, its teaching and learning is an important matter in the Indian Classrooms. The quality Teaching & learning progress depends on not only quality faculties but on facilities available and provided for the teaching by the educational units. Because the teacher's role in the college life of the students is very crucial as he is the person whose guidance can be given either positive or negative direction to the students for their life. So in the modern education in any faculty teaching education the responsibility of teachers has increased. It demands more study of language and modern techniques of teaching. Technology has taken a tremendous leap facilitating the learners by providing an easy process to the teaching and learning process. I am writing with my experience in the rural context.

It is evident that information and communication technologies (ICT) have transformed our lives and reshaped the nature of every day activities and contemporary times are called the 'information age' and 'knowledge society'; In today's day and age, education plays a big role in which we are and what we achieve in our life time. In present scenario, arrival of computer and internet in the field of education has changed the procedures and patterns of learning. Today's learning patterns knock at the door of student or learner. Today anyone learns anywhere, any time. Latest information and content is available at low cost. New technological terms replaced old terms such as ICT-learning to E-learning (Mobile Learning is the new sensation in the field of education).

Many teachers still miss the appropriate interest or strong will to learn and a challenging attitude towards teaching with computers. Our

major problem that is commonly shown by the teachers is how to be integrated with computers and ICT in to their classes and how to teach any subject with technology. The solution integrates theory and practice. In the age of globalization it is just as important to know that everything has its advantages and disadvantage but we must find out how beneficial, advantageous these technologies can be used. Teachers can save time and information can be available at a click of mouse. Teachers can develop themselves as well as their students in good resource. Worldwide communication and information technology has brought revolutionary change in the field of education. Colleges and universities have access to good network of internet and students are exposed to variety of technology and informational resources like libraries, database, computer, network and video to gather and synthesize information and create communicative knowledge.

The teaching and learning process is becoming more nuanced more seamless and it flows back and forth from students to teachers. Teachers are using their collective students together to find the best ways of engaging students. Actually students relied on whatever teachers teach and lead to one way process. So, if we follow the same method of teaching there won't be any feedback that in turn will lead to failure all the planning for better learning. To make the students attentive concentrated for longer time and at the same time retain whatever is taught is a difficult task. I emphasize that teachers are not fully aware of computer technology and internet. So the teaching community should become well awarded with learned technology seriously appropriately and proficiently.

The expected change can be brought in the teaching and learning field by introducing technology in the classrooms. We can't at this stage

compare with foreign countries and demand more advanced technology for some of our teachers and students who are apt to learn to use it. If a classroom has access to simple computer internet connection and projector teacher can have wonderful and most desirous effect on the students. Use of power point to aid in lectures can communicate a vast amount of information available in most effective way. It would be easier to make them concentrate, reciprocate and raise spirit of enquiry them. Similarly information can be generated in the classroom itself and transformed and shared with eager students across nations. Use of teaching aids in the classes will give a practical experience to students.

Conclusion

Use of ICT would be useful for the teachers and students. It can be achieved more knowledge

through it. So, learn technology, learn through technology and learn about technology must be employed for teachers and students. Technology can reach anywhere and everywhere. A student sitting in a remote area can have access to great scholars speeches lectures, study materials, e-mail video conferences etc. Availability of technology and information enhances knowledge, motivates students and helps in fair assessment and reasonable homework. It helps very much the students or the learners. The future of teaching and learning will certainly be shaped by the resources that educators use to teach with the characteristics of good teaching will always be at the foundation of these resources.

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संशोधनामध्ये माहिती व संप्रेषण तंत्रज्ञानाची भुमीका : इंटरनेट

प्रा. कु. फरहिना शीरीन नसीरोद्दीन आणि प्रा. महेंद्र देशमुख

स्व. पंचफुलाबाई पावडे कला व वाणिज्य महिला महाविद्यालय, वरुड, जि. अमरावती

प्रस्तावना :

सध्याचे युग हे माहिती तंत्रज्ञानाचे युग असून या तंत्रज्ञानाचा विकास झपाट्याने होत आहे. माहिती ही संशोधनाचा आत्मा आहे तसेच संशोधक हा माहितीभीमुख असायला पाहिजे. माहिती शास्त्र हे माहिती तंत्रज्ञानाचा जवळचे क्षेत्र असल्याने जास्तीत जास्त प्रगत माहिती – तंत्रज्ञानाचा वापर या क्षेत्रात होत आहे. परिणामी माहिती शास्त्र क्षेत्राची प्रगतीही तितक्याच प्रचंड वेगाने होत आहे. संशोधक हा माहितीभीमुख असायला पाहिजे, आज प्रगत माहिती तंत्रज्ञानाशी जुळवून घेण्याचे मोठे आव्हान संशोधकापुढे उभे आहे. संगणक तंत्रज्ञान, माहिती, प्रसारण/दळणवळण तंत्रज्ञान (टेलिकम्युनिकेशन) तसेच नेटवर्किंग इ. चे प्राथमिक प्रगत ज्ञान आत्मसात करण्याची गरज आज प्रत्येक संशोधकाला आहे. कारण संशोधनासाठी आवश्यक असलेली माहिती ही आज विविध स्वरूपात व विविध माध्यमांमध्ये मोठ्या प्रमाणावर उपलब्ध होत आहे. आज माहितीचा विस्फोट होत आहे. अशावेळी उपलब्ध माहितीतून संशोधनासाठी आवश्यक असलेली योग्य व नेमकी माहिती संशोधक हा इंटरनेटच्या माध्यमातून प्राप्त करू शकतो.

इंटरनेटच्या सुरुवातीचा इतिहास पाहिला तर त्याकाळी असे वाटले असेल की, इंटरनेटचा

उपयोग संरक्षणासंबंधी गुप्त माहिती हाताळण्यासाठी, संशोधनासाठी किंवा शास्त्रीय माहितीची देवाणघेवाण करण्यासाठीच असावा. पण आज इंटरनेट प्रत्येक वयोगटासाठी उपयोगी साधन झाले आहे. शिक्षणात अगदी प्राथमिक स्तरापासून संगणकाची ओळख सुरु होत आहे आणि संगणक प्रशिक्षणाचा शेवट इंटरनेटच्या प्रशिक्षण शिवाय होत नाही. इंटरनेटची परिभाषा, भाषा, त्याचे तंत्रज्ञान हे तरुण मुलांच्या बोलण्यात वारंवार येतांना आपण पाहतो. गल्ली-गल्लीत सायबर कॅफे उघडल्या आहेत. लहान मुले गटागटाने इंटरनेट वरील खेळ, ॲनिमीषन, कार्टुन्स पाहतात.

इंटरनेट : इंटरनेट म्हणजे जगातील लाखो संगणकांची मिळून तयार झालेले जाळे होय. त्याची थोडक्यात व्याख्या करायची झाली तर ती “माहितीच्या साठ्यांचे जाळे” अशी करता येईल. इंटरनेट हे भुतलावरच आहे. सर्वात महत्वाचे म्हणजे त्याचा कोणी मालक नाही. फक्त काही संस्था त्यांच्या तांत्रिक नियंत्रणाचे काम पाहतात. इंटरनेटमधील सर्व संगणक हे एकमेकांशी संवाद साधतांना विशिष्ट अशा तत्त्व प्रणालीचाच उपयोग करतात त्याला देवाणघेवाण संयोजनप्रणाली (Transmission Control protocol) इंटरनेट तत्त्वप्रणाली (Internet

Protocol Suite) असे संबोधले जातात. संक्षिप्त स्वरूपात टी.सी.पी / आय.पी (T.C.P / I.P) असे म्हटले जाते हे एक तांत्रिक बंधन आहे. त्यायोगे इंटरनेटवरील दळवणवळण सहज शक्य होते.

संशोधन : संशोधकाचा संशोधन करण्यामागील उद्देश किंवा हेतु हे की एखाद्या विषयासंबंधी किंवा घटनेसंबंधी अधिकाधिक खोलवर ज्ञान मिळविणे आणि त्याची अधिकाधिक कारणमिमांसा करणे हाच असतो आणि हे संशोधन करीत असतांना त्या संशोधकाला खरी गरज इंटरनेटच्या माध्यमातून प्राप्त होते.

व्याख्या : संशोधन : – जे. डब्ल्यू. बेस्ट

“ख-या अर्थाने संशोधन म्हणजे वैज्ञानिक पद्धती प्रत्यक्षात कार्यान्वित करण्याची अधिक नियमबद्ध सुव्यवस्थित आणि सखोल अशी प्रक्रिया आहे”

संशोधनामध्ये इंटरनेटची खूप महत्वाची भूमिका आहे. इंटरनेटशी जोडलेल्या संगणकामध्ये (Client Server) प्रकारची रचना वापरली जाते. याचाच अर्थ, एक देणारा (client) व घेणारा (Server) असतो. संशोधन करतांना जगातील एका कोप-यात किंवा अंतराने दुर असणारा सर्व्हर हा त्याच्याजवळ असणा-या माहिती, फाईल्स, वापरण्याच्या client च्या मशिनवर उपलब्ध करून देतो. Client च्या मशिनचे तंत्रज्ञान जर अत्याधुनिक असेल तर त्याला सर्व्हरकडे असलेली अत्याधुनिक माहिती सहज उपलब्ध होवू शकते. इंटरनेटमध्ये सहभागी होणे व त्यातील माहिती, फाईल्स मिळवण्याचा परवाना, (Access) मिळणे

यामध्ये मुख्यत्वेकरून पुढील संस्थासमूह येतात.

- 1) संशोधन करणा-या संस्था
- 2) शैक्षणिक संस्था
- 3) संरक्षणातील संस्था
- 4) धंदेवाईक, खाजगी व व्यापारी संस्था

संशोधनासाठी आवश्यक असलेली माहिती इंटरनेटवरील खालील सेवांद्वारे उपलब्ध होवू शकतात.

- 1) इलेक्ट्रॉनिक्स मेल
- 2) फाईल्सची देवान-घेवाण (File Transfer)
- 3) माहितीचे प्रचंड स्त्रोत
- 4) इंटरनेट वापरणा-या गुपमध्ये प्रतिनिधीत्व
- 5) परस्पर देवान-घेवाण व सहभाग,
- 6) मल्टिमीडियाद्वारा शोध
- 7) प्रत्यक्ष घटनेबाबत तात्काळ माहिती प्रसारण
- 8) ऑनलाईन ई जर्नलस व डेटा बेसेस वापरणे
- 9) ऑनलाईन पुस्तकांची खरेदी.

संशोधनासाठी आवश्यक असलेली माहिती ही इंटरनेटचा वर्ल्ड वाईड वेब व हाईपरटेक्स्ट तंत्रज्ञान द्वारे उपलब्ध होतो. W.W.W ही एक इंटरनेटची सर्व्हिस सिस्टीम आहे. वेब सिस्टीम ही मल्टिमीडीया व प्रगत आज्ञावली भाषा या दोन्हीबरोबर मिळतेजुळते घेत असल्याने सध्या इंटरनेटचे झपाट्याने वाढणारे अंग बनले आहे. इंटरनेटद्वारे संशोधन करतांना आपल्याला अनेक गोष्टींचा फायदा मिळतो. त्यात ई-मेल, टेलनेट, तसेच युजनेट आणि वेबसाईट पाहून आवश्यक माहिती पाहणे हे तीन प्रमुख फायदे होतात.

संशोधनामध्ये इंटरनेटचे फायदे :

संशोधनामध्ये इंटरनेटच्या जोडणीमुळे माहितीचा खजिना तर खुला होतोच पण त्याचबरोबर इतरही फायदे उपलब्ध होतात. त्यात प्रामुख्याने ई-मेल व संवाद मिळतो व ते माहिती गोळा करण्यासाठी उपयोगी असतो.

- 1) **ई-मेल :** इलेक्ट्रॉनिक्स मेलमुळे संगणक वापरणा-यांना स्थानिक तसेच जागतिक पातळीवर संदेशांची देवाण-घेवाण करणे शक्य झाले आहे. इलेक्ट्रॉनिक्स मेलमुळे संशोधकाला आवश्यक असलेली माहितीची स्थानिक तसेच जागतिक पातळीवर संदेशांची देवाण-घेवाण करणे शक्य झाले आहे. ई-मेलद्वारे संशोधक हा आपल्या संशोधन विषयाशी संबंधित प्रश्नावली तो उत्तरदात्यांकडे पाठवून भरून घेवू शकतो व त्यांच्याकडून माहिती गोळा करू शकतो. तसेच संशोधक आपल्या संशोधन विषयाशी संबंधित ग्रंथांची माहिती ई-मेलद्वारे मिळवू शकतो.
- 2) **न्युज ग्रुप (News Group) :** यामध्ये संशोधकाला त्यांच्या संशोधन विषयाशी संबंधित बातम्यांवर आधारीत लेख तसेच न्युजग्रुप संवाद वाचायला मिळतात व त्यात भाग घेता येतो जेणेकरून संशोधनासाठी आवश्यक असलेली अद्ययावत माहिती त्याला न्युज ग्रुप द्वारे मिळू शकते
- 3) **ई-चॅट किंवा गप्पा मारणे :** इंटरनेटवरील उपलब्ध चाटसच्या द्वारे संशोधनाशी

निगडीत दोन व्यक्ती एकमेकांशी गप्पा मारून माहिती गोळा करू शकते.

- 4) **ई-जर्नल्स व डाटा बेस :** संशोधक इंटरनेटद्वारे आपल्या विषयाशी संबंधित माहिती ही ई जर्नल मधून शोधू शकतो किंवा मिळवू शकतो. संशोधकाला संशोधनामध्ये पुर्व प्रकाशीत साहित्याचा (Review of literature) आढावा घेण्यासाठी इंटरनेटचा उपयोग होतो.
- 5) संशोधन करीत असतांना संशोधकाला संशोधन कार्याच्या शेवटी जी संदर्भसूची द्यावी लागते त्याची माहिती सुध्दा इंटरनेटवर उपलब्ध असलेल्या APA व MLA या प्रमाणित मानकांद्वारे संशोधकाला मिळू शकते.

संशोधनामध्ये इंटरनेट वापरण्यामागील उद्देश :

- 1) संशोधकाच्या वेळेची व पैशाची व श्रमाची बचत होणे.
- 2) संशोधकाला कमीत कमी वेळेत माहिती उपलब्ध होणे.
- 3) संशोधनासाठी आवश्यक अचुक माहिती मिळविणे.
- 4) संशोधनाकाचे कार्य ठरलेल्या कालावधीत पूर्ण होणे.

निष्कर्ष : आजचे युग माहिती तंत्रज्ञानाचे युग आहे. आजच्या युगात माहिती मोठ्या प्रमाणात उपलब्ध होत आहे. असा विसकळीत माहितीतून संशोधकाला आवश्यक असलेली योग्य माहिती

व योग्य वेळेत इंटरनेट द्वारा प्राप्त होवू शकतो. मात्र त्यासाठी संशोधक हा संगणक साक्षर असणे आवश्यक आहे. संगणक साक्षरतेस पर्याय नाही. संगणकीकरणाचे प्रगत ज्ञान अवगत करणे म्हणजे काळाबरोबर चालणे होय.

जगातील कुठलीही माहिती संशोधक हा घर बसल्या एका क्षणात इंटरनेटद्वारे मिळवू शकतो. इंटरनेट हे संशोधनातील एक महत्वाचे साधन आहे. माहिती व संप्रेषण तंत्रज्ञानाच्या विकासामुळे संशोधकाला त्यांच्या संशोधनासाठी आवश्यक

असलेली माहितीचा संग्रह व त्याचे विश्लेषण करणे शक्य झाले आहे.

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- 3) <http://www.google.com>



विद्यार्थ्यांच्या प्रगतीमध्ये माहिती संप्रेषण तंत्रज्ञानाची भुमिका

प्रा. विलास शालिग्रामजी गांजरे

मातोश्री सुभद्राबाई पाटील कला, विज्ञान व कौ. पां. ठा. वाणिज्य महाविद्यालय,
मानोरा जि. वाशिम.

प्रस्तावना :-

आज प्राचीन काळापासूनचा आपण विचार केला तर ज्ञान, विज्ञान, तंत्रज्ञानाच्या कक्षा दिवसेंदिवस अधिकच विस्तारत जात आहे. 21 व्या शतकात ज्ञान व माहिती तर आपल्या पर्यंत माहिती तंत्रज्ञानामुळे सहज पोहचते आहे. आज माहिती संप्रेषण तंत्रज्ञानामुळे मानवी जीवन पार बदलून गेले आहे. माहिती संप्रेषण तंत्रज्ञानामुळे शिक्षणाच्या क्षेत्रात प्रचंड बदल होत असून अतिशय सकारात्मक सुधारणा त्यामुळे घडून येत आहे. पूर्वीची गुरुकुल पद्धती, नंतरची खडू फळा पद्धती ह्या सारख्या शिक्षणातील विद्या देणे घेणे प्रक्रियेमध्ये प्रचंड मोठ्या प्रमाणात बदल होत आहे आणि त्यामुळे रटाळ अध्ययन आणि अध्यापन पद्धतीच्या जागी आता ह्या विज्ञानाच्या माहिती तंत्रज्ञान युगात प्रात्यक्षिक आणि स्वअध्ययन यायला सुरुवात झाली आहे. माहितीचा आणि ज्ञानाचा ग्रहण करण्याचा वेग तीव्र गतीने वाढत आहे.

माहिती संप्रेषण तंत्रज्ञान जे आज या युगात शिक्षणाच्या क्षेत्रात विद्यार्थ्यांसाठी अतिशय मोलाचे ठरत आहे त्याची समर्पकता पाहावयाची असेल तर काही व्याख्यांचा परामर्श घेणे उचित ठरेल. व्याख्या – 1) “ माहिती प्रसारीत करणे, साठवणे, तयार करणे, माहितीचे आदान प्रदान

करणे यासाठी वापरण्यात येणारे तंत्रज्ञान म्हणजे माहिती संप्रेषण तंत्रज्ञान होय.” 2) “माहितीच्या कार्यक्षम व्यवस्थापनासाठी लागणाऱ्या हार्डवेअर आणि सॉफ्टवेअरचा वापर म्हणजे माहिती संप्रेषण तंत्रज्ञान होय.” यामध्ये रेडिओ, दुरदर्शन, व्हिडीओ, डिव्हीडी, दुरध्वनी, मोबाईल फोन, उपग्रहावर आधारित सेवा व सुविधा, संगणक व त्यासंबंधीत हार्डवेअर आणि सॉफ्टवेअर अशा गोष्टींचा समावेश होतो. ह्याव्यतिरीक्त व्हिडीओ कॉन्फरेंसिंग इ-मेल, ब्लॉग अशा तंत्राचाही समावेश आहे.

शिक्षणाच्या क्षेत्रात माहिती संप्रेषण तंत्रज्ञानाने फार मोठी क्रांती झाली असून हे माहिती संप्रेषण तंत्रज्ञान विद्यार्थ्यांच्या विकासामध्ये ये आणि त्यांच्या सर्वांगीन प्रगतीमध्ये अतिशय मोलाची भुमिका बजावत आहे.

विषय विवेचन :

मानवी जीवनाच्या जवळ जवळ सर्वच क्षेत्रांमध्ये माहिती संप्रेषण तंत्रज्ञान उपयुक्त ठरत आहे. विज्ञान आणि तंत्रज्ञानाची होणारी प्रगती ह्यामुळे माहितीच्या संप्रेषणाचाही वेग झपाट्याने वाढत चालला आहे. विद्यार्थ्यांच्या दृष्टिकोनातून हे माहिती संप्रेषण तंत्रज्ञान अतिशय मोलाची भुमिका बजावत आहे. अध्ययन करत असतांना कुठल्याही घटकांचे संदर्भ आणि माहिती विद्यार्थ्यांना सहज उपलब्ध होत आहे. माहिती

संप्रेषण तंत्रज्ञानातील विलक्षण प्रगतीमुळे वर्ल्ड वाईब वेब ने विद्यार्थी, शिक्षक हयांच्यासाठी माहितीचा खजिना उपलब्ध झाला आहे. माहिती संप्रेषण तंत्रज्ञानामुळे वर्गातील विद्यार्थ्यांचा अध्ययनाचा वेळ कमी करता येऊन सहज, सुलभ पद्धतीने विद्यार्थ्यांना ज्ञान देणे शक्य होत आहे. ICT मुळे एकच शिक्षक अनेक शाळामध्ये अनेक विद्यार्थ्यांना ज्ञानदान करू शकतो. शेकडो मैल अंतरावर असणारे तज्ञ शिक्षक ऑनलाईन किंवा व्हिडीओ कॉन्फरेंसिंगद्वारा विद्यार्थ्यांना माहिती किंवा ज्ञान देऊ शकत आहे. विद्यार्थी स्वतःच्या वेळेनुसार व गतीनुसार केव्हाही आणि कुठेही माहिती किंवा ज्ञान घेऊ शकतो. त्यामुळे विद्यार्थी आपल्या समस्या सहज सोडवत आहेत.

सखोल शिक्षण घेणे ही 21 व्या शतकातील गरज असून याच तंत्रज्ञानाचा वापर करून विद्यार्थ्यांची गुणवत्ता वाढविणे सहज शक्य होत आहे. गुणवत्ता वाढीसाठी अडथळा ठरणार्या घटकांचा अभ्यास करून त्यावर तंत्रज्ञानाच्या वापराने उपाय करता येतो. माहिती तंत्रज्ञान व संप्रेषण साधनांमुळे शिक्षण पद्धतीवर निश्चितच चांगला परिणाम दिसतो आहे. विद्यार्थ्यांचा गुणात व उपस्थितीत सुध्दा सुधारणा झाल्याचे निष्पन्न होत आहे. हया ICT मुळे विद्यार्थ्यांना उपयुक्त, सुलभ व रुची असणारी शिक्षण पद्धती उदयास येत आहे. माहिती व संप्रेषण तंत्रज्ञानामुळे विद्यार्थ्यांना जणू काही आनंददायी शिक्षणच खुले झाले आहे. माहिती व संप्रेषण साधने योग्यरित्या वापरल्यास विद्यार्थ्यांमध्ये शिक्षणाविषयी आवड निर्माण करता येते व शिक्षणाची गुणवत्ता सुध्

धारण्यास मदत होते. हया माहिती संप्रेषणाच्या साधनांमुळे विद्यार्थ्यांना ज्ञानाची नवी कवाडे खुली झाली आहे. जगातील कुठलेही ज्ञान व माहिती सहज विद्यार्थ्यांना मिळणे शक्य झाले आहे. संगणक व इंटरनेट वापरून विद्यार्थी पुस्तकी ज्ञानाच्या पलीकडे जाऊन त्यांच्या विषयाची तसेच इतर कुठल्याही विषयाशी संबंधीत नवनवीन माहिती मिळवू शकतात व आपल्या ज्ञानात भर घालू शकतात. हया तंत्रज्ञानामुळे विद्यार्थी दैनंदिन जीवनातील घटना अभ्यासू शकतात व त्यायोगे विषय अधिक, सखोलरित्या जाणून घेऊ शकतात.

आज माहिती संप्रेषण तंत्रज्ञानामुळे चांगले ज्ञान माहिती व चांगले शिक्षण मिळण्याच्या संधी अनेक पटीने वाढल्या आहेत. आवश्यक त्या वेबसाईटवरून योग्य ती माहिती किंवा युट्युबवरून आवश्यक ती चित्रफीत सहज विद्यार्थ्यांना उपलब्ध होत आहेत. हयाशिवाय तज्ञांचे विचार, मार्गदर्शन, व्याख्यान, लेखन-चिंतन पाहता येणे किंवा वाचता येणे अगदी सोपे बनले आहे. आजचे युग हे तंत्रज्ञानाचे युग असल्यामुळे डिजीटल स्कूल आणि ई-लर्निंगच्या माध्यमातून विद्यार्थ्यांना योग्य ते शिक्षण सहज सुलभरित्या देणे शक्य होत आहे. आज आपण पाहतो आजचा विद्यार्थी स्वअध्ययनाकडे झुकत चालला आहे हयाचे महत्वाचे कारण म्हणजे माहिती संप्रेषण तंत्रज्ञान आहे. विद्यार्थी स्वतः तंत्रज्ञानाच्या माध्यमातून माहिती मिळवून दुसऱ्यापर्यंत ती माहिती किंवा ज्ञान देण्यास पात्र बनत चालला आहे. म्हणजेच ही शिक्षण पद्धती खऱ्या अर्थाने विद्यार्थी केंद्रीत होत चालली आहे. विद्यार्थ्यांचा सक्रीय सहभाग, माहिती व

दळणवळणाच्या साधनांमुळे परीक्षा पध्दती, माहितीचे विश्लेषण करण्याच्या पध्दती यात अनेक बदल घडून येत आहे. त्यासोबतच माहिती संप्रेषण तंत्रज्ञानामुळे अभ्यासाची घोकंपट्टी करून गुण मिळविण्याच्या पध्दतीला प्रोत्साहन मिळण्यापेक्षा विद्यार्थ्यांचा शिक्षणातील रस वाढल्यास मदत होत आहे.

भौतिक आणि भौगोलिक अडथळे ओलांडून संप्रेषण प्रस्थापित करणे माहिती संप्रेषण तंत्रज्ञानामुळे शक्य होते त्यामुळे शाळा आणि बाहेरील जग यांच्यामधील सीमारेषा पुसुन टाकणे शक्य झाले आहे. एकमेकांशी स्पर्धा करण्यापेक्षा एकमेकांना सहकार्य करत शिकण्याला माहिती संप्रेषण तंत्रज्ञान पोषक आहे. आधुनिक जगाचे अविभाज्य अंग बनलेल्या तंत्रज्ञानाची ओळख नवीन पिढीला होण्यासाठी माहिती संप्रेषण तंत्रज्ञानाचे ज्ञान निश्चितच उपयुक्त ठरू शकते. माहिती संप्रेषण तंत्रज्ञानामुळे विद्यार्थ्यांना शिक्षणात प्रोत्साहन मिळत असून त्यांची जिज्ञासा वाढीस लागलेली आहे. विद्यार्थ्यांच्या अमूर्त संकल्पना ह्या तंत्रज्ञानामुळे स्पष्ट होत आहेत. माहिती संप्रेषण तंत्रज्ञानामुळे हे विश्व खऱ्या अर्थाने जवळ आले आहे.

निष्कर्ष :

माहिती व संप्रेषण तंत्रज्ञानाचा (ICT) वापर करण्याने विद्यार्थ्यांच्या शैक्षणिक दर्जात उल्लेखनीय आणि सकारात्मक सुधारणा झाल्याचे शिक्षण तंत्रज्ञानाच्या निदर्शनास आले आहे. विद्यार्थ्यांची माहिती तंत्रज्ञानामुळे अध्ययनातील रुची वाढू लागली आहे. ज्ञानाच्या कक्षा रुंदावत जाऊन माहिती

संप्रेषण तंत्रज्ञानामुळे ज्ञान, माहिती अगदी प्रत्येक विद्यार्थ्यांपर्यंत सहजरित्या पोहचत आहे, त्यामुळे विद्यार्थ्यांचा बौद्धिक, मानसिक विकास होणे सोपे झाले आहे. शिक्षणात विद्यार्थ्यांसाठी माहिती संप्रेषण तंत्रज्ञानाचा उपयोग केल्यामुळे विद्यार्थीकेंद्री शिक्षण प्रक्रिया आनंदी, मनोरंजक, आकलनक्षम व परिणामकारक झाली आहे. विद्यार्थ्यांना विविध परीक्षा ऑनलाईन देणे शक्य झाले आहे. व विद्यार्थी स्वयंमुल्यमापन करू शकत आहे. विद्यार्थ्यांना घरबसल्या अध्ययन करणे व मार्गदर्शन मिळवणे शक्य झाले आहे. विद्यार्थ्यांना माहिती, ज्ञान मिळवण्यासाठी तिचा अभ्यास करण्यासाठी नवीन मार्ग उपलब्ध झाला आहे. पारंपारिक शिक्षण पध्दतीला बाजूला सारत माहिती तंत्रज्ञानामुळे विद्यार्थ्यांची गुणवत्ता वाढीस लागत आहे.

जगातील एकंदर माहितीचा साठा दर चार ते पाच वर्षांमध्ये जवळपास दुपटीने वाढतो या माहितीच्या विस्फोटाला सामोरे जाण्यासाठी, त्यात तग धरण्यासाठी माहिती संप्रेषण तंत्रज्ञान विद्यार्थ्यांसाठी महत्वाची भूमिका निभावत आहे. आज या 21 व्या शतकात विद्यार्थ्यांची प्रगती साधण्यामध्ये माहिती संप्रेषण तंत्रज्ञानाची भूमिका अतिशय महत्वाची ठरत आहे. आणि ह्याची फलश्रुती दिसायला लागली असून हेच माहिती संप्रेषण तंत्रज्ञानाचं गमक आहे.

ज्ञान विज्ञानाच्या रुंदावल्यास कक्षा

चला आपण त्या जाणू या ।

विस्तारले क्षितीज हे माहिती तंत्रज्ञानाचे

संप्रेषणे ते स्विकारुया ।।

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लि. आग्रा.



आजच्या शिक्षणात आय.सी.टी. चे महत्त्व

डॉ. कु. लीना शरदराव गावंडे

गृहअर्थशास्त्र विभाग

प्रा. कु. एम.एम.कनाटे

भूगोल विभाग, स्व. पंचफुलाबाई पावडे कला वाणिज्य महिला महाविद्यालय, वरुड, जि. अमरावती

प्रस्तावना:

आधुनिक तंत्रज्ञानाचा वापर करणे ही आजच्या काळाची गरज झाली आहे. संप्रेषणाची साधने व तंत्रे वापरून उपलब्ध माहिती परिणामकारकरित्या समोर पाठवू शकतो ही साधने व तंत्रे सहजरित्या दैनंदिन जीवनात उपलब्ध असल्याने शिक्षण क्षेत्रातील अध्ययन, अध्यापन प्रक्रिया या माध्यमातून समृद्ध होवू शकते. कारण आज विद्यार्थी तंत्रज्ञानाच्या वापरात पारंगत होणे आवश्यक आहे. मानवी जीवनाच्या जवळजवळ सर्व क्षेत्रामध्ये माहिती संप्रेषण तंत्रज्ञान उपयुक्त ठरत आहे. विज्ञान आणि तंत्रज्ञानात वेगाने होणाऱ्या प्रगतीमुळे माहितीचा वेगही वाढला आहे. त्या अनुशंगाने माहिती संप्रेषण तंत्रज्ञान हे उपलब्ध साधनांचा उपयोग करून, सर्वसामान्यांना त्यांच्या विविध गरजांसाठी माहितीचा वापर करून देत आहे. माहिती संप्रेषण तंत्रज्ञान हे आज काळाची गरज बनले आहे.

माहिती संप्रेषण तंत्रज्ञान, शिक्षण आणि विकास या ज्ञानाधिष्ठित समाजाला आधार देणाऱ्या स्तंभाचा स्वतंत्रपणे विचार करण्याऐवजी शिक्षण आणि माहिती संप्रेषण तंत्रज्ञान ही विकासाच्या गाडीची दोन चाके आहेत, या दृष्टिकोनात पाहणे गरजेचे आहे. कुठेही, कधीही अध्ययन शक्य व्हावे ही कल्पना प्रत्यक्ष आणण्यासाठी माहिती

संप्रेषण तंत्रज्ञान महत्वाची भूमिका बजावते माहिती संप्रेषण तंत्रज्ञानामुळे ज्ञानाने भौगोलिक सीमा ओलांडल्या आहेत तसेच ज्ञानाची देवाणघेवाण करण्याच्या आणि ज्ञान जतन करण्याच्या जास्त शक्यता निर्माण झाल्या आहेत. यामध्ये माहिती संप्रेषण तंत्रज्ञान उपयोजन आणि सेवांचे कार्य समजून घेवून विशिष्ट माहिती कशी शोधायची, प्रक्रिया कशी करायची व त्या माहितीचे मुल्यांकन कसे करायचे, माहितीच्या विविध स्रोतांची सत्यता कशी पडताळून पाहायची याचाही समावेश होतो. चिकित्सक दृष्टीने पाहिल्यास माहिती संप्रेषण तंत्रज्ञान हा अस्सल ज्ञानाधिष्ठित समाज उभारण्याच्या ध्येयाकडे जाणारा एकमेव मार्ग आहे.

विद्यार्थ्यांमध्ये उच्च कौशल्ये, आजीवन टिकतील अशा अध्ययनाच्या सवयी, चिकित्सक दृष्टीने विचार करण्याची क्षमता, संवाद, सहकार्य त्याचबरोबर माहिती उपलब्ध करून, मुल्यांकन व एकत्रीकरण करणे या गोष्टींचा विकास करणे.

व्याख्या :

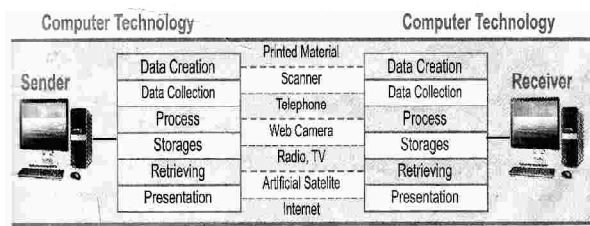
“संप्रेषणासाठी माहिती निर्माण करणे, वर्गीकरण करणे, जतन करणे/साठवणे आणि माहितीचे व्यवस्थापन करणे इ. गोष्टीसाठी लागणारे तंत्रज्ञान संसाधने आणि साधने यांचे एकत्रीकरण म्हणजे माहिती संप्रेषण तंत्रज्ञान होय.”

उद्दिष्टे :

1. विद्यार्थी मिळवलेली माहिती वापरून समस्या सोडवू शकतात तसेच नविन समस्यांना सामोरे जाऊ शकतात.
2. कच्चा स्वरूपातील माहितीवर प्रक्रिया करून तिचे उपयुक्त माहितीमध्ये रूपांतर करणे.
3. स्वतःच्या वेळेनुसार व गतीनुसार सरावावर आधारीत कौशल्ये विद्यार्थी शिकू शकतात.
4. माहिती समजण्यास सोपी व्हावी अशा नव्या रूपात तिचे रूपांतर करणे.
5. माहितीचे ज्ञानामध्ये रूपांतर करणे आणि या ज्ञानाच्या माध्यमातून वापरकर्त्याला सुजाण बनविणे.
6. व्यक्तीव समाज यांचे ज्ञान, त्यांची तार्किक कौशल्ये आणि दृष्टिकोन यात इलेक्ट्रॉनिक माध्यमाच्या मदतीने बदल घडविणे.

माहिती संप्रेशण तंत्रज्ञानाचे सहा घटक पुढीलप्रमाणे :

1. युजर, 2. संप्रेशण, 3. माहिती, 4. कृती, 5. हार्डवेअर, 6. सॉफ्टवेअर

**आकृती : माहिती संप्रेशण तंत्रज्ञानाचे स्वरूप**

माहिती संप्रेशण तंत्रज्ञानामुळे माहितीचे आदान प्रदान होते. आवश्यक तेव्हा ही माहिती वापरता येऊ शकते. असे हे माहितीचे चक्र निरंतर सुरू राहते.

आजच्या शिक्षणात आय.सी.टी. चा वापर**1. अध्यापनात आय.सी.टी. चा वापर :**

षाळेत तसेच उच्च शिक्षणात माहिती देण्यावरच शिकवण्याचा जास्तीत जास्त भर असतो त्यामुळे मुलांना ते कंटाळवाणे वाटते. मात्र आय. सी.टी. च्या हार्डवेअर व सॉफ्टवेअर साधनामुळे अध्ययन रंजक होते. पॉवर पॉइंट प्रेझेंटेशन, ऑनिमेशन व ध्वनी यामुळे धडा चांगला समजु शकतो. वेबकॅम व एल.सी.डी. मुळे अध्ययन परिणामकारक होते.

2. मुल्यांकनात आय.सी.टी. चा वापर :

तंत्रज्ञानातील प्रगतीमुळे बहुपर्यायी प्रश्न, रिकाम्या जागा भरा, चुक की बरोबर, जोड्या लावा इ. प्रश्नांवर आधारित ऑनलाईन परिक्षा घेणे शक्य झाले आहे. वर उल्लेख केलेल्या तंत्रज्ञानावर आधारित संगणकाच्या मदतीने उत्तरपत्रिकांचे परिक्षण करणेही शक्य झाले आहे. मोठ्या स्पर्धात्मक परिक्षांमध्ये ही पद्धत यशस्वीरित्या राबवली गेली आहे.

3. ऑनलाईन मार्गदर्शनासाठी आय.सी.टी. चा वापर :

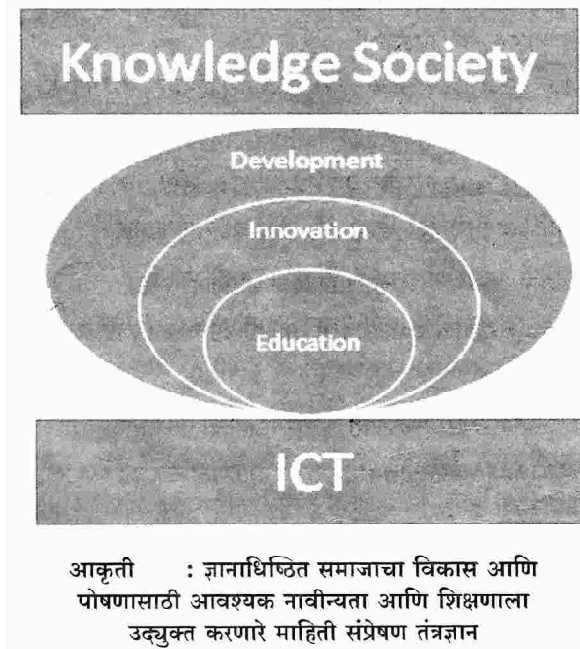
विद्यार्थ्यांना अभ्यासासाठी षाळेव्यतिरिक्त मदतीची आवश्यकता असते. विद्यार्थ्यांना ऑनलाईन शिकवले जाते. हे केवळ आय.सी.टी. मुळे शक्य झाले आहे. ऑनलाईन मार्गदर्शन विद्यार्थी त्यांच्या घरी बसून घेवू शकतो. इंटरनेट आणि सॉफ्टवेअर मार्फत तो त्याच्या मार्गदर्शकाशी जोडला जातो. भारतात असलेल्या शिक्षकाला तो पाहु शकतो आणि दुसऱ्या देशात असलेल्या विद्यार्थ्याला शिक्षक पाहु शकतो. विद्यार्थ्याने प्रश्न

विचारल्यास शिक्षक पॉवर पॉईंट किंवा स्मार्ट बोर्डच्या सहाय्याने उत्तर देवू शकतो. ही परस्पर क्रिया समोरासमोर होते. त्यामुळे अनेक विद्यार्थ्यांना शिक्षण सुकर होते.

4. प्रशिक्षण साहित्य विकसित करण्यासाठी आय.सी.टी.चा वापर:

एखाद्या विशिष्ट विशयात प्राविण्य असलेले अनेक शिक्षक असतात त्यांच्या व्याख्यानाचे डिजिटलायझेशन करून ती सर्व वापरकर्त्यांना उपलब्ध करून दिली पाहिजेत. जेणेकरून शिक्षक त्या व्याख्यानाचा उपयोग वर्गात करू शकतात आणि त्यावर चर्चा घडवून आणू शकतात. त्यामुळे काही नविन मुद्दे लक्षात येतात.

अशा उपक्रमामुळे शिक्षण प्रभावी, सहाभागात्मक आणि आनंददायी होण्यास मदत होते.



निष्कर्ष :

शिक्षण व्यवस्थेत येणाऱ्या आणि पर्यायाने विकासात येणाऱ्या अडचणी सोडविण्याची क्षमता माहिती संप्रेषण तंत्रज्ञानात आहेत, म्हणून अनेक देशांनी माहिती संप्रेषण तंत्रज्ञानाला त्यांच्या विकास योजनेच्या केंद्रस्थानी ठेवून त्यात मोठ्या प्रमाणात गुंतवणुक केली आहे. माहिती संप्रेषण तंत्रज्ञान ज्या विकास कार्यक्रमांमध्ये समाविष्ट केले आहे, त्याच्यामध्येही अनेक बदल झाले आहेत. उदा. सुधारित सेवा, पुरवठा, अभ्यासक्रमातील बदल, गुणवत्ता निर्धारण किंवा व्यवसायामधील उत्पादन प्रक्रिया इ. औपचारिक शिक्षणाच्या संदर्भात बघितले तर विकेंद्रीकरण, शालेय व्यवस्थापन, आणि विद्यार्थी केंद्रीत तत्वज्ञान यांचाही समावेश करता येतो. मात्र विकसित देशांपुढे माहिती संप्रेषण तंत्रज्ञानाच्या क्षमतांचा पुरेपुर आणि परिणामकारकरित्या यशस्वी वापर करण्यासाठी आवश्यक ती साधने, क्षमता आणि कौशल्य यांच्या अभावाचे आव्हान आहे.

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आधुनिक ग्रंथालय सुरक्षितता : सी. सी. टि. व्ही.

प्रा.कु. कविता मु. इंगळे

ग्रंथपाल, स्व. पंचफुलाबाई पावडे कला व वाणिज्य महिला महा. वरुड

सार

ग्रंथालयामध्ये मुक्तद्वार पद्धतीचा अवलंब केला जातो. या पद्धतीमुळे वाचकांना हवा असलेला ग्रंथ, वाचनसाहित्य उपलब्ध होते. परंतु या पद्धतीमुळे काही दुष्परिणामही समोर आले. ग्रंथालयातील दुर्मिळ ग्रंथ, वाचन साहित्य, हस्तलिखिते यांचे गहाळ होण्याचे प्रमाण वाढले. बदलत्या काळानुसार वाचकांच्या ग्रंथलयाकडून अपेक्षाही वाढत गेल्या. त्याचा परिणाम निश्चितच ग्रंथालयावर पडत गेला. आज ग्रंथालयामधून आधुनिक तंत्रज्ञानाचा वापर होवू लागला.

आधुनिक माहिती व संप्रेषण तंत्रज्ञानामुळे ग्रंथलयाच्या अंतर्गत सुरक्षेसाठी ज्या काही नवनवीन सुरक्षा प्रणालींचे षोध लागले त्यापैकी सी.सी.टि.व्ही. हे एक तंत्रज्ञान आहे. प्रस्तुत षोध निबंधामध्ये ग्रंथालय सुरक्षितता, ग्रंथालय सुरक्षिततेची गरज, सी.सी.टि.व्ही. संकल्पना, उद्देश व सी.सी.टि.व्ही. ची ग्रंथालयातील कार्यपद्धती यावर प्रकाष टाकण्यात आलेला आहे.

प्रस्तावना :

एकविसावे षतक हे माहिती-तंत्रज्ञानाचे युग म्हणून ओळखले जाते. संपूर्ण जग हे एक जागतिक खेडे बनलेले आहे. माहिती व तंत्रज्ञानातील बदलांचा फार मोठा परिणाम ग्रंथालयावर झालेला आहे. पारंपारिक, ग्रंथालयांची जागा आता अंकिय ग्रंथालये घेत आहे. वाचकांना परिणामकारक व चांगल्या प्रकारच्या सेवा देण्यासाठी ग्रंथालयाचे संगणकीकरण करणे आवश्यक झालेले आहे. ग्रंथालयांचे स्वरूप हे ज्याप्रमाणे बदलले आहे. त्याचप्रमाणे ग्रंथालयांच्या सुरक्षिततेचाही प्रज्ण निर्माण होतो आहे. ग्रंथालये ही आधुनिकीकरणाबरोबरच असुरक्षितही बनत चाललेली आहेत.

जागतिकीकरणाच्या युगात जगातील कुठलीही माहिती ही क्षणात आपल्या पुढ्यात येते इतका माहितीचा वेग वाढलेला आहे. माहितीची विविधता, माहितीचा मोठ्या प्रमाणात झालेला विस्फोट आणि त्याचा वाचकाकडून होणारा वापर यावर अवलंबून असणारे माहितीचे तंत्रज्ञान या सर्वांचा समावेश आज ग्रंथालयात केला जातो.

ग्रंथालय सुरक्षितता:

ग्रंथालय व्यवस्थापनामध्ये ग्रंथालय सुरक्षिततेला एक विषेश स्थान आहे. ग्रंथलयास सुरक्षितता प्रदान करण्यासाठी सुरक्षिततेचे अनेक उपाय आज उपलब्ध आहेत. तसेच ते खर्चिकही

आहेत. खरेतर कुठलेही तंत्रज्ञान स्विकारतांना त्यासाठी लागणा-या खर्चापेक्षा त्याच्या परिणामकारकतेला जास्त महत्त्व दिले जाते.

ग्रंथालय सुरक्षिततेची गरज :

ग्रंथालय आधुनिकीकरणामध्ये खालील बाबींमुळे ग्रंथालय सुरक्षेची गरज भासत आहे.

1. ग्रंथालय संग्रहातील होणारी वाढ.
2. मुक्तद्वार ग्रंथालय पद्धतीचा अवलंब.
3. ग्रंथसंग्रहातील दूर्मिळ ग्रंथांची संख्या वाढणे.
4. ग्रंथालय संग्रहातील मोठ्या किंमतीच्या पुस्तकांचा भरणा.
5. ग्रंथालयात मर्यादित प्रतिलिपी मिळण्याची सोय नसणे.

क्लोज सर्किट टि.व्ही. संकल्पना :

21 व्या शतकाच्या असुरक्षित परिस्थितीत सुरक्षिततेला फार महत्त्व आहे. सार्वजनिक ठिकाणे उदा. सिनेमा हॉल, शॉपिंग मॉल, हॉस्पिटल, विमानतळ, मंदिरे, संसद व विधानभवने अशा अतिमहत्वाच्या ठिकाणची सुरक्षितता ठेवणे आज अत्यावश्यक झाले आहे. सर्वच ठिकाणी मानवनिर्णयित सुरक्षितता व्यवस्था अपुरी पडते आहे. त्यामुळे आज त्याच्या जोडीस त्यासंबंधी विकसित होत असलेल्या तंत्रज्ञानाचा वापर करणे गरजेचे झाले आहे. जेणेकरून येणाऱ्या परिस्थितीत किंवा घडणाऱ्या घटनांवर देखरेख ठेवण्याने शक्य होणार आहे. सुरक्षिततेच्या कारणासाठी क्लोज सर्किट टि.व्ही. तंत्रज्ञानाचा शोध लागला व त्याचा माहिती-तंत्रज्ञानाच्या युगात पुढे विकास झाला.

वेब कॅमेरा व डिजिटल व्हिडिओ सुरक्षितता पद्धती आज अस्तित्वात आली आहे व त्याचा सार्वजनिक ठिकाणी सुरक्षिततेसाठी वापर वाढतो आहे. सार्वजनिक सुरक्षिततेसाठी वापरले जाणारे सी.सी.टि.व्ही. तंत्रज्ञान ग्रंथालयाच्या अंतर्गत सुरक्षिततेसाठी वापरले जाऊ लागले आहे.

आज ग्रंथालये ही नॉलेज रिसोर्स सेंटर बनून वाचकाभिमुख होत आहेत. त्यामुळे वाचकांना बरेच स्वातंत्र्य प्राप्त होत आहे. परंतु या संधीचा काही वाचक गैरफायदा घेतात. ग्रंथालयातून अमूल्य ग्रंथ व इतर साहित्य चोरीस जाणे, संगणक व इतर यंत्र सामुग्रीची चोरी होणे, इतकेच नव्हे तर वाचकांवर किंवा ग्रंथालय कर्मचाऱ्यांवर हल्ले होणे, त्यांना जखमी करणे असे प्रकारही ग्रंथालयात घडतात. अशावेळी ग्रंथालय प्रवेश व निर्गमन स्थानी तसेच कॉरिडोरमध्ये, स्टॅकिंग क्षेत्रामध्ये, कपाटांच्या गाळ्यामध्ये सतत देखरेख करण्याची व्यवस्था केली जाते.

सी. सी. टि. व्ही. ग्रंथालयात वापरण्याचे उद्देश

1. ग्रंथालयात ग्रंथचोरी, ग्रंथ लपवणे, नियतकालीक किंवा दूर्मिळ संदर्भग्रंथाची पाने फाडणे किंवा इतर गुन्हे शोधणे.
2. ग्रंथाचोरीच्या घटना घडल्या तर तपासण्यासाठी किंवा संबंधितावर जबाबदारी टाकण्यासाठी व्हिडिओ फिल्ममधील दृश्ये पुराव्यासाठी वापरणे.
3. ग्रंथालयातील वाचकांना तसेच ग्रंथालय कर्मचाऱ्यांना ते सुरक्षित ठिकाणी आहेत असा दिलासा देणे.

4. ग्रंथालय व्यवस्थापनात चित्रीत केलेल्या माहितीचा वापर करणे.
5. ग्रंथालय योग्य उद्देशासाठी वापरले जाणे हे सुनिश्चित करणे.
6. ग्रंथपालास बसल्याजागी ग्रंथालयातील विविध विभागातील कार्याचा आढावा घेता येणे.
7. ग्रंथालय कर्मचाऱ्यावर ग्रंथपालाला देखरेख ठेवता येते.

ग्रंथालयात सुरक्षिततेपोटी क्लोज सर्किट व्दारा चित्रित केलेली माहिती ही गोपनीय पद्धतीने सांभाळणे व वापरणे आवश्यक असते. जेणेकरून त्याचा इतर व्यक्तीस किंवा स्त्रियांना त्रास होणार नाही अशाप्रकारचे चित्रीकरण केले जाते. परंतु असे चित्रीकरण करणे बऱ्याच वाचकांना आवडत नाही व अशा व्यवस्थापनेस त्यांचा आक्षेप असू शकतो. अशा परिस्थितीत त्यासंबंधीचे कायदे बनविणे व त्याची वाचकांना माहिती करून देणे अगत्याचे असते.

सी.सी.टी. व्ही. तंत्रज्ञानाची ग्रंथालयातील कार्यपद्धती :

1. सी. सी.टी.व्ही यंत्रणा ग्रंथालयात, बसवितांना ग्रंथालयाचे प्रवेशव्दार, निर्गमनव्दार, कॅरिडोर,ग्रंथ संग्रह क्षेत्र, कपाटांमधील गाळ्या, देवघेव विभागातील काउंटर, संदर्भ विभाग व बाऊंड व्हॉल्युम विभाग वा अभ्यासिका अशा ठिकाणी सी.सी.टी.व्ही.

- यंत्रणेचे कॅमेरे बसविले जातात.
2. ग्रंथालयातील विविध विभागात बसलेल्या कॅमे—याचे कनेक्शन हे ग्रंथपालाच्या केबीन मधील टि.व्ही. ला जोडलेले असते.
3. ग्रंथालयातील विविध विभागातील घडामोडींवर ग्रंथपाल आपल्या बसल्याजागी मॉनिटरच्या सहाय्याने लक्ष ठेवू शकतो.
4. या यंत्रणेत कॅमे—याच्या समोर येणा—या सीनचे चित्रण हे त्यास जोडलेल्या व्ही.डी. ओ. मॉनिटरवर सतत दिसत असते.
5. या संरक्षण प्रणातील एक मॉनिटर अनेक कॅमे—याशी जोडलेला असतो. काही विषिष्ट परिस्थितीत फिरते कॅमेरेही बसविले जातात.
6. सी.सी.टी.व्ही. यंत्रणेसाठी लागणारी यंत्रसामुग्री ही सामान्य ते उच्च दर्जाची असते. तसेच रंगीत व कुशुणधवल दोन्ही प्रकारचे चित्रीकरण करणारी यंत्रे मिळू शकतात.
7. सी.सी.टी.व्ही. व्दारे केलेल्या चित्रीकरणाचे रेकॉर्डिंग करणे गरजेचे असते.
8. अशा चित्रीकरणाचे रेकॉर्डिंग आता व्हीसीआर ऐवजी डीव्हीआरच्या सहाय्याने करून ठेवले जात आहे.
9. डीव्हीआर या पद्धतीने रेकॉर्ड करणे व पाहणे एकाच वेळी करता येते. तसेच चित्रीकरणही दीर्घकाळ टिकते.

निष्कर्ष :

आज ग्रंथालयातील अंतर्गत सुरक्षिततेसाठी

अद्ययावत तंत्रज्ञानाचा ग्रंथालयात वापर करणे गरजेचे ठरते. त्यामुळे सी.सी.टी.व्ही सारख्या आधुनिक तंत्रज्ञानाच्या साहाय्याने ग्रंथालयीन अंतर्गत सुरक्षितता करणे शक्य आहे. परंतु सी.सी. टी.व्ही. ही यंत्रणा ग्रंथालयासाठी अतिशय खर्चिक आहे. पण त्याचबरोबर या यंत्रणेची, ग्रंथालयातील उपयोगिता पाहता अशा स्वरूपाचे तंत्रज्ञान मोठ्या ग्रंथालयासाठी तसेच लहान ग्रंथालयातील सुध्दा ग्रंथ व नियतकालिकांची पाने फाडणे, ग्रंथ चोरून नेण्यासारख्या प्रकारांना आळा घालण्यास निश्चितच या संरक्षण प्रणालीचा उपयोग होतो.

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शिक्षणामध्ये माहिती तंत्रज्ञानाचा वापर

प्रा. बि. एस. थेर

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प्रस्तावना :

माहिती व संप्रेषण तंत्रज्ञानाचा (ICT) योग्य वापर करण्यासाठी तुमच्या शाळा महाविद्यालयासाठी योग्य तांत्रिक उपकरणे निवडणे हे अत्यंत महत्वाचे आहे. या विभागात माहिती मिळविण्यासाठी वापरता येऊ शकणाऱ्या विविध तंत्रज्ञानाची माहिती देण्यात आली आहे. शिवाय ही तंत्रे वापरतांना कोणकोणत्या अडचणी येऊ शकतात याविषयी देखील यात चर्चा करण्यात आली आहे.

माहिती प्रक्षेपीत करण्यासाठी, साठविण्यासाठी, तयार करण्यासाठी प्रदर्शित करण्यासाठी किंवा तिची देवाण घेवाण करण्यासाठी वापरली जाणारी विद्युत उपकरणे म्हणजे माहिती व संप्रेषण तंत्रज्ञान यामध्ये रेडीओ, दुरदर्शन, व्हिडीओ, डिव्हीडी, दुरध्वनी, मोबाईल फोन, उपग्रहावर आधारीत सेवा व सुविधा, संगणक व त्या संबंधीत हार्डवेअर आणि सॉफ्टवेअर अशा गोष्टींचा समावेश होतो. ह्या व्यतिरिक्त व्हिडीओ, कॉन्फरन्सिंग, ईमेल ब्लॉग अशा तंत्राचा ही यात समावेश होतो.

सध्याच्या 'माहिती युगात' शैक्षणिक क्षेत्रात समजून घेण्यासाठी माहिती व संप्रेषण तंत्रज्ञानाच्या (ICT) नवनविन स्वरूपांचा शिक्षणात अंतर्भाव करणे गरजेचे आहे. हे सर्व प्रभाविरित्या करण्यासाठी शैक्षणिक नियोग नकार, मुख्याध्यापक, शिक्षक व

तंत्रज्ञाना प्रशिक्षण, तंत्रज्ञान वित्त, शिक्षण, संप्रेषण अशा विविध क्षेत्रात अनेक निर्णय ते ही योग्य रित्या घेता आले पाहिजेत. अनेकासाठी हे काय म्हणजे एखादी नवी भाषा शिकणे व ती शिकविण्यास शिकणे इतके कठीण काम वाटते. या विभागात विविध उपकरणे व तंत्रे यांची माहिती दिलेली आहे. यात देशांना जोडणाऱ्या उपगृहापासून विद्यार्थी वर्गात वापरत असणाऱ्या उपकरणापर्यंत सर्वांचा समावेश, आहे. शिक्षणतज्ञ, नितीशास्त्रज्ञ, नियोजनकार, अभ्यासक्रम तयार करणारे तज्ञ तसेच इतरांना माहिती व संप्रेषण तंत्रज्ञानाची (ICT) गुंतागुंतीची उपकरणे, त्या संबंधीत संज्ञा आदींतून मार्ग काढत योग्य निर्णय घेणे सोपे जावे हा यामागील उद्देश आहे.

माहिती व तंत्रज्ञानाची शिक्षणातील भुमीका :-

माहिती व संप्रेषण तंत्रज्ञानाचा (ICT) वापर करून शिक्षणाच्या दर्जात उल्लेखनीय आणि सकारात्मक सुधारणा करता येईल असे साधारणतः सर्वच शिक्षणतज्ञांचे व संशोधकांचे म्हणणे आहे. मात्र शिक्षणपद्धतीमध्ये माहिती व संप्रेषण तंत्रज्ञानाचे स्थान नेमके काय असावे व त्याच्या उपयुक्ततेचा जास्तीत जास्त फायदा कसा करून घेता येऊ शकतो हा अजून ही चर्चीला जाणारा मुद्दा आहे. या विभागात माहिती व संप्रेषण तंत्रज्ञानाचा शिक्षणपद्धतीवर पडलेला प्रभाव व

शाळामध्ये तंत्रज्ञानाचा वापर कसा करता येईल या विषयी अनेक लेख, अहवालात समाविष्ट करण्यात आले आहेत. शिवाय या विषयावरिल ऑनलाईन जर्नल्स व वेबसाईटच्या लिंक्स देखील देयात आल्या आहेत.

शिक्षणपद्धतीत माहिती व संप्रेषण तंत्रज्ञान वापरण्याचे फायदे सांगणारे लेख या विभागात आहेत. तसेच, शिक्षणपद्धतीत या तंत्रज्ञानाचा समावेश करतांना होऊ शकणाऱ्या चुका त्या टाळण्यासाठी ध्यावयाची काळजी याविषयावरील लेख व उदाहरणे देखील देण्यात आली आहेत.

कार्यक्षेत्रात तंत्रज्ञान :-

सान्या जगातून मिळविलेल्या तंत्रज्ञानाचा वापर करतांना वापरल्या जाणाऱ्या पद्धती, उपाय, धोरणे त्यांचे यश अपयश यांच्या कथा, यात खालील मुद्दांचा समावेश आहे.

- 1) मल्टी चॅनेल लर्निंग (बहु-वाहिनी शिक्षण)
- 2) शैक्षणिक दुरदर्शन
- 3) शैक्षणिक रेडिओ
- 4) वेष – आधारीत सुचना
- 5) शोधासाठी ग्रंथालये
- 6) विज्ञान व तंत्रज्ञान यांची प्रात्यक्षिके
- 7) माध्यमांचा (मिडीया) वापर
- 8) विविध क्षेत्रातील तंत्रज्ञानाचा वापर : लहान मुलांचा विकास कमी घनता असणारी लोकसंख्या, प्रौढ शिक्षण, स्त्री शिक्षण, मनुष्यबळ विकास
- 9) शिक्षकांच्या तयारीसाठी व प्रशिक्षणासाठी तंत्रज्ञानाचा वापर

10) धोरणे आखण्यासाठी, माहिती व्यवस्थापन (डेटा-प्रबंधन) करण्यासाठी तंत्रज्ञानाचा वापर

11) शाळा व्यवस्थापनासाठी तंत्रज्ञानाचा वापर

संघकाळातील तंत्रे :-

- 1) सुचनात्मक साधने
- 2) ऑडीओ, व्हिडीओ व डिजीटल उपकरणे (श्रव्य, दृश्य व डिजीटल उत्पाद)
- 3) सॉफ्टवेअर व कनेन्टवेअर
- 4) संपर्काची साधने
- 5) माध्यम (मिडीया)
- 6) शैक्षणिक वेबसाईट्स

भविष्यातील तंत्रज्ञान :-

सध्या अस्तीत्वात असलेले तंत्रज्ञान व भविष्यात येऊ घातलेले तंत्रज्ञान यावर एक नजर वापर करणाऱ्या आणि निर्णय घेणाऱ्यांचा कल्पनेला प्रोत्साहन देण्यासाठी आणि काय उपलब्ध आहे ह्या वरच आधारीत नव्हे तर काय येत आहे ह्यावर भविष्यातील तंत्रज्ञानावर एक दृष्टी.

रेडीओ व दुरदर्शन :-

20 व्या शतकाच्या सुरुवातीपासून रेडीओ व दुरदर्शन यांचा वापर शिक्षणासाठी केला जात आहे रेडीओ व दुरदर्शनाचा वापर मुख्यत्वे खालील प्रकारे केला जातो. (ICT) च्या ह्या स्वरूपांचा मुख्यत्वे तीन प्रकारे उपयोग करण्यात येतो.

- 1) शालेय विषयांशी संबंधीत ध्वनी चित्रफीती व रेडीओवरून प्रसारीत केले जाणारे कार्यक्रम यांच्या सहाय्याने वर्गात शिकविणे.

- 2) शाळांमध्ये शिक्षणाला पुरक असे कार्यक्रम प्रक्षेपीत करणे.
- 3) सामान्य ज्ञान व माहितीवर शैक्षणिक कार्यक्रम दाखविणे किंवा प्रसारीत करणे.

रेडीओवरुन (IRT) प्रसारीत केले जाणारे कार्यक्रम दैनिक स्वरूपाचे असतात हे रेडीओ धडे, एका विशिष्ट विषयाशी संबंधित असतात व त्यांचा प्रेक्षकवर्ग लक्षात घेऊन त्यांची काढीण्य पातळी ठरविली जाते. या कार्यक्रमांमुळे शिक्षकांना तो विषय अधिक चांगल्या रीतीने शिकविण्यास मदत होते तसेच मुलांना ही तो विषय समजुन घेणे सोपे जाते. या पद्धतीमुळे दुर्गम भागातील शाळेतील विद्यार्थी व ज्या ठिकाणी शिक्षकांची कमतरता आहे अशा ठिकाणच्या विद्यार्थ्यांना ही शिक्षण घेणे सोपे जाते. रेडीओवरुन (IRT) प्रसारीत केल्या जाणाऱ्या या कार्यक्रमांमुळे औपचारिक व अनौपचारिक दोन्ही प्रकारच्या शिक्षणाचा दर्जा व त्याची व्याप्ती दोन्ही गोष्टीवर सकारात्मक प्रभाव पडला आहे. शिवाय रेडीओ कमी खर्चीक असल्यामुळे मोठ्या लोकसंख्येला शिक्षणाचा लाभ मिळू शकतो.

दुरचित्रीत केलेले कार्यक्रम अभ्यासक्रमास पुरक म्हणून किंवा स्वतंत्र पाठ म्हणून ही वापरले जाऊ शकतात. अशा कार्यक्रमांत आता अनेक आमुलाग्र बदल घडून आले आहेत. पुर्वी अनेकदा अशा कार्यक्रमात एखादा शिक्षक एखाद्या विषयावर विवेचन करतांना दाखविला जाई मात्र आता त्याची जागा विद्यार्थ्यांना जवळ वाटणाऱ्या मुद्यांनी व सुसंवाद साधणाऱ्या कार्यक्रमांनी घेतली आहे

त्यामुळे हे कार्यक्रम विद्यार्थ्यांना अधिकाधिक खिळवून ठेवत आहेत. विद्यार्थ्यांची ग्रहण क्षमता व सुसंवाद वाढविण्यासाठी बहुतेक अशा शैक्षणिक कार्यक्रमांसह छापील व इतर प्रकारचे साहित्य देखील पुरविले जाते.

आशिया पॅसिफीक प्रदेशात शैक्षणिक प्रसारण मोठ्या प्रमाणात केले जाते उदा. भारतात इंदीरा गांधी राष्ट्रीय मुक्त विद्यापीठातील अनेक अभ्यासक्रम दुरदर्शन व व्हिडीओ कॉन्फरेंसिंगच्या मदतीने शिकविले जातात.

काही विशिष्ट अभ्यासक्रमांशी संबंधित कार्यक्रम प्रसारित करण्याबरोबर सर्वसामान्य शैक्षणिक कार्यक्रम प्रसारित करण्यासाठी ही दुरदर्शन व रेडीओचा वापर केला जाऊ शकतो. वास्तविक शैक्षणिक मुल्य असणारा व रेडीओ किंवा दुरदर्शनवरून प्रसारित केला जाणारा कोणताही कार्यक्रम सर्व सामान्य शैक्षणिक कार्यक्रम म्हणून गणला जाऊ शकतो. उदा. अमेरिकेत प्रसारीत केला जाणारा 'सिसेम स्ट्रीट' हा कार्यक्रम किंवा कॅनडामधील फार्म रेडीओ फोरम हा रेडीओ चर्चा कार्यक्रम.

शिक्षण पद्धती शिक्षार्थी केंद्रीत करण्यासाठी माहिती व संप्रेषण (ICTS) साधनांचा कसा वापर करता येईल ? :-

संशोधन केल्या नंतर हे सिध्द झाले आहे की माहिती व संप्रेषण साधने (ICTS) योग्यरित्या वापरल्यास विद्यार्थ्यांमध्ये शिक्षणाविषयी आवड निर्माण करता येते व शिक्षणाची गुणवत्ता सुधारण्यास मदत होते. माहिती व संप्रेषणाच्या

(ICTS) साधनांमुळे, विशेषतः संगणक व इंटरनेटमुळे शिक्षक व विद्यार्थ्यांना ज्ञानाची नवी कवाडे उघडी झाले आहेत. संगणक व इंटरनेट वापरून शिक्षक व विद्यार्थी पुस्तकी ज्ञानाच्या पलीकडे जाऊन त्यांच्या विषयाशी तसेच इतर विषयांशी संबंधात नवनवी माहिती मिळवू शकतात व आपल्या ज्ञानात भर घालू शकतात. यामुळे आतापर्यंत शिक्षक केंद्रीत असणाऱ्या शिक्षणपद्धतीत नवा बदल घडून आला आहे. आतापर्यंत शिक्षक विद्यार्थ्यांना ज्ञान देत असत मात्र आता विद्यार्थी देखील स्वतः इंटरनेट वापरून माहिती मिळवू शकतात व ती वर्गात वाटू शकतात म्हणजेच शिक्षणपद्धती हळूहळू शिक्षार्थी केंद्रीत होत चालली आहे.

सक्रिय सहभाग : माहिती व दळणवळणाच्या साधनांमुळे परीक्षापद्धती माहितीचे विश्लेषण करण्याच्या पद्धती यात अनेक बदल घडून आले आहेत. त्यामुळे विद्यार्थ्यांना मार्ग उपलब्ध झाला आहे. आता विद्यार्थी त्यांच्या सवडीप्रमाणे माहिती मिळवू शकतात. निरनिराळ्या प्रकारे तिचा अभ्यास करू शकतात, दैनंदिन जीवनातील घटना अभ्यासू शकतात व त्याजोगे विषय अधीक सखोलरित्या जाणून घेऊ शकतात. अशा पद्धतीने माहिती व दळणवळणाच्या साधनामुळे केवळ अभ्यासाची धोकंपट्टी करून गुण मिळविण्याच्या पद्धतीला प्रोत्साहन मिळविण्यापेक्षा विद्यार्थ्यांचा शिक्षणातील रस वाढण्यात मदत होत आहे.

दुहेरी शिक्षण : माहिती व दळणवळणाच्या साध

नांमुळे विद्यार्थी शिक्षण तज्ञ यांच्यात संवाद व सहकार्याची भुमीका निर्माण होण्यास मदत होते. शिवाय या साधनामुळे वेगवेगळ्या संस्कृतीतील व्यक्तींशी त्यांच्या संस्कृतीशी ओळख होते व आपल्या ज्ञानाच्या कक्षा रुंदावण्यास मदत होते. या सर्वांचा आयुष्याच्या पुढील वास्वालीत नक्कीच फायदा होतो.

माहिती व संप्रेषणाच्या साधनांचा शिक्षणात कसा फायदा होतो :-

माहिती व साधनांचा शिक्षणावर कितपत आणि कसा प्रभाव पडतो हे ती साधने कशी व कशासाठी वापरली जातात यावर अवलंबून असते. या साधनांचा सर्वांनाच सारख्याच प्रमाणात फायदा होईल असेही नाही. मात्र ही साधने योग्य पद्धतीने वापरली गेल्यास त्यांचा फायदा नक्कीच होतो.

माहिती व संप्रेषणाच्या साधनांमुळे शिक्षणाच्या गुणवत्तेवर काय परिणाम होतो ह्याचा विस्तृत अभ्यास अजूनपर्यंत केला गेलेला नाही मात्र जो काही थोडाफार अभ्यास करण्यात आलेला आहे त्यावरून हे स्पष्ट झालेले आहे की माहिती व संप्रेषणाच्या साधनामुळे शिक्षण पद्धतीवर निश्चीतच चांगला परिणाम होतो. प्रसारीत केल्या जाणाऱ्या अनेक शैक्षणिक कार्यक्रमांपैकी रेडीओद्वारे सुसंवाद कार्यक्रमाचा सखोल अभ्यास करण्यात आलात्र या कार्यक्रमांमुळे शिक्षणाचा दर्जावर उत्तम परिणाम झाल्याचे दिसून आले तसेच विद्यार्थ्यांच्या गुणांत व उपस्थितीत ही सुधारणा झाल्याचे आढळले.

मात्र संगणक, इंटरनेट यांच्या वापरामुळे शिक्षणाच्या दर्जात फारसा फरक पडल्याचे आढळून आले नाही. या विषयावर संशोधन करणाऱ्या रसेला या अभ्यासकाने काही उल्लेखनिय अंतर नसल्याचे म्हटले आहे की, माहिती व संप्रेषणाच्या साधनांचा वापर करणाऱ्या विद्यार्थ्यांच्या गुणवत्तेत व व्यक्तीगत मार्गदर्शन घेणाऱ्या विद्यार्थ्यांच्या गुणवत्तेत त्याला फारसा फरक आढळला नाही. माहिती व संप्रेषणाच्या साधनांद्वारे दिल्या जाणाऱ्यामुळे व्याख्यानांमुळे विद्यार्थ्यांमधील अनुपस्थितीचे प्रमाण वाढल्याचे ही मत अनेक समीक्षक व्यक्त करतात. मात्र माहिती व दळणवळणाच्या साधनांमुळे विद्यार्थ्यांच्या गुणवत्तेत सुधारणा होत असल्याचेही निदर्शनास आले आहे. पारंपारिक शिक्षणाच्या जोडीला संगणकाचा वापर करण्यात आल्यास शिक्षणाच्या गुणवत्तेत वाढ होऊ शकते. संगणकाचा वापर केल्यामुळे विद्यार्थ्यांमध्ये शिक्षणाविषयी आवड निर्माण झाल्याची ही काही उदाहरणे आहेत.

शिक्षकांना माहिती व दळणवळणाची साधने हाताळण्याचे योग्य ते प्रशिक्षण दिल्यास शिक्षण पद्धतीत आमुलाग्र बदल घडून येऊ शकतो. मात्र अजून या प्रयत्नांना म्हणावा तसा भर देण्यात आलेला नाही शिवाय अशा प्रशिक्षणामुळे शिक्षणपध्

दतीस बदल घडून आल्याचे काही ठोस पुरावे ही उपलब्ध नाहीत सध्या या विषयी उपलब्ध असणारी माहिती ही विद्यार्थी व शिक्षकांकडून मिळविण्यात आली आहे व त्याद्वारे काढलेले निष्कर्ष सकारात्मक आहेत.

संगणक व इंटरनेटमुळे होणारे फायदे मोजण्यासाठी प्रमाणित अशा चाचण्या नाहीत त्यामुळे ही या साधनांचा प्रभाव मोजण्यात अडथळे येत आहेत. शिवाय ही साधने शिक्षण पद्धतीत अशा काही तऱ्हेने मिसळली आहेत की त्यांचा वापर वेगळा करून त्यांचा प्रभाव मोजणे हे एक कठीण काम झाले आहे.

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संगीतामध्ये अध्ययन, अध्यापन व मूल्यमापन करण्यासाठी ICT (माहिती व संगणक तंत्रज्ञान) ची भूमिका

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प्रस्तावना :

आजचे युग हे वैज्ञानिक युग आहे. या वैज्ञानिक युगाच्या अंतर्गत विविध टेक्नॉलॉजी माध्यमांचे चक्र सुरु असते. या टेक्नॉलॉजीच्या विविध माध्यमांच्या साह्याने मानवाने अनेक शोधां लावले आहे आणि या शोधांमुळे मानव आपली प्रगती प्रतिदिन करीत आहे.

आज आधुनिक काळाची गरज असणा-या ICT Technology ची भरभराट दिवसेंदिवस वाढतच आहे. Computer हया माध्यमाद्वारे माहिती पुरविणारी ही टेक्नॉलॉजी प्रणाली आहे. Computer ला इंग्रजी मध्ये कंप्युट (Comput) असा शब्द आहे. ज्याचा अर्थ गणना करणे असा होतो आणि याच शब्दाच्या सोबत er लावल्याने हा Computer शब्द तयार होतो. ज्याचा पूर्ण अर्थ होतो 'गणना करणारा'.

Computer हया कार्यप्रणालीला आज सर्वच क्षेत्रात महत्वपूर्ण स्थान दिले गेलेले आहे. उदा.बँक खाते, औद्योगिक क्षेत्र, वैद्यकीय क्षेत्र, कृषी व्यवसाय इत्यादी. हया क्षेत्रांनी ICT या प्रणालीद्वारे माहिती प्राप्त करुन उत्तुंग भरारी मारली आहे. त्याच पाठोपाठ शैक्षणिक क्षेत्रात देखील Teaching Aid म्हणून या ICT प्रणालीचा उपयोग करुन घेण्यावर भर देण्यात येत आहे.

आज असा कोणताही अभ्यासक्रम नाही की त्या अभ्यासक्रमामध्ये आपण ICT चा उपयोग करू शकत नाही. शिक्षण पद्धतीमध्ये प्राथमिक स्तरापासून ते उच्च स्तरापर्यंत ICT चा प्रवास चालू असतो. एवढेच नव्हे तर या ICT मुळे विश्वात प्रतिदिन घडत असणा-या घडामोडींचा आढावा घेतल्या जाऊ

शकतो. या घडामोडींमध्ये शिक्षणाशी संबंधित असणा-या सर्व बाबींचा उल्लेख करता येऊ शकतो. ICT च्या अंतर्गत येणा-या विविध ICT यावरून विविध क्षेत्रातील माहितीचे संकलन करुन प्रसारित केल्या जाऊ शकते. उदा.स्व.किशोरीताई आमोणकर यांची माहिती हया ICT द्वारे काही क्षणातच संपूर्ण विश्वात प्रसारित झाली. अशाप्रकारे विश्वात घडत असणा-या संगीत विषयाशी संबंधित असणा-या घडामोडींचा आढावा ICT द्वारे घेता येऊ शकतो. आणि अपडेट झालेली माहिती संकलीत करुन विद्यार्थ्यांपर्यंत पोहचविण्याचे कार्य करू शकतो. करिता शिक्षणात Teaching, Learning आणि evaluation मध्ये ICT चा समावेश असणे गरजेचे झाले आहे. हे सांगण्याचा प्रयत्न प्रस्तुत शोधनिबंधामध्ये करीत आहे.

2. ICT म्हणजे काय ?

It is an umbrella term- that includes all technology for the communication of information. It refers to the forms of technology that are used to transmit, store, create, share, or exchange particular task.

ICT चे महत्व : या ICT च्या विविध ICT असलेल्या दिसून येतात या वेबसाईटला गुगल चे सर्च इंजिन द्वारे इंटरनेटच्या मदतीने वेगवेगळ्या वेबसाईटवरून माहिती संकलीत करता येऊ शकते. विकीपीडिया, इनसायक्लोपेडिया यु टूब, इत्यादी यावरील वेबसाईटवर सर्च केल्याने माहिती आपल्यापर्यंत त्वरीत पोहचते. जसे की, युटूब वरील व्हीडीओ, लाईव्ह प्रोग्राम तसेच शिकवणी वर्ग अपडेट असल्यास त्यावरूनही अध्ययन करता येते.

अशाप्रकारे जेवढे महत्त्व हे ICT शी संबंधित असणा-या Website चे आहे तेवढेच महत्त्व Computer शी संबंधित असणा-या कार्यप्रणाली भागांशी आहे. ते म्हणजे सी पी यु, मॉनिटर, कि बोर्ड, स्पीकर्स, माउस, मायक्रोफोन, इअरफोन, वेब कॅमेरा, प्रोग्राम सॉफ्टवेअर, इंटरनेट कनेक्शन, विद्युत प्रवाह इत्यादी यांच्या उपयोगाने आपण कोणत्याही क्षेत्राशी संबंधित असणा-या अध्ययन, अध्यापन कार्यामध्ये ICT च्या कार्यप्रणालीचा उपयोग करू शकतो. कारण ही या आधुनिक काळाची गरज झालेली आहे.

3. ICT आणि संगीत :

थोडक्यात आयसीटी म्हणजे Information and Computer Technology होय. याची प्रगती व उपयोगिता उत्तरोत्तर वाढत आहे. तशीच प्रगती आयसीटी द्वारे संगीत विषयाची देखील वाढत आहे. ही प्रगती वाढविणारी माध्यमे म्हणजे रेकॉर्डिंग, ब्रॉडकास्टिंग, रेडीओ, कॅसेट्स, सीडी, इत्यादी माध्यमांचा समावेश संगीतात दिसून येतो.

4. विषय प्रवेश :

1) सांगितिक अध्ययन अध्यापन आणि मूल्यमापनामध्ये ICT चा समावेश :

संगीत अध्यापन पद्धती : संगीत प्राथमिक अवस्थेत असतांना ते मौखिक स्वरुपातील मनोरंजनाचे साधन असायचे त्यानंतर भाषेची जशी प्रगती होत गेली तसतशी पुस्तक या साधनांनी त्याची जागा घेतली. पुढे पुस्तक हा जुना संदर्भ घेऊनच सांगितिक ज्ञान ICT द्वारे प्रसारीत केल्या जाऊ लागले.

प्राचीन काळापासून संगीताचे कला आणि शास्त्र या दोन्ही पक्षामध्ये महत्त्वपूर्ण शोधकार्य केलेले दिसून येतात. या शोधांतर्गत येणा-या विषयांना महाविद्यालयीन अभ्यासक्रमामध्ये समाविष्ट करण्यात आलेले आहे. हा अभ्यासक्रम स्नातक आणि स्नातकोत्तर दोन्हीही पदवी अभ्यासक्रमामध्ये समाविष्ट आहे. पूर्वीपासून चालत आलेली अध्ययन आणि अध्यापन ही प्रक्रीया तर चालूच आहे मात्र

ही आणखी प्रभावीरित्या सादर करण्यासाठी ICT ची मदत घेता येवू शकते. ICT ची उपयोगिता पुढील प्रमाणे :

अध्यापन प्रक्रियेमध्ये ICT : प्राथमिक उदाहरणादाखल काही उदाहरणे : जसे. अलंकार

सात स्वरांना स्क्रिन वर दाखवून त्याच्या जोडया लावण्याची पद्धती ICT द्वारे प्रभावीरित्या होऊ शकते.

आरोह : सा रे ग म प ध नि सां (साग, रेम, गप, मध, पनी, धसां)

अवरोह : सा नि ध प म ग रे सा (सांध, निप, धम, पग, मरे, गसा)

त्याचप्रमाणे दुसरे उदाहरण असे घेता की संगीत निर्मितीची एक उपपत्ती आहे की, सात स्वरांची निर्मिती ही अन्य जीवी प्राण्यांमधून झालेली आहे. आजपर्यंत आपण केवळ हयाचे महत्त्व सांगितले मात्र ICT च्या रेकॉर्डिंग व व्हीडीओ क्लिपद्वारे पक्षी, प्राणी यांना दाखवून त्यांचे आवाज विद्यार्थ्यांना ऐकवू शकतो. त्याच प्रमाणे एखाद्या रागाची बंदीश ऑडीओ व्हीडीओ द्वारे पाठवू शकतो. त्याची साध्यता ही सोशल नेटवर्किंगच्या सहाय्याने करू शकतो. उदा. Gmail, Whats app, Facebook इत्यादी त्याचप्रमाणे शास्त्राशी संबंधित असणा-या वाद्यं व त्यांचे वर्गीकरण आयसीटीद्वारे दाखवू शकतो. थोडक्यात वाद्यं दाखवून त्या वाद्यांचे वादक, ते वाद्यं वर्गीकरणाच्या कोणत्या प्रकारात मोडते याचे ज्ञान आयसीटी द्वारे देऊ शकतो. त्या वाद्यांचे महत्त्व देखील सांगू शकतो उदा. शहनाईवादक उ.बिसमिल्ला खॉं साहब या माहितीमध्ये उ. बिसमिल्ला खॉं साहब यांचे फोटो, त्यांचे वाद्य (शहनाई) शहनाई हे सुषिर वाद्य वर्गीकरणात मोडते. आणि शुभकार्यप्रसंगी या वाद्यांची उपयोगिता असते. या तिन्ही गोष्टी आपण आयसीटी द्वारे साध्य करू शकतो.

अशाप्रकारे आयटीसी चा संगीतामध्ये उपयोग करून घेता येऊ शकतो. कारण आयटीसी हे दृक्श्राव्य माध्यम असल्याने विद्यार्थ्यांचे

मन आणि मस्तिष्क या अवयवांचा यात सहभाग असतो. मात्र आयसीटी द्वारे अध्ययन अध्यापन होत असतांना विद्यार्थी हा स्क्रीन समोर बसलेला असून शिक्षक माउसच्या कर्सरद्वारे शिकवित असतो. त्यामुळे कमी वेळात चांगले अध्ययन होऊ शकते.

2. संगीत अध्ययन पद्धती :

ICT ही कार्यप्रणाली विश्वात सामावलेली आहे. त्यातील एक कार्यप्रणाली म्हणजे इंटरनेट होय. या इंटरनेट चा संगीताचे अध्ययन, अध्यापन करणा-याला निश्चितच फायदा होतो.

1. अध्ययनार्थी या आयसीटी तील e-library द्वारे संगीत साहित्य वाचू शकतो.
2. अध्ययन करणा-याला आवडणारे गीत तो विविध Website वरून डाउनलोड करू शकतो. उदा. Raag tune, Jatta.com, songs pk.com इत्यादी.
3. अध्ययनार्थी अभ्यासाचे विविध ग्रंथ आणि पुस्तकांचा आधार घेऊ शकतो.
4. एखाद्या गाण्याला व रागाला रेकॉर्ड व डाउनलोड करून पुनः पुनः ऐकू शकतो.
5. विविध घराण्यांच्या गायकांची गायकी ऐकू शकतो. ज्यांचे यु टूब सारख्या माध्यमाद्वारे लाईव्ह प्रोग्राम बघू शकतो.
6. अध्ययनार्थीला आवडणारे गायकांचे गायन आणि वादकाचे वादन सोशल नेटवर्कींगच्या माध्यमाने मागवू शकतो.
7. व्हीडीओ कॉन्फरन्सद्वारे एखाद्या सांगीतिक विषयावर चर्चा केली जाऊ शकते.
8. संगीत क्षेत्रामध्ये घडणा-या घडामोडींची माहिती या आयटीसी द्वारे बघू शकतो. इत्यादी.

अशाप्रकारे आयटीसी द्वारे अध्ययनार्थीनाही तर अध्यापनार्थी देखील आपल्या ज्ञानात आणखी भर घालू शकतो. असे अनेक फायदे आपण ICT द्वारे अध्ययन अध्यापन कार्यात होऊ शकतात.

3. मूल्यमापन पद्धती :

अध्ययन आणि अध्यापन या कार्यामध्ये उपरोक्त विषयांचे मूल्यमापन करणे गरजेचे आहे. हे मूल्यमापन सेमीनार, परिसंवाद, चर्चासत्र आणि स्पर्धा इत्यादी माध्यमांद्वारे करू शकतो. एखाद्या अभ्यासक्रम विषयावर विद्यार्थ्यांचा सेमीनार आयोजित करता येतो यामुळे त्यांच्या बुद्धी कौशल्याचा विकास होऊ शकतो. त्यानंतर आपण विद्यार्थ्यांकरिता चर्चासत्र आयोजित करू शकतो. याद्वारे त्यांच्या मनातील कल्पनांना वाव मिळून विषयावर चर्चा करण्याचा उत्साह वाढीस लागतो. व शिक्षणाची आवड निर्माण होते.

स्पर्धा या माध्यमाद्वारे देखील विद्यार्थ्याला अभ्यासक्रमातील एखाद्या रागाची चांगली तयारी करून घेणे वा पाठांतर करून सादर करण्याची सवय जडते. या सादरीकरणामुळे काही विद्यार्थ्यांच्या मनातील भीती नाहिशी होण्यास मदत होवून तो सादरीकरणासाठी उत्तम प्रकारे तयार होऊ शकतो व त्याला चांगल्या संधी चालून येऊ शकतात.

त्याचप्रमाणे महाविद्यालयीन स्तरावर राबविल्या जाणा-या इतर उपक्रमांमध्ये विद्यार्थ्यांचा सहभाग घेऊन विविध गीतांची तयारी करून घेऊन त्यांना स्टेट, नॅशनल लेव्हल सारख्या प्रतियोगितांमध्ये पाठवू शकतो.

या संपूर्ण प्रक्रियेमध्ये अध्यापनार्थी ही तेवढाच क्रियाशील आणि प्रभावशील बनू शकतो. तसेच या प्रक्रियेमध्ये विद्यार्थ्यांच्या आवड निवड विषयांचे ज्ञान होऊ शकते.

5. संशोधन उद्देश :

ICT या कार्यप्रणालीद्वारे अध्ययन आणि अध्यापन प्रभावीरित्या सादर व आत्मसात केल्या जाते. त्याचप्रमाणे या शोध निबंधाचा उद्देश हा शिक्षक विद्यार्थी केंद्री असू शकतो कारण शिक्षण क्षेत्रामध्ये अनेक बुद्धीमत्तेचे विद्यार्थी असतात यापैकी काहींना अधिक पाठांतराची आवश्यकता असते. अशासाठी ICT

हे माध्यम प्रभावीरित्या काम करते. करिता वरील शोध निबंध करण्याचा प्रयत्न करित आहे. अशाप्रकारे संगीत अध्ययन, अध्यापन व मूल्यमापनामध्ये ICT चे असणे क्रमप्राप्त आहे.

6. संशोधनाची आवश्यकता व उपयोगिता :

प्रस्तुत शोध निबंधामध्ये संकलीत केलेल्या माहितीच्या आधारावरून असे म्हणता येईल की पारंपारिक शिक्षणाच्या जोडीला संगणकाचा वापर करण्यात आल्यास शिक्षणाच्या गुणवत्तेत वाढ होऊ शकते त्याचप्रमाणे विद्यार्थ्यांमध्ये शिक्षणाची आवड निर्माण होते व विद्यार्थ्यांना टेक्नॉलॉजी सारख्या प्रणालीला हाताळण्याची सवय होवून त्यांचा आत्मविश्वास वाढीस लागतो. करिता अध्ययन अध्यापन आणि मूल्यमापन करतांना ICT चे शिक्षण असणे आवश्यक आहे. त्याचप्रमाणे या शोधनिबंधांतर्गत होणारे अध्ययन अध्यापनाचे कार्यामध्ये शिक्षक आणि विद्यार्थी दोघांनाही उपयोग होतो. त्याचप्रमाणे विद्यार्थ्यांमध्ये आत्मविश्वास वाढून त्यांच्यातील सुप्त गुणांना वाव मिळतो. हाच गुण अध्यापनार्थीसाठी देखील लागू होऊ शकतो. आणि अध्ययनार्थी आणि अध्यापनार्थी दोन्ही स्वतः नेहमी या आयसीटी कार्यप्रणालीत अपडेट राहू शकतात. त्याचप्रमाणे अपडेट झालेल्या नवनविन कल्पनांची माहिती संकलीत करून संगीत विषयांशी अधिक जवळीक साधू शकतात.

सारांश :

ICT या तंत्रज्ञानाचा वापर करून शिक्षणाच्या दर्जात उल्लेखनीय आणि सकारात्मक सुधारणा करता येऊ शकतात. उदा.पारंपारिक अध्यापन पद्धती आता काही प्रमाणात मागे पडत असून तिची जागा आता प्रात्यक्षिक व स्वअध्ययन यांनी घ्यायला सुरुवात केली आहे. माहिती ग्रहण करण्याचा वेगही दिवसेंदिवस वाढत आहे.

माहिती व दळणवळण साधनांमुळे परीक्षा पद्धती माहितीचे विश्लेषण करण्याची पद्धती यात बदल घडून आले आहेत. त्यामुळे विद्यार्थ्यांना माहिती मिळविण्यासाठी तिचा अभ्यास करण्यासाठी नविन मार्ग उपलब्ध झाला आहे. त्यामुळे विद्यार्थी त्यांच्या सवडीप्रमाणे माहिती मिळवू शकतात. निरनिराळ्या प्रकारे तिचा अभ्यास करू शकतात. दैनंदिन जीवनातील घटना अभ्यासू शकतात व त्या योगाने विषयांचे अध्ययन अधिक सखोल करू शकतात त्यामुळे गुण मिळविण्याच्या पद्धतीला प्रोत्साहन मिळण्यापेक्षा विद्यार्थ्यांचा शिक्षणातील रस वाढवण्यात मदत होत आहे. करिता प्रस्तुत शोध निबंधामध्ये Teaching, Learning आणि Evaluation सोबत ICT चे महत्व सांगण्याचा प्रयत्न करण्यात आला आहे.

संदर्भ :

- 1) WWW.Google.Com
- 2) Wikipidia
- 3) AGB Publishing Souvenir
- 4) संगीत कलाविहार



अध्ययन-अध्यापन व मूल्यमापन प्रक्रियामध्ये माहिती संप्रेषण तंत्रज्ञानाची भूमिका (The Role of ICT in teaching-Learning & Evaluation)

डॉ. दीपाली प्र. गांवडे

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सारांश

शिक्षण ही निरंतर चालणारी प्रक्रिया आहे. समाजात वावरत असतांना व्यक्ती हा सतत काहीना काही शिकत असतो. या शिक्षण प्रक्रियेतूनच त्याच्यामध्ये अनेक बदल होत असतात. व्यक्तिमध्ये किंवा कुठल्याही क्षेत्रात बदल होत राहणे हे त्याच्या जीवंतपणाचे लक्षण आहे. मग याला शिक्षणक्षेत्र सुद्धा अपवाद नाही. उलट शिक्षण क्षेत्राला फार मोठी जबाबदारी पार पाडायची असते. सुसंस्कृत राष्ट्र निर्माण करण्याचे व सुजाण संपन्न भावी नागरिक घडविण्याचे महत्वाचे कार्य या क्षेत्राला करावयाचे असते. शिक्षक हा या प्रक्रियेतील महत्वाचा घटक आहे. विद्यार्थ्यांना शिलसंपन्न माणूस बनविणे हे शिक्षणाचे ध्येय आहे व शिक्षकांचे राष्ट्र कार्य आहे. शिक्षक हा मार्गदर्शक, सुभलक, Facilitator आहे. या भूमिकेतून त्याला सर्व दृष्टिने तयार राहावे लागेल. काळानुसार शिक्षकाला आपल्या ज्ञानाच्या कसा सर्व बाजूने अधिक रुंदाव्या लागतील. विद्यार्थ्यांना पाहिजे त्या विषयावर मार्गदर्शन करणे, रस्ता दाखविणे हे सुभलक, मार्गदर्शकाचे काम आहे. या दृष्टिने शिक्षकांची जबाबदारी वाढलेली आहे.

शिक्षणाने समाजपरिवर्तन झाले पाहिजे आणि बदलत्या समाज परिस्थिती बरोबर शिक्षणाने व शिक्षकानेही आपल्यात परिवर्तन घडविणे आवश्यक आहे. विद्यार्थ्यांचा सर्वांगीण विकास घडविणे हे शिक्षणाचे मुख्य ध्येय आहे. हे ध्येय गाठण्यासाठी शिक्षकाला आपल्या अध्ययन-अध्यापन प्रक्रियेत अनेक प्रयोग, बदल संशोधन करणे आवश्यक असते. आज समाजामध्ये अनेक बदल होऊ घातलेले आहे. आजचा काळ हा आय.सी.टी. चा आहे. (आय.सी.टी. म्हणजे Information and communication Technologies होय) आज समाजामधील बहुतांश घटक या आय.सी.टी. मुळे प्रभावित झाला आहे. शिक्षण क्षेत्रामध्ये ही मोठ्या प्रमाणात आज आय.सी.टी. चा उपयोग केला जात आहे. Internet, Broadband, Networking, E-learning, facebook, Whatsapp, निरनिराळ्या विषयासंदर्भाततील aApp, Software, Website, U-tube, Video, आय.सी.टी. ने तर संपूर्ण जग आज संगणकाच्या छोट्याशा चौकटीमध्ये आणून ठेवलेले आहे. त्यामुळे शिक्षकांनी तंत्रज्ञानाचा (Technology) उपयोग करणे नैसर्गिक झाले आहे. आय.सी.

टी. च्या माध्यमातून आपण एकच विषय चोहूबाजूने, निरनिराळ्या तंत्रज्ञानाच्या साह्याने एका ठिकाणी बसून समजून घेऊ शकतो.

कुठल्याही गोष्टीचा प्रत्यक्ष अनुभव आपण याद्वारे विद्यार्थ्यांना देऊ शकतो. शिक्षणासंबंधी ज्या निरनिराळ्या Apps, Website, Educational Video, U-tube वरील शिक्षणासंबंधी Video Software-Hardware तयार झाल्या आहेत. त्याद्वारे आपण विद्यार्थ्यांचे संबोध अधिकाधिक स्पष्ट करू शकतो. यामधील Apps, Software, Website, Video, free, offline आहेत. शिक्षकाने अध्ययन-अध्यापन प्रक्रियेत आय.टी.सी. चा उपयोग केला तर विद्यार्थ्यांनाही त्याविषयी ज्ञान होईल. आय.सी.टी. द्वारे अध्ययन कसे करावयाचे हे त्याला समजून तो आय.सी.टी. द्वारे स्वतः Anywhere-Anytime तो आपली Learning Process सुरू ठेवेल. काळानुसार त्याचे व्यक्तिमत्त्व सर्वांगाणे विकसित होईल. माजी राष्ट्रपती ए.पी.जे. अब्दुल कलाम यांचे 2020 मध्ये भारत महासत्ता बनेल ही संकल्पना प्रत्यक्षात साकार करण्यासाठी व सध्याच्या काळाची गरज ओळखून अध्ययन-अध्यापन मूल्यमापन प्रक्रियेत आय.सी.टी. चा उपयोग

करणे अपरिहार्य, अत्यंत गरजेचे झालेले आहे. याच दृष्टिकोनातून सदर संशोधन पेपरमध्ये चर्चा करून काही निष्कर्ष व करण्यात आलेल्या आहेत.

संदर्भ

Teaching, Learning, Evaluation, Information Communication Technology, NAAC, UGC, New National Education Policy, Middle P. S. M. G. R.

अध्ययन-अध्यापन प्रक्रियेमध्ये तंत्रज्ञानाचा उपयोग (The Role of ICT in Teaching & Learning)

प्रस्तावना –शिक्षण प्रक्रियेत निर्माण होणाऱ्या अनेक प्रश्नांची बदलत्या परिस्थितीची उत्तरे संशोधनाद्वारे सापडणे शक्य आहे. आजचे युग हे विज्ञानाचे (Science) तंत्रज्ञानाचे (Technology) आहे. आज समाजात, जगात प्रत्येक ठिकाणी Technology चा वापर होत आहे. आजचा विद्यार्थी सुध्दा कालच्या विद्यार्थ्या पेक्षा बदलेला आहे. आजच्या विद्यार्थ्याला हातात पुस्तक नकाशे, पाटी-लेखन, वही-पेन, घेवून त्याच त्याच पद्धतीने शिकणे कंटाळवाणे वाटते. त्याचा कल हा Technology तंत्रज्ञानाकडे आहे. आजचा 2-3 वर्षांचा मुलगा मोबाईल, संगणक काही न शिकवता तो चांगल्याप्रकारे हाताळतो आहे. तेव्हा त्याच्या या आवडीला योग्य दिशा दिली त्याच्या या आवडीचा अध्ययन-अध्यपनात उपयोग केला तर त्याला शिक्षणाविषयी आवड निर्माण होईल त्याच्या बुद्धिला जे आवश्यक खाद्य आहे ते विद्यार्थ्यांना मिळणे महत्वाचे आहे. शिक्षकाला आपल्या विद्यार्थ्याला काळानुरूप काय देणे आवश्यक आहे. त्याला कुठले अनुभव देणे आवश्यक आहे. हे ओळखून त्याने यासाठी Selfmotivation करणे आवश्यक आहे. शिक्षकांनी आय.सी.टी. संदर्भात अभ्यास करून, त्याविषयीची अधिकाधिक ज्ञान मिळवून निरनिराळ्या विषयासंदर्भातील निरनिराळी माहिती मिळवून आपल्या ज्ञानाच्या कक्षा अधिक व्यापक करायला हव्यात. शिक्षकांजवळ जर निरनिराळे

अध्यापन कौशल्ये, साहित्य, गुणवत्ता, अथिरुची, विषयासंबंधाची माहिती मिळविणे व आपल्या ज्ञानाचा उपयोग इतरांसाठी करणे ही वृत्ती असेल तर तो विद्यार्थ्यांना चांगल्या प्रकारे घडवू शकतो. या सर्व गोष्टीसाठी आज शिक्षकाने आपली पारंपारिक भूमिका बदलून Information and Communication Technologies तंत्रज्ञानाचा वापर करून तंत्रज्ञानाची शिक्षकांची भूमिका स्विकारणे महत्वाचे आहे.

अध्ययन-अध्यपनात माहिती संप्रेषण तंत्रज्ञानाची भूमिका

The Role of ICT in teaching-Learning

आजच्या काळात तंत्रज्ञान हे शिक्षकाला पुरक झालेले आहे. शिक्षणाची प्रक्रिया ही आय.सा.टी. शिवाय अपूर्ण आहे. तंत्रज्ञानाच्या (आय.सी.टी.) साह्याने जगातील कुठलही ज्ञान ते मिळवू शकतो. जगातील वेगवेगळी संस्कृती (Different) आणि भाषा आपण घरी बसून किंवा वर्गखोलीमध्ये विद्यार्थ्यांना शिकवू शकतो. Anytime-Anywere Learning Process तंत्रज्ञानाच्या मध्यमातून शिक्षक आणि विद्यार्थी करू शकतात. तंत्रज्ञानाच्या मध्यमातून शिक्षक आणि विद्यार्थी करू शकतात. तंत्रज्ञानाच्या साह्याने शिक्षक आपली अध्ययन-अध्यपन प्रक्रिया अधिक Effectively परिणाम कारक करू शकतो. विद्यार्थ्यांना शिक्षणामध्ये निर्माण होऊन त्यांच्या शिकण्याविषयीच्या आवडी बदलतील. विद्यार्थ्यांमध्ये आत्मविश्वास निर्माण होईल. उदा. विद्यार्थ्यांना नाटक हा (Drama) संबोध स्पष्ट करायचा आहे. तेव्हा शिक्षक हा संबोध व्याख्यान पद्धतीने किंवा नाट्यीकरण पद्धतीने स्पष्ट करण्याऐवजी तंत्रज्ञानाच्या आधारे तो स्पष्ट केला तर तो विद्यार्थ्यांच्या मनावर अधिक रुजेल. कारण तंत्रज्ञानाच्या आधारे चेहऱ्यावरील हावभाव, संवाद कसे करायचे, प्रसंगानुरूप प्रकाशयोजना, पार्श्वसंगीत कशी असायला पाहिजे इ. अनुभव आपण विद्यार्थ्यांना देऊन त्यांचा तो संबोध अधिकाधिक स्पष्ट करू शकतो. सोबतच इतर देशातील नाटक (Drama) या संकल्पनेविषयीची अनुभव

तंत्रज्ञानाच्या आधारे विद्यार्थ्यांना देऊ शकता. जेणे करून विद्यार्थ्यांना तो संबोधअधिक व्यापक होईल. तसेच यामुळे अध्ययन-अध्यापन प्रक्रिया अधिक रंजक, सोपी, होते. कमी वेळात कमी मेहनतीत विद्यार्थ्यांना अधिकाधिक अनुभव शिक्षक देऊ शकतो. पूर्वी कंटाळवाणी पुर्णपणे संबोध स्पष्ट न करणारी, मर्यादित अनुभव देणारी अध्यापन प्रक्रिया रंजक, आनंददायी, संबोध स्पष्ट करणारी व जास्तीत जास्त अनुभव देणारी होईल. याचा परिणाम म्हणजे विद्यार्थ्यांमध्ये उपस्थिती व टिकवणूक, अध्ययनाविषयी आवड, अध्ययन निष्पत्तीत सुधारणा होणे, अध्ययन कौशल्य विकसीत होणे इ. दृश्य बदल झालेले दिसतील शिक्षकाने आय.सी.टी. द्वारे विद्यार्थ्यांना कसे शिकायचे सांगितले तर विद्यार्थी Anytime व Anywhere शिकू शकतो अभ्यास करतांना एखादी समस्या आली तर शिक्षकांची भेट होण्याची वाट न पाहता तो Google वर किंवा U-tube वर सर्च करून आपली समस्या सोडवू शकतो त्यासाठी शिक्षकांना आय.सी.टी. चे व वर्गखोलीमध्ये आय.सी.टी. चा कसा उपयोग करायचा याविषयीचे Skills याची भरपूर माहिती असायला हवी. त्यासाठी शिक्षकांना ट्रेनिंग देऊन यासंदर्भातील सर्व ज्ञान-माहिती दयायला हवी. जेणे करून शिक्षक स्वतः नवीन नवीन तंत्रज्ञान त्या विषयाचे कौशल्य आत्मसात करून त्याचा उपयोग आपल्या वर्गखोलीत करून अध्ययन-अध्यापन प्रक्रिया रंजक-सोपी-परिणामक करू शकतो. तंत्रज्ञानामुळे (आय.सी.टी.) शिक्षकांमध्ये विद्यार्थ्यांना अधिकाधिक देण्याची क्षमता निर्माण होऊन ज्ञान देण्याचे Multiple Sources त्याच्या जवळ राहतील. तंत्रज्ञानाच्या साहाय्याने तो निरनिराळे ज्ञान, दृष्टिकोन, कौशल्य आत्मसात करून स्वतःचे व्यक्तिमत्व अधिकाधिक समृद्ध, स्वावलंबी, व निर्भर आत्मविश्वास या दृष्टिने तयार होईल. या बदलाचा परिणाम त्याच्या अध्ययन-अध्यापन प्रक्रियेवरही झालेला दिसेल ती अधिक परिणामकारक होऊन संपादनकृपातळी वाढवणारी होईल. आय.सी.टी. मुळे शिक्षकाला जगातील ज्ञान मिळविण्याचे अनेक रस्ते मिळाले आहे त्यामुळे तो नेहमी Updaed राहू शकतो.

Smart बनू शकतो. शिक्षणामध्ये नवीन नवीन येणाऱ्या दृष्टिकोनाविषयी (Attitudes) मूल्यविषयी (Values) तो जागृत राहील. तंत्रज्ञानाच्या साहाय्याने तो शिकविण्याची तयारी चांगल्या प्रकारे करून अध्यापनाच्या निरनिराळ्या पद्धतीचा अवलंब करू शकतो परिणामतः त्याची अध्यापन पद्धती मनोरंजक ज्ञानदायी होईल. एखादा विषय त्याला शिकविणे कठीण जात असेल तर त्याविषयातील तंत्राच्या मदतीने आय.सी.टी. चा आधार घेऊन तो विषय वर्गखोलीमध्ये शिकवू शकतो. निरनिराळे तंत्रज्ञान, त्यासंदर्भातील शिक्षणासंबंधी तयार झालेले Software आणि Hardware अभ्यासक्रम संबंधित संगणकीय पाठयांश, चित्र, चलचित्र, कार्टून, Audio-Video, PPT याच्या साहाय्याने तो नवीनप्रकारे आपले सादरीकरण (Presentaion) करून आपली अध्ययन-अध्यापन प्रक्रिया अधिक परिणामकारक नावीन्यपूर्ण करेल. उदा. विद्यार्थ्यांचा व्यवहारभाषा – शास्त्रभाषा – साहित्यभाषा हा संबोध शिकवायचा आहे तर या सर्व भाषेचे अनेक उदाहरण त्याने Audio Video च्या आधारे विद्यार्थ्यांसमोर ठेवले तर त्याचा हा संबोध निश्चितच चांगल्या प्रकारे स्पष्ट होईल. शब्दांचे आदर्श उच्चार कसे करायचे हेही त्याला समजेल. तंत्रज्ञानाच्या साहाय्याने शिक्षक विद्यार्थ्यांसोबत योग्यपद्धतीने संवाद करून दोघांमधील अंतर कमी होऊन एक शैक्षणिक वातावरण तयार होईल. कमी वेळेत ज्ञान-कौशल्य विद्यार्थ्यांकडे Pass करू शकेल. तंत्रज्ञानाचा उपयोग केल्यामुळे एक आत्मविश्वास पूर्ण, परिणामकारक, परिपूर्ण व रंजक अध्ययन-अध्यापन प्रक्रिया होते. त्यामुळे आजच्या काळात शिक्षणामध्ये तंत्रज्ञानाचा उपयोग करणे नैसर्गिक-अपरिहार्य झाले आहे.

मूल्यामापन (Evaluation) : मूल्यामापनप्रक्रियेमध्ये सुद्धा आय.सी.टी. चा महत्वपूर्ण Role आहे. आय.सी.टी. मुळे मूल्यामापन प्रक्रिया सोपी, कमी वेळात पूर्ण होणारी झाली आहे. परीक्षा झाल्यावर मूल्यामापन प्रक्रिया पूर्ण होण्यासाठी जो 2-3 महिन्यांचा कालावधी लागायचा तो कमी झाला आहे. आय.सी.टी. च्या

साह्याने आपण परीक्षा घेतली तर लगेच आपल्यासमोर निकाल येतो. त्यामुळे लवकरच आपल्याला समजते की कोणता विद्यार्थी कश्यामध्ये कमी आहे. त्याला त्यादृष्टिने मार्गदर्शन करून प्रगत करू शकतो. तंत्रज्ञानाचा मूल्यमापन प्रक्रियेत उपयोग केल्यामुळे प्रत्येक विद्यार्थ्याच्या व्यक्तिगत Feedback कमी वेळेत आपल्या समोर येतो. मूल्यमापनासंदर्भातील विद्यार्थ्यांचा Data ठेवणे, Filing करणे सोपे जाते. आय.सी.टी. द्वारे मूल्यमापन प्रक्रियेमध्ये निरनिराळ्या कौशल्ये वपद्धती वापरून विविधता आणू शकतो. त्यामुळे अध्ययन-अध्यापन प्रक्रिया सुध्दा रंजक-सोपी होऊन विद्यार्थ्यांची परीक्षेसंदर्भातील भिती घालवू शकतो. आय.सी.टी. मुळे Online परीक्षा फार्म भरण्याच्या केंद्रावर, परीक्षा देण्याच्या केंद्रावर, व निकाल पाहण्याच्या केंद्रावर जाण्या येण्यासाठी जो वेळ, पैसा, शारिरीक खर्च व्हायचे ते कमी झाले आहे. त्यामुळे मूल्यमापन प्रक्रिया अधिक सोपी झाली आहे. आय.सी.टी. च्या उपयोगामुळे ही प्रक्रिया शक्य असल्यामुळे पर्यावरणसंवर्धन करणे सुध्दा शक्य आहे. सर्वात महत्वाचे म्हणजे आय.सी.टी. च्या उपयोगामुळे मूल्यमापन प्रक्रिया पारदर्शक होऊन त्यामधील होणाऱ्या काळयाव्यवहाराला (भ्रष्टाचाराला) आळा घालणे शक्य आहे. ज्यामुळे मूल्यमापनप्रक्रिये संदर्भात विद्यार्थ्यांमध्ये एक विश्वास निर्माण होईल. एक निखळ-निकोप मूल्यमापन प्रक्रिया घडू शकेल. एकूणच (शिक्षणासंदर्भातील) अध्ययन-अध्यापन व मूल्यमापन प्रक्रियेमध्ये तंत्रज्ञानाचा (आय.सी.टी.) महत्वाचा भाग आहे असे असेल तरी काही मोजकेच प्रयोगशील शिक्षक अध्ययन-अध्यापनात नाविन्यता, रंजकता, विद्यार्थ्यांचे संबोध अधिकाधिक स्पष्ट करण्यासाठी व आपली अध्यापन प्रक्रिया अधिक परिणामकारक करण्यासाठी तंत्रज्ञानाचा अध्यापनात उपयोग करतात. 100 टक्के शिक्षक अजूनही आपल्या अध्ययन अध्यापनात तंत्रज्ञानाचा उपयोग करत नाही. अजूनही याकडे पाहण्याचा शिक्षकांचा दृष्टिकोन उदासीनच आहे. त्यांच्यामधील ही उदासिनता घालवण्यासाठी त्यांना दर्जेदार

ट्रेनिंग देऊन त्यांच्यामध्ये जागरूकता निर्माण करणे आवश्यक आहे. तंत्रज्ञानाचा आपल्या अध्ययन-अध्यापनात उपयोग करण्यासाठी त्यांच्यामध्ये निरनिराळी दर्जेदार कौशल्ये निर्माण करणे गरजेचे आहे जेणे करून त्यांच्यामध्ये यासंदर्भात सकारात्मकता निर्माण होऊन याविषयीची भिती नाहीशी होईल. जे प्रयोगशील शिक्षक तंत्रज्ञानाचा उपयोग करतात त्यांच्या समोरही ते करत असतांना Infrastructure च्या संदर्भात अनेक अडचणी आहेत. संगणक Tab, Android Mobile पुरेशा प्रमाणात उपलब्ध नसल्यामुळे Anywhere-Anytime Learning Process शक्य होत नाही. विशेषतः ग्रामीण भागात विजपुरवठा नसणे, असला तरी तो खंडीत होणे. Broad-Band Internet सुविधा नसणे, पोषक वर्गखोल्यांची कमतरता, अप्रशिक्षित मनुष्यबळ इत्यादी अडचणी येतात.

या दृष्टिने उच्च शिक्षणामध्ये उच्च गुणवत्ता आणि कार्यक्षमता आणण्यासाठी तंत्रज्ञानाचा जास्तीत जास्त उपयोग होण्यासाठी काही शिफारशी सुचविणे आवश्यक वाटते. त्या म्हणजे कायमस्वरूपी विजपुरवठा असणे, संगणक-प्रोजेक्टर Tab पुरेशा प्रमाणात उपलब्ध असणे, Internet सुविधा असणे, Netspeed असणे, पोषक वर्गखोल्या इ. दृष्टिने शासनस्तरावर, विद्यापीठ स्तरावर, महाविद्यालय स्तरावर प्रयत्न होणे गरजेचे आहे. Internet सुविधा महाविद्यालयांना मोफत पुरविण्यात यावी. शिक्षणाच्या गुणवत्तेत सकारात्मक बदल उच्चगुणवत्ता व कार्यक्षमता आणण्यासाठी सर्व महाविद्यालयमधील प्राचार्य, शिक्षक व इतर कर्मचारी विद्यार्थ्यांमध्ये माहिती संप्रेषण तंत्रज्ञान विषयक कौशल्ये विकसित करणे गरजेचे आहे. त्यासाठी त्यांना जास्तीतजास्त प्रेरित व प्रोत्साहित करून प्रशिक्षित करावे. शिक्षकांना स्वतःचे Apps, Video, Blog, Website, Software तयार करण्यासाठी कश्टीकार्यक्रम आखून प्रोत्साहित व प्रशिक्षित करावे यासाठी दर्जेदार ट्रेनिंग देण्यात यावे.

