Impact of ICT in Teaching, Learning and Evaluation Process

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EDITORIAL'S

It gives us an immense pleasure to welcome you all, being a part of our E-book entitled "Impact of ICT in Teaching, Learning and Evaluation Process". The main motto behind publication of this E-book is to provide awareness of ICT and its implementation in teaching, learning and evaluation process. ICT based learning is the present protocol worldwide. Information and Communication Technology (ICT) plays vital role in enhancing education process through the various ICT tools. Last two years we have facing tremendous problems for teaching, seeking knowledge and evaluating both teachers 'and students due to COVID-19 pandemic. Our main vision in publishing this E-book for knowing ICT based technology, new methods and their services; which will inspire all the academic stakeholders to promote education in lucid manner. This book will definitely be a best substitute for offline teaching in a very promising tool.

We express a deep sense of gratitude towards all authors for contributing their original research work in this book chapter. We further look forward for such innovative educational awareness in future.

Thank you!

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01

Use of Online Platform in Teaching, Learning and Evaluation Process

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Abstract:-

Human beings are getting panic every day by reading news of CORONA-19. After the long struggles of humans with a corona in India people try to find out a healthy way of living life. All the pupils started to focus their life's goals once again on overall development. During this pandemic of the corona, not only the government but also common people try to adjust to life and its problem. In this journey of the pandemic, everybody faces many problems such as economic, social, educational, etc. If we talk about the educational problem then everybody knows that students and teachers have also gone through many educational problems. Many schools are turning to use video meeting apps to teach students at their home from schools until it's safe for students to return to the school. Teachers try to reach the doorstep of students so that

they can remain in the mainstream of education. Educational institution tries their hard to give online classes through the internet. The present research paper is going to focus on the use of online meeting platforms to conduct classes with the help of the online app and its merits and demerits.

Keywords: online, teaching, learning, and evaluation

Introduction:-

Somebody said that "Change is the need of development". In our society, everybody found the footprints of development slowly and gradually. In this new era, daily challenges were faced by human beings. Every time peoples try to overcome all those challenges with their intelligence and support of digital technology. In the early days, mobiles and other technology were banned to use on educational campuses. But today nobody knows that mobile will get such immense importance for day to day teaching. This miracle was done by digital technology. Yes, the educational department had permitted to use of mobiles to conduct online classes on school campuses because students are not allowed to reach school campuses unless and until the effect of the corona pandemic gets removed from society. The educational department had permitted to do online classes with the help of ICT because students are spread out in different locations. So, teachers need to pre-plan online classes with the help of online apps. It is proved that carefully designed online courses yield excellent learning outcomes[1] (Means et al., 77). So, teachers and institutes have to provide all the online facilities of ICT to students to learn from home. ICT can be defined as the convergence of audio-visual and telephone networks with computer networks through a single cabling or link system. ICT is the main umbrella term that includes any communication device such as television, cell phones computer, network hardware, and satellite system, etc. In early day Distance education conduct online courses. Online courses are defined

as "A course where most or all of the content is delivered online. Typically have no face-to-face meetings[2]" (Allen & Seaman 6).

So, online classes become part and parcel of school and college-going students. It becomes a boon to the education department to run classes for all streams of education not only in a rural areas but also in urban areas. Although teachers face many problems of online classes such as " Faculty have reported the lack of student discipline as the main barrier to online learning" [3] (Wasilik & Bolliger 20-70). In this situation of CORONA-19 pandemic teachers tries to cope up with day-to-day teaching and learning problems. It is the responsibility of the teacher to conduct sound classes and try to overcome the problems of taking online classes. Online classes are taken in the form of virtual conferencing. This term was earlier used in the cooperative sector. Virtual Conferencing is of the following types.

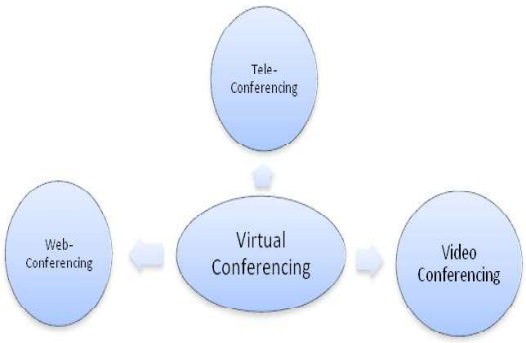

Figure 1.1: Types of Virtual Conferencing

Virtual conferencing comes under the heading of Educational technology. Different social media are highly used in society such as email, Twitter, YouTube, what's app, Mobile, Messages, facebook, dictionary. These digital media are used at a high scale in education by students and teachers also. Teachers are sending information related to the content of

the lesson to the students and on the next day or same-day do discussions on the topics are provided to them. So in this pandemic, it becomes necessary to conduct online classes with the help of mobiles, computers, and laptops. Almost all Parents are having mobiles with them. According to the report of Annual status of Education 2021 online classes is the best option in this situation of the pandemic to give education because "67.6 / of students are enrolled with a smartphone available at home[4]" (29).

So, the above report shows that many students have mobile digital technology and others are using laptops and computers for online classes. These equipment and technologies play a vital role in the development of students since the last two pandemic years of the corona. "There is no prior history or tradition for this strange half-real, half-fantasy learning space. No routines are governing virtual interaction that students have absorbed as they've made their way through years of schooling. There are no norms for their behavior in these classrooms[5]" (Polin 43). These teaching practices are not having any kind of rules or norms of behavior. A teacher has to conduct these classes with her/his own space within a limited period.

Polin said that "In this new realm, we are cultural workers, crafting interactional space, tools, and objects of meaning; roles and identities for participants; and norms for behaving[6] (44). So, according to the above research teachers have to act like an artist and create her/his creation in online classes by choosing the best online apps for online classes. There are many online platform apps available on Social media, but out of it following are used at a large scale in the education sector as shown in following fig 1.2

a) Zoom:-

It is the most common video conferencing device in the education and cooperative sectors. It can be used based

on size and needs. The price of the Zoom app is changing from a free plan to others plans for personal and team meetings. It cost about $ 19.99/ month/host (minimum 100 hosts) for large peoples of the institution. Many people all over the world use free plans but if anybody needs more then enterprise-level plans include up to 200 meeting participants, unlimited cloud storage customs emails, and more and more.

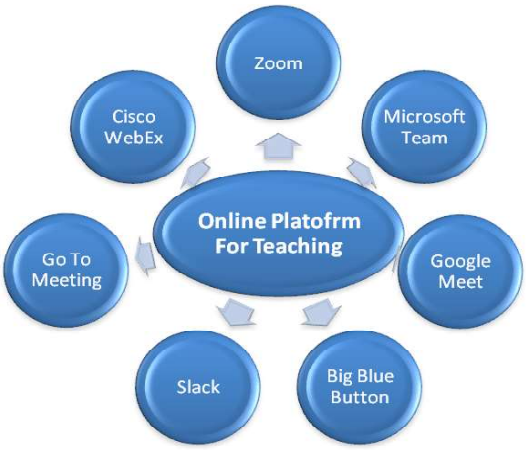

Figure 1.2: Online teaching platforms

b) Slack:-

It gets started in August 2013 and it is available in 8 languages. It is an extremely popular tool used for collaboration all over the globe. It is developed by American software company Slack technologies and is now owned by Salesforce. It has integrated collaborative features and has an easy way to make quick calls. One-on-one video chat is an important part of Slack's free account. It provides the facility to call up to 15 people from a channel but for larger meetings customized enterprise pricing is required. Direct messages allow users to send private messages to specific users rather than a group of people. Direct messages can include up to nine people.

c) Big Blue Button:-

This app is started in 2007 at Carleton University by technology Innovation Management program mainly created for education through online learning. There are many add and integration through third-party developers which allows for customized web conferencing experiences for students and teachers. It helps to share audio and video screen. Teachers can record sessions for playback. Breakout rooms are provided. Other collaborative tools like Whiteboard, polling, notes can be used while conducting the meeting.

d) Go To Meeting:-

It is used for 10 to 150 meeting participants and costs $14/ month and $29/ month respectively. It is HD video conferencing. This teleconferencing tool is having the following features. It is a smart virtual meeting assistant which allows you to record meetings and generates an automated transcription. Business messaging can transit from a chat box to a video call with the click of a button. The screen can be shared on desktops, smartphones, and laptops.

e) Cisco WebEx:-

It is founded in 1995 by Subrah Iyar and Min Zhu in Califomia and taken over in 2007. It is used for a large number of team members. It is a video conferencing service that operates combine with web conferencing and voice calling services. It allows participants to join meetings via the phone or online mode depending upon the participants and ability at that time. The price of WebEx started from $ 13.50/host/month.

f) Google meet:-

It gets started on 9 March 2017 and was developed by Google. It is an upgraded version of Google Hangouts made for teams. It is Google conference call software. Google meet is designed to arrange video meetings for members. It has Zoom like features such as calendar syncing, conference room brooking, and a more advanced user interface. It provides up

to 300 hours long time for meeting and 250 attendees can attend meeting at a time and it can live-stream to up to 100000 viewers. It provides 24/7 online support among others. During the 2020 COVID pandemic Google meet grew by a member of 30 in January to April 2020 by 100 million users a day accessing meet. Google provides 60 minutes limit for unpaid accounts.

Meet provide An accompanying chat, audio filter Noise-cancelling, Two-way, and multi-way audio and video calls with a resolution up to 720p, It provides call encryption between all users, Low-light mode for video. Integration with Google calendar and Google contacts for one-click meeting calls. It helps in screen-sharing to present documents, spreadsheets, presentations, or other browser tabs. Ability to make a call into meetings using a dial-in number in the US. "It gives facility to hosts being able to deny entry and remove users during a call. Ability to raise and lower hand of a student, Video filters, effects and augmented reality masks[8]". (Porter 2-15)

g) Microsoft team:-

Microsoft team is started on March 14, 2017. It is developed by Microsoft and it is available in 45 languages. It is mainly a business communication platform. Teams allow users to communicate through chat. It helps to join meetings by sending an invitation through a specific URL or invitation sent by the owner or administrator. Direct messages allow users to send private messages to a specific user rather than a group of people, it is providing workspace chat and video-conferencing, file storage, and application integration just like Slack. "It has 250 million users up to 2020[9]" (Tejaswi 3).

Merits of using online platform:

- It saves the time of the teacher.
- It is helpful in the pandemic of COVID19.
- It is useful for large numbers of participants
- A teacher can use other digital devices available on mobile for an explanation.

· It helps a teacher to give correct track of students by evaluating them after teaching.

Demerits of using online platform:

· It becomes hard for teachers and students in adjusting to online learning environments.

· Sometimes teachers and students required technical assistance.

· Student discipline is the main barrier to online learning platforms.

· Educational Institutes do not provide long time duration classes to students and teachers.

Conclusion:-

· Teachers are using the online platform on large scale.

· Teachers are facing problems in conducting online classes.

· A teacher faces the problem of internet connectivity.

· The teacher tries to explain all concepts of content with the help of an online app.

· Teachers are using Zoom, Google Meet, and Microsoft Team on large scale.

· Students are taking participation in classroom discussions.

· Some students pretend to be involved in classroom discussions.

· Sometimes teachers are having problems with buffering in rural areas.

· Teacher faces comprehension problems while taking online classes.

· Students are unable to handle digital technology sometimes.

· All students are not having an internet facility every time.

· Special students are learning things according to their ability.

· Teachers are doing online evaluations.

· There are possibilities of misconduct in writing examinations.

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02

ICT: An Important Tool to Analyze Effectiveness of Teaching, Learning and Evaluation

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Abstract:

This paper presents the study of the role of ICT in education and its effective parameters. It highlights the need, importance and effectiveness of the ICT in the educational parameters like teaching, learning and evaluation. The basic

purpose of this study is to present the impact of ICT on teaching,learning and assessment. The amount of ICT used by students and their attainment levels have been investigated in many research studies. Some studies have used national test results as the measurement; whereas other studies have used the observed improvement in students' learning outcomes. However, a systematic study is done in this work to represent the effectiveness of ICT in the teaching, learning and assessment.

Keywords:ICT, Teaching Learning, Assessment, Evaluation, Technology, Pedagogy.

1. Introduction:

The term ICT simplified means any technology that has to do with information and communication.Today information and communication technologies are the one thing and so the repertoire of technologies expands further to encompass computers and computer-related products, email, MMS, and other forms of communication [1].

Information and Communications Technology (ICT) is technology that is used to handle communications processes such as telecommunications, broadcast media, intelligent building management systems, audiovisual processing and transmission systems, and network-based control and monitoring functions.ICT is often used to describe the convergence of several technologies, and the use of common transmission lines carrying very diverse data and communication types and formats.In a very simplified sense, ICT is used to elaborate about all of the technologies that facilitate communications.

The effective use of Technology is helping andupgrading the Teaching- learning process.It helps to promote knowledge and skill of the learnersthereby encouraging and improving creativity, critical thinking and learning how to learn.Educationalactivities through ICT are

providing scope to acquire wider knowledge. Use of ICT will empower the individuals, the institution and the university [2].

2. Importance of ICT in Education:

In today's society, people as consumers of ICT, all strive for the one dream ie the dream of a connected life.This makes ICT a lifestyle choice for much of the population. In addition, this lifestyle choice is changing the way we communicate, increasing the rate of consumerism, and changing how we interact and gather information.

ICT has invaded and transformed many aspects of our lives to the extent that we live in an environment that is dominated by technology which itself is consumer-driven [3]. No matter how we perceive its presence, there is no denying that it is an important part of our lives and that it is here to stay.

2.1 ICT Integrated Teaching –Learning Process Uses:

The use of ICT in the classroom teaching-learning is very important for it provides opportunities forteachers and students to operate, store, manipulate, and retrieve information, encourage independentand active learning, and self-responsibility for learning such as distance learning, motivate teachers and students.There is a growing interest in online classroom settings in Higher education to provide learningopportunities for the teacher and the learner.Bystating the role of ICT in educational domain and to provide an integrating and blending programs forteacher and learner could increase the potential of an Individual. The capabilities of an individual inspecific fields can be increased. The table 1 shows the significance of ICT enabled teaching [2].

Table 1: Significance of ICT enabled teaching

ICT head	Particulars/significances
What is ICT based teaching ?	Information and Communication Technology (ICT) in education is the mode of education that use information and communications technologyto support, enhance, and optimize the delivery of information. Worldwide research has shown that ICT can lead to an improved student learning and better teaching methods.
What is the role of a teacher in ICT?	ICT plays an important role in student evaluation. ICT is store house of educational institution because all educational information can safely store through ICT. It helps Teacher to communicate properly with their students. ICT helps Teacher to design educational environment.
Can ICT replace teachers?	ICT cannot replace a teacher. It will facilitate the teacher in virtual classroom. By integrating ICT in teaching learning process lot of extra inputs can be given to the learner. For teacher it is a learning experience. ICT will enhance the learners learning.
What is the key benefit of ICT based education?	ICT-based Education is about using computers and technology as tools to enrich learning in various subjects such as English, Science andMathematics. Key Benefits of ICT-based Education: PromotesLearning by doing approach. Enables self-paced learning.
How does ICT helps in education.	ICTs can enhance the quality of education by increasing learner motivation by facilitating the acquisition of basic skills by enhancingteacher training. ICTs are transformational tools which, when used appropriately can change the learning Creates a learner-centred environment.
Why ICT skills for teacher?	ICT skills for graduate teachers: self-directed learning. The effective integration of ICT in the school and classroom can both transformpedagogy and empower students. It is important that teachers are able to successfully weave technology into learning projects.

2.2 Infrastructural development:

This concerns with growth in technology against education system. Online education has become one of the essentials of today's education system, the necessity to bepresent in a classroom to learn is no longer an issue. Educators, tutors or other education professionals who are willing to teach through the Internet need to have the appropriate amenities, infrastructure and software to create virtual classroom for an immersive learning experience. Education system is recorded as a dynamic system which

happens to be changing with time and growthin technology. It responds to the demands of the public, by adopting the technological advancements.The various classes of ICT products such as teleconferencing, email, audio conferencing, televisionlessons, radio broadcasts, interactive radio counselling, interactive voice response systemaudiocassettes and CD ROMs etc. are being used as a medium for teaching. This assimilation oftechnology leads to a new mode of education. This growth in technology against education system is shownin figure 1 below [2].

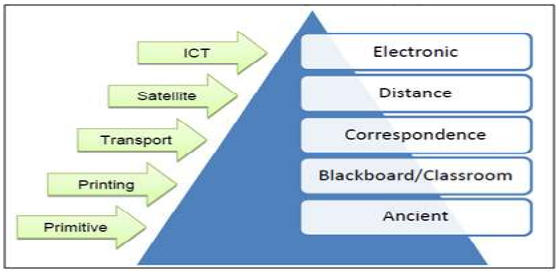

Figure1: Growth in technology against education system

2.3 Importance of Students Engaging with ICT:

It is important for students to engage with ICT so that:

· Learn 21st-century skills and develop their ICT capability and ICT literacy.

· Improves their attainment levels.

· Prepares them for an integrated society dominated by ICT developments.

· So that they learn the notion of using ICT as a tool for lifelong learning.

3. Teaching and Learning with ICT Tools from Teachers' Perceptions:

When teachers are presented with a new technology, the two key factors would influence their decision from the extended variables around them about how and when they will use it:

External Variables –

It represents the challenges that teachers face that come from outside theirsphere of control when integrating a new technology in their teaching and learning process. Thesechallenges include:Limited accessibility and network connection, Schools with limited ICT facilities, Lack of effective training, Limited time, Lack of teachers' competency.

Perceived Usefulness –

It represents the degree to which they believe that using a particulartechnology would enhance their job performance.The factors as key elements to teachers' perceived usefulness of ICT tools are: Work more quickly, Job performance, Increased productivity, Effectiveness, Usefulness.

Perceived ease of use (PEOU) –

It represents the degree to which they believe that using a particular system would be free from effort.The Impact project and other studies identified a wide range of skills and competencies which teachers felt they needed in order to find ICT easy to use. Some of these are: Easy to learn, Clear and understandable, Easy to use, Controllable, Easy to remember. Some other important key factors are: Teachers' attitude toward use, Behavioral intention, Social influence processes like job relevance, output quality, result demonstrability, and perceived ease of use, subjective norm, voluntariness, and image etc. [4]

4. Benefits of Using ICT in Education:

Information and Communication Technology (ICT) includes computers, the Internet, and electronic delivery systems such as radios, televisions, and projectors among others, and is widely used in today's education field.ICT tends to expand access to education. Through ICT, learning can occur anytime andanywhere.The use of ICT has beenfound to:

· Assist students in accessing digital information efficiently and effectively

· Support student-centered and self-directed learning
· Produce a creative learning environment
· Promote collaborative learning in a distance-learning environment
· Offer more opportunities to develop critical (higher-order) thinking skills
· Improve teaching and learning quality
· Support teaching by facilitating access to course content Based on ICT, learning and teaching no longer depend exclusivelyon printed materials. Multiple resources are abundant on the Internet, and knowledge can beacquired through video clips, audio sounds, visual presentation and so on [5].

The major emphasis of ICT infusion in pedagogy is such that it tends to improve learning, motivate and engage learners, promote collaboration, foster enquiry and exploration, and create a new learner centered learning culture. Since ICT provides greater opportunity for both teachers and students to adjust learning and teaching to individual needs, therefore, it is necessary to enhance the integration of ICT concept and application in School education [6].

5. Different Strategies for applying ICT in Teacher Education

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. By using and acquire the knowledge of ICT, student teacher will become effective teachers. ICT is one of the major factors for producing the rapid changes in our society. It can change the nature of education and roles of students and teacher in teaching learning process. Teachers' strategy for applying ICT in education includes:

· Providing adequate infrastructure and technical support.
· Applying ICT in all subjects.

· Applying new Pre-service Teacher Education curriculum.

· By using application software, using multimedia, Internet e-mail, communities, understanding system software. Teachers in India now started using technology in the class room. Laptops, LCD projector, Desktop, EDUCOM, Smart classes, Memory sticks are becoming the common media for teacher education institutions.So use of Information & Communication Technology (ICT) in Teacher Education in 21st Century is of prime importance because teachers can create a bright future for studentsand society [7].

6. ICT in Assessment or Evaluation:

The use of ICT in assessment is now common where it utilizes digital devices which help in construction of assessment tasks for students. It helps in delivery of assessment tasks. Not only construction or delivery, the ICT has the ability to give grades or feedback to students. It is essential for schools to encourage themselves to strengthen their commitment to developing a better assessment practice which can support teachers, students and other stakeholders.There are various kinds of tasks which are not suitable for the computer to evaluate them but most of the time the technology becomes a powerful tool in carrying out the tasks which are very much tough for a common human being to evaluate in a little spam of time. Some methods are briefed below:

6.1 Computer Assisted Assessment (CAA):

Computer-assisted assessment is used to assess learning and performance of the students. It includes all types of assessments whether formative or summative assessment and which is then conveyed with the assistance of these modern technologies. Delivery of the assessment is made online as well as offline. Examples of computer assisted assessment are the OMR that is used to grade MCQs and

various other database programs that help in recording student marks.

6.2 Computer Adaptive Testing (CAT):

In the recent development in technology is the use of computer adaptive testing which enhances the testing process to a great extent.While a student is subjected to answer questions, the technology is capable of adjusting the level of the difficulty. The technology accesses how a student is answering the questions and how much mistakes the student is making. Based on that concept the technology will adjust the other questions accordingly. The technology is capable of putting questions from previous learned content as well. As the technology is increasing its area, it became as the easiest method to use it in the educational contexts.

6.3 E-Portfolio:

Electronic portfolio is a process of gathering of e - evidence collected and maintained by a person on the web. Such kind of e-evidence include written text, files, multimedia, images and hyperlinks. The E-portfolios is basically useful for assessing the abilities of the person. The person maintaining these kinds of portfolios online is having an eye on his strengths and weaknesses. An e-portfolio works as a learning record for the person where his achievements can be analyzed by the person himself or another person. These kinds of records are related to learning of a person to a great extent.

6.4 Digital Rubrics:

A rubric is basically a criterion which is set for the work of the students. The rubrics has included descriptions in the subjective manner about the performance of the students. Rubrics is mainly used to have a look at the key constituents of an assignment. Rubrics assume the expectation from students before the start of the learning activity. They make students aware of the thing that learning is to make integrated with the necessary skills. The way of assessment in rubrics

follows the formative type of assessment as student is able to know the weakness in any area where he/she needs to improve.

6.5 Online Assessment:

Online assessment is usually followed when any instructor needs any information pertaining to some content. The assessment is made online where an instructor sets some sort of a questionnaire to get it filled from the opponent. With the help of the emerging technology, it is easy for instructors to design an online test and get the response of that test via web. There are a lot of agencies working under this platform. Some of them are free while most are paid.

6.6 Survey Tools:

There are many online survey tools like survey monkey, poll daddy or lime survey. These kinds of tools can be used to collect feedback from students regarding any matter. In some situations, where we are creating a survey of bipolar set of opinions, this kind of web-based tools can be used.

6.7 Wikis:

A wiki is a website that allows users to collaboratively edit and create content. A very good example of a wiki is Wikipedia, a collaboratively created online encyclopedia. The Wikis are becoming very much popular now a day. Because it facilitates collaboration among learners. The contribution made in wiki by the learners can be assessed by the teachers as well. Therefore, it can be very much helpful while using it as a tool for accessing peers [8].

7. Discussion and Conclusions:

This study highlights that the presence of ICT in education allows for new ways of learning for students and teachers. E-learning or online learning is becoming increasingly popular and with various unprecedented events taking place in our lives. ICT brings inclusion, it promotes higher-order thinking skills, enhances subject learning. Use

of ICT develops ICT literacy and ICT Capability, encourages collaboration, motivates learning and also allows for effective differentiation instruction with technology. ICT in education improves engagement and knowledge retention. ICT integration is a key part of the national curriculum.

The discussions of this paper suggest that ICT based technology can be bitterly used for assessment of the students in classroom situations.The teachers can be empowered by providing them assess to the e-portfolio and project with the help of a rubric that is capable of assessing not only the process and product, but also the use of technology by students.The major emphasis of ICT infusion in pedagogy is such that it tends to improve learning, motivate and engage learners, promote collaboration, foster enquiry and exploration, and create a new learner centered learning culture.ICT is one of the major factors for producing the rapid changes in our society. It can change the nature of education and roles of students and teacher in teaching learning process. The study examines the challenges of using ICT tools in teaching and learning in the classroom among school teachers and recognizes the effectiveness of the extent of ICT tools in supporting classroom teaching and learning.

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03

Role of ICT in the Process of Teaching and Learning

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Abstract

This paper identifies the changing role of teachers in ICT integrated curriculum, its benefits, requirements and challenges. Impact of technology is everywhere Economic, Political also at the Education sector. ICT enables self-paced learning through various tools as assignment, computer etc. as a result of this the teaching learning enterprise has become more effective. It helps facilitate the transaction between producers and users by keeping the students updated and enhancing teachers capacity and ability fostering an eye to eye contact through virtual mode like e-mail, chalk session, e-learning, web-based learning including internet, intranet, extranet, CD-ROM, TV audio-videotape. Current era of learning has digital technology as a key component and technology has changed the way students learn as well as how the teachers teach. Students of modern age using technology and are exposed to technology anywhere and everywhere, so education also needs to be inclusive of technology to bridge gap between home and traditional

classroom environment. Consequently, teachers need to change their approach to teach students of the current era by integrating technology into the teaching learning process and to use the internet and technology to support learning.

Keywords: ICT, smart class, digital literacy, Self-paced learning, Interactive learning, Integrated Learning Module, E-learning,M-learning.

The teacher has the responsibility to shape new generation, but has to keep pace with the changing world. Earlier, teachers were the only source of information in the classroom and their knowledge was limited to books, magazines etc. or achieved during his education for teachers. But the present teacher browses through various sources of information available online, upgrades his knowledge periodically and integrates this knowledge in his lesson plans and instruction material to teach students. The student also relied solely on the teacher and books for his source of knowledge and his concepts were mainly acquired from them. Time has altered the role of teachers dramatically from a mere instructor or sole provider of information to a mentor, facilitator and guide who opens new opportunities to learning making use of technology. This role change of teachers demanded him to display a different set of skills not relevant in the past. He must be properly equipped with new skills, attitudes and knowledge required for handling ICT in the classroom. In fast changing environment, teachers often find it difficult to cope with new changes in the teaching process that includes digital delivery of educational context.

ICT has caused a major paradigm shift in teaching-learning practices and marked a transition from teacher centric learning to student centric learning. Use of ICT in classroom has many benefits like motivation, engagement, fostering of creativity, enhancing collaborative intelligence, high meta cognition, differentiated learning but evidence shows that

these benefits depend upon the way in which teacher integrates ICT in classroom as well as the way he selects and organizes ICT resources to attain educational outcome. So, the teacher and their pedagogical approaches play a crucial role in the successful integration of ICT in classroom.

Teacher can use ICT as a tool to create learning environment that supports constructivism. It is not only important for teacher to master ICT skills but he must use ICT to improve teaching learning pedagogy. Mere teaching using ICT tools in a passive manner will not fulfill the purpose of ICT as pedagogical tool for learning; rather use of ICT tools must lead to evolution of new learning environment to satisfy the needs of learners. The new age teacher must adapt themselves to the new classroom environment and fit to the new model of learning where way of interaction between teacher and student is changing, they must be open to communicate, discuss, stimulate students to learn, help them in learning from a multitude of sources available.

This has also changed the relationship between teacher and student, teachers lacked openness in communication worked as passive sources of knowledge transmission, but now, teacher is not prime or only source of information in the classroom rather he opens ventures to explore more sources of information and knowledge to his students and shows them methods to acquire knowledge from other sources so that they are benefited from alternate sources. He must play the role of communicator, having one to one interaction with the students, he must collaborate with the students in small groups giving them proper individual attention, encouraging them to engage actively and participate in the process of learning.

The teacher must possess high cognition skills and with the support of technology, act as a skilled educator to promote constructivism. ICT has empowered teachers as well

as learners, and the teacher's role has become more complex in nature and technology oriented. He has evolved as a facilitator, guide towards learning, Students tend to learn independently, on their own, discover new concepts, but the teacher will facilitate opportunities and resources available for learning to them. He must update his knowledge to keep pace with the global knowledge and make use of technology to create content for instruction that can be shared, reused by other teachers as well. He must plan how to use the technology in instruction and select the suitable method to do so, for that purpose he must keep on trying new methods and resources to discover what suits for him and his students keep on updating his knowledge. He must aid his colleagues and ICT coordinators in using ICT by sharing the content and knowledge of ICT with them. He has to make students aware about the issues like digital citizenship, cyber bullying and hacking, copyright issues. He should make him differentiate between reliable and unreliable sources of information, promote and model responsibility in using the online resources of learning.

ICT teachers fall into two categories, those who are ICT specialists and those who are specialists in their curriculum teaching but not so good at ICT. Teachers weak in ICT skills must be encouraged to use ICT but there must be the optimal balance between IT skills and subject expertise of teachers. The present age teacher should give students the freedom to engage in the learning process, discover innovative solutions to problems using technology and help them learn independently to inculcate habit of self-learning in them. He must act as a friend and cleaner for his students, stimulate mental activity and take suggestions from the students as peer coaches who are tech savvy and eager to provide help in the evolution of a student friendly teaching environment.

In tech friendly environment, students take more

responsibility for learning using technology. Teacher sets project goals for the students, provides guidelines, resources and ensure active participation of every student in learning activities.

Modern teacher should have skilled ICT skills to be assured to integrate ICT within the room. Fig.1. Shows the role of a tutor within the ICT integrated programmer. They'll flip between ancient room teaching and ICT enabled room, use mixed approach, hybrid approach for teaching or custom approach to suit his teaching desires. They must have sensible knowledge analysis skills to browse multiple sources of reliable knowledge, produce helpful tutorial material out of it to suit the student's cohort, level of understanding and learning desires.

As totally {different completely different} students learn in several designs and at different pace, their focus ought to get on customizedprogrammer designed to suit each student. They're purported to analyze student assessment knowledge, assignments, results of quizzes, etc. and guarantee remedial action if required. Most of the lecturers have joined the education sector before the age of technology and there have been no computers within the faculties at that point. They need either very little or no experience in ICT and lack awareness concerning the utilization of ICT. They have to be provided ICT trainings in order that they acquire the desired skills and sense importance concerning the utilization of ICT in teaching. Fresh recruited lecturers should incline awareness concerning the utilization of ICT within the room in induction programmersand there should be an integral a part of skilled development of lecturers.

The process of teaching has additionally evolved with time however the standard education remains because the main challenge in spite of inclusive enlargement within the education sector. There are a unit varied unaddressed

problems like ability gaps, shortage of versatile labor, state, the digital divide in our country. Technology may be a powerful tool that may rework education in many ways. It will build education accessible from anyplace and to everybody. Group action ICT in education will improve the standard of education by encouraging important and procedure thinking in students leading them to investigation and innovation. This may lead them to the active participation in learning method, encourage them to find out, facilitate them in exploring new sources of information, foster power and facilitate them to find artistic solutions to everyday issues.

It is a widely known incontrovertible fact that a tutor plays an awfully vital role in shaping the society initial and nation at giant. This era of science and technology has fetched a substantial impact on the teaching –learning processes. The today's learner is obtaining access to the large supply of content offered on the web and may explore ton additional things, subject to his focus of attention. Therefore, the role of teacher is shifting from its previous domain of teaching solely to the restructure of domain comprising mentoring additionally to the teaching. Hence, a tutor should be updated with respect to technology of your time like ICT. The amendment in teacher's role thanks to ICT looks to be instrumental for this generation of scholars and in future also.

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04

Impact of ICT Tools in Chemistry

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Abstract:

There are several topics in chemistry which required computational technique to learn and use of ICT enhance learning capacity of learner as well as facilitator. The present article deals with the use of ICT in some of the topic of chemistry. We tried to overcome from routine chalk and talk method to understand the several topic viz. stereochemistry, IUPAC naming and other organic chemistry topics. All though chalk and talk method has gain attention of the students but it has been found that using ICT to teach such topic of chemistry helps teacher to overcome from class room difficulty like presenting 3 D structure of molecule with model. The objective is to reveal teachers' ICT experiences and views on ICT integration into teaching-learning process as well as uncover the perceived obstacles to the integration process. Chemistry education pedogogy in this country will have to shift its present at all levels attracts the best talent, retains them and works for their professional development. To acquire this goal teaching profession will have to be made more attractive. Teachers like researchers should be duly recognized for their contributions in form of fellowship and awards.

Keywords: ICT, Chemistry, ICT in education, Education

Introduction:

Information and Communications Technology (ICT) is an umbrella term that includes all technologies for the manipulation and communication of information. The term is sometimes used in preference to Information Technology (IT). A large number of commercial software packages offer teachers exciting and visually appealing approaches to teaching. These often drive the pedagogy and to a certain extent might restrict flexibility in teaching. In addition, some teachers resist the opportunity of teaching someone else's lesson and report that commercial software packages might not be available to pupils outside school. Experienced ICT practitioners canproduce very effective lesson material using Microsoft ® applications which can be uploaded to a school's intranet and internet and in a number of other ways can be made available for pupils to use outside school. Sharing lesson material is helpful for colleagues who can customize files to suit their own approach.

Teachers require continuous support and training to effectively integrate technology initiatives. Successful technology integration involves the allocation of time for teachers to experiment with new technologies, collaborate with peers, and the provision of professional development opportunities. As teachers collaborate and plan lessons that integrate technology, they reframe their perceptions towards innovative technology implementation and, ultimately, student achievement.

ICT in Chemistry:

In chemistry education, ICT can provide solutions to many of the problems afflicting chemistry education and thus help enhance the quality of chemistry education in chemistry. Traditional classroom teaching, as we all know, is basically a talk- and- chalk method. Besides, there is also pressure on the teacher to finish the syllabus on time and therefore, even though a teacher wants his students to acquire an in depth

understanding of the subject. Chemistry extended knowledge of information and communication technology, with particular emphasis on tools and methods are used in teaching chemistry at the lower and upper secondary school level. The traditional chalk and talk method could not help out to solve the problem of learner and hence the need of ICT as a tool can enhance the knowledge as well as learning experience. There are many concepts that can be used to describe the motivational aspect of science teaching and learning. Computers have been used in education in many ways from the very beginning of their history. Several ways to analyses use of computer and ICT in education is govern the importance of one and all. Any particular technology is often treated as a particular tool to accomplish their task in more efficient way.

There are so many topics which can be covered with the help of chemsketch and chemdraw.

1. Aromaticity
2. 3D structure optimization
3. Tautomeric forms
4. Auto renumbering
5. Calculation of Molar Refractivity, Surface tension, Parachor, Index of refraction, Density, Polarizability and dielectric constant.
6. IUPAC Nomenclature
7. Import and export of molecule
8. Conversion of 2D into 3D
9. Advance form of periodic table
10. Structure of Carbohydrate
11. Structure of Fullerene and other bigger molecule
12. Editing of molecule structure.

ICT increases teacher efficiency and can reduce teachers' time spent performing administrative tasks (Koszalka & Wang, 2002; et al.). It is important for both students and teachers to use ICT regularly in their courses

(Figg, 2000 et al.). Students higher-order thinking skills are enhanced in learning environments where ICT is used (Allegra, Chifori, & Ottaviano, 2001 et al.).

To be able to use ICT in the courses effectively, teachers should

1. be aware of its potential,
2. select tools and methods which are appropriate with the needs of students,
3. design their teaching methods effectively,
4. develop new teaching strategies,
5. Know and apply classroom management rules in order to cope with problems encountered in technology-aided learning environments (Becker, 2001 et al.)

Investigating teachers beliefs on ICT as well as their current level of ICT use have particular importance in ICT integration studies (Bucci, Copenhaver, Lehman, & O'Brien, 2003 et al.). The use of ICT as an effective tool for student learning inspired a growing debate among educators and policy makers. Teachers, students, parents and many others with an interest in technology integration frequently are overwhelmed by providing and assessing quality technological instruction. ICT is playing a central role in cooperation between schools and the community and to engage parents in the learning process. ICT is widely promoted by central authorities as a tool for teaching and learning but large implementation gap remains. ICT is often recommended for assessing competences but steering documents rarely indicate how it should be applied. Teachers usually acquire ICT teaching skills through their initial education but further professional development is less common.

Stereochemistry

An important branch of stereochemistry is the study of chiral molecules. Stereochemistry is also known as 3D chemistry because the prefix "stereo-" means "three-dimensionality". Teaching stereochemistry with chalk and talk

method is always a tedious job for teacher because it requires a lot of 3D structure of molecule and drawing 3D object on black board is not possible. There is several drawing tools available free on internet in which 3D object can easily draw and several other information viz. bond angle, angle strain, chiral carbon etc. can easily calculate.

Periodic Table

Concept of periodic table used in every aspects of chemistry. Whether it is organic, inorganic and physical chemistry or pharma, drug, and medicinal chemistry. But it is always a challenge to remember all the properties of periodic table. With the help of this tool we can teach periodic table in more effective manner. All elements from atomic numbers 1 (hydrogen) to 118 (ununoctium) have been discovered or synthesized, with elements 113, 115, 117, and 118 being confirmed by the IUPAC on December 30, 2015. The periodic table is organized like a big grid. Each element is placed in a specific location because of its atomic structure. As with any grid, the periodic table has rows (left to right) and columns (up and down). Each row and column has specific characteristics. For example, beryllium (Be) and magnesium (Mg) are found in column two and share certain similarities while potassium (K) and calcium (Ca) from row four share different characteristics.

Tools of ICT in Chemistry:

There are huge amount of chemistry software available which can be readily used as an ICT tools to learn chemistry in better way. Some of them is freely available while some of them has commercial values. Drawing of molecule can be done by (Chemsketch and Chemdraw) and (Marvin Sketch). These tools provide various additional information along with the object.

Conclusion:

Software's for drawing and visualising 3D chemistry structure, predicting NMR, IR and other spectroscopic

techniques, periodic table and organic chemistry other topics. It is very unfortunate that in our country more focus on theoretical knowledge rather than experimental work and ICT can play very important role in this concern. Technology initiatives can only be successful if they are compatible with the conditions of teaching. The initiative to incorporate technology effectively into classroom instruction must begin with the curriculum objectives. This ensures a consistent goal. A mismatch between values of the teacher and the technology initiative will cause an incorporation failure. If inadequate computer access or if there is a high pupil/computer ratio, teachers will be reluctant to employ technology as an instructional tool. The technology that is available must be reliable. Computers that are outdated or frequently requiring repair will cause frustration rather than a strong commitment to change. The training of a teacher as a technical specialist is instrumental to successful integration. As the specialist provides suggestions for integration technology into the curriculum and instructional activities, teachers understand how technology can be used as an instructional tool across all disciplines.

The ultimate success of ICT for learning will be attained when we stop marvelling about the ICT and apply our minds and emotions to the wonders of learning.

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05

Challenges and Issues in the Use of Information and Communication Technologies (ICTs) in Education

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Abstract:

Now a days many Modern universities and institutes have a goal to to make teaching learning process effective and interesting. The methods of teaching learning which are used traditionally can be made more effective and interesting by using information and communication technologies. Students and teachers by using the ICT facilitates can gets variety of study materials on a particular topic using internet from anywhere and anytime. The Application of ICT very much supports distance education and e-learning. Along with this Using ICTs universities and institutes can improve the admission process. While considering these opportunities associated with ICT enhanced education, but there are many challenges, which impede the exploration and exploitation of its opportunities. Which includes availability of information

and communication technologies infrastructure, affordable Internet service, availability of electricity andTelephony, Language and Content. This review article discussed about such challenges and Issues in the Use of ICTs in Education

Keywords—Education, Information and Communi cation Technology, Learning, Teaching, challenges in Information and Communication Technology.

I. Introduction:

ICTs knownasinformation and communication technologies and are defined as a "vast and diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information." these technologies include computers, the Internet, broadcasting technologies (radio and television), and telephonyIn recent decades there has been increased feeling of interest in digital personalized computers and the Internet improve the quality and effectiveness in the education at both the formal and non-formal levels. But ICTs include more than these technologies; the technologies such as telephone, radio and television are getting old and outdated but have a long and rich history as instructional tools, For instance, the use of radio and television or open and distance learning for over forty years, although the print remains the cheapest, accessible and dominant delivery mechanism in developed and developing countries. The use of computers and the Internet is still in its growing and developing state in developing countries due to the limited infrastructure and high costs of access.

II. Issues in implementing ICTs in Education

There are major four broadintertwined issues which must be consider the overall impact of the use of ICTs in education

III. How much effective is the ICT-enhanced learning?

The effectiveness of ICTs in The education depends on how they are used and for what purpose, and likeany other

educational tool or mode of educational delivery that works everywhere, while ICTs do not work for everyone, everywhere in the exact same way.

Improved access: most of the work done for basic education have been small-scale and under-reported hence It is difficult to measure the degree to which is expands.Telesecundariaexceptionin 1997-98 the television-based project which was serving over 750,000 junior secondary students in 12,000 centres in Mexico. In Asia andAfrica, the assessments of junior secondary level by using the combination of print, taped, and broadcast technologies have been less decisive in the distance learning projects, while at the primary level the ICT-based models are well developed. Peoples who are constrained from attending traditional universities are provided the educational opportunities of higher education and adult training. The 11 mega-universities, biggest and most well-established open and distance institutions in the world(including Open University of the United Kingdom, the Indira Gandhi National Open University of India,the Universitas Terbuka of Indonesia, TV University System of China, , and the University of South Africa) has more than 100,000 annual enrolment, and together they serve approximately 2.8 million.

Raising quality: there is very less research on the impact of ICT tools like radio and television broadcasts on the quality of basic education. but what little research there is suggests that these tools shows the same impact as the traditional classroom instruction. Out of other educational broadcast projects, all aspects of the Interactive Radio Instruction project has been most analysed. The result of these analysis showed that this project effectively raising the quality of education which is demonstrated by increased scoring and improved attendance.

There have also been many studies that showed the use of computers enhances and amplifies existing curricula, as measured through standardized testing, specifically, some research shows that the traditional instruction combinedWith the use of computers as tutors for practice and instructional delivery results in increases in learning in the traditional curriculum and basic skills areas, this also increased the scoring in some subjects compared to traditional education alone. Students also are better motivated to learn, demonstrate greater retention and learn more quickly when they work with computers.

One of the major problems in trying to assess of computers and the Internet as transformational tools effectively is that standardized tests cannot demonstrate the benefits that need to be gained in a learner-cantered environment.

IV. Cost of ICT in education

Considering the cost-effectiveness, educational television broadcasts and computer-based online learning are much more expensive than radio broadcasts. Assessments of cost-effectiveness in different categories are difficult to make because of lack of data, differences in programs, problems of generalization, and problems of quantification of educational outcomes and opportunity costs. 'When considering about computers and the Internet Blurton argues that "when talked about whether the ICT is "cost-effective" in educational sector an exact conclusion is not possible for a variety of reasons. Estimating the cost of particular ICT educational application is taken wrongly and is focused too much on initial fixed costs like purchase of equipment, retrofitting of physical facilities, construction. Studies of the use of computers showed that there is only cost of 40% to 60% of installation of hardware and retrofitting of physical facilities of the full cost thetotal cost of ownership. In fact, the initial purchasing of hardware

and software is the costliest spending in this process. A large amount of total cost spends over time with annual maintenance and support costsconstituting between 30% to 50% of the total cost of hardware and software.

V. FIXED COSTS

- Retrofitting of physical facilities
- Hardware and networking
- Software
- Upgrades and replacement (in about five years)

VI. VARIABLE OR RECURRENT COSTS

- Professional development
- Connectivity, including Internet access and telephone time
- Maintenance and support, including utilities and supplies

All the fixed costs must be distinguished from variable costs to determine cost efficiencies. In case of general educational radio and television broadcasting, the fixed costs of a technology project is much higher andits variableCosts are low, then there will be cost advantages. Programs such as Sesame Street and Discovery are more Cost-efficient, in such cases there are large number of audience and the high cost of production is distributed over a larger viewer base while less variable costs are made for learner support.

Another dimension of cost is location and other payments, in projects that involve computers connected to the Internet either the school or student or both includes variable costs such as maintenance, and telephone line charges. While in the cost of radio programming includes cost of radio and a set of batteries.

VII. Key Challenges in Integrating ICTs in Education

A clear andspecific objectives guidelines and time-bound targets require in order to Attempts to enhance education through ICTs. Some required elements of planning for ICT are listed below.

a) A detailed analysis of the present state of the educational system. Educational institutions must identify and try to remove all the barriers including those related to pedagogy and curriculum.Infrastructure, capacity-building, language and content, and financing.

b) To specify the educational goal at different educational level and according to that different models of ICT CAN BE USEFUL in pursuit of these goals. the policymaker MUST understand the potentials of different ICTs in different purposes, and an awareness of priority education needs and best practices around the world

VIII. Infrastructure-related challenges in ICT-enhanced education

a) In the first place, are appropriate rooms or buildings need to be provided to install the technology, in many countries where there are many old school buildings, improper and extensive retrofitting and improper electrical wiring, heating/cooling and ventilation and security would be needed. The availability of electricity and telephony is the major basic requirement, In many developing countries there are large areas where the electricity not supplied and the nearest telephones are miles away. Although this is currently an extremely costly approach for some countries.

b) There are also some cheap and easy alternate forms of technology into education and need to keep it working where education is run on the large-scale by governments or the private sector. Television can be used as an education tools rather than television for entertainment.

IX. Challenges with respect to capacity-building

Many different skills andcompetencies must be developed throughout the educational system for ICT integration to be successful.

1. Teachersmust be trained in theirpre-service teacher training about the skills with particular applications,

integration into existing curricula, updates in the curricular related to the use of IT and changes in teacher role. Countries, like Singapore, Malaysia, and the United Kingdom teaching accreditation requirements include training in ICT use. ICTs are evolving technologies, so the ICT trained teachers need to continuously upgrade their skills and keep updated about the latest developments and best practices.

Teachers getting anxiety about the technology will take their place in the classroom as the learning process becomes more learner-cantered. This can become less severe if teachers getting interest in understand the latest Tools and technology in ICT.

2. To integrate the ICT in education require a Leadership, education. Many teacher- or student-initiated ICT projects cannot become much effective because of lack of support from above. To run the ICT integrated programs effectively require administrators support and the administrators themselves must be competent in the use of the technology. They can use the ICT in various fields like the technical, curricular, administrative, financial, and social areas.

3. To maintain the ICT in smooth work requires Technical support specialists, in this the educational institutes have to provide in-school staff or external service providers, or both. While the technical support requires in the depend on what and how technology is brined in action and used, the general competence that are required would be in the installation, operation, and maintenance of technical equipment (including software), network administration, and network security, during technical breakdowns, the money and time would get waste if the technical support would not get provided on time.

4. Content development is a critical area that need to be majorly considered. The already existing ICT-based educational material are all in English or of little relevance to education in developing countries (especially at the primary

and secondary levels). There are very few original educational content and need to develop more of original education content, (e.g., radio programs, interactive multimedia learning materials on CD-ROM or DVD,Web-based courses, etc.), need to convert existing print-based content to digital media. These are the work of content developer such as instructional designers, scriptwriters, audio and video production specialists, programmers, multimedia course authors, and web-developers are needed.The content developers are highly skilled professionals like technical support specialists. Many universities with distance education programs that make use of ICTs hired dedicated technical support and content development units.

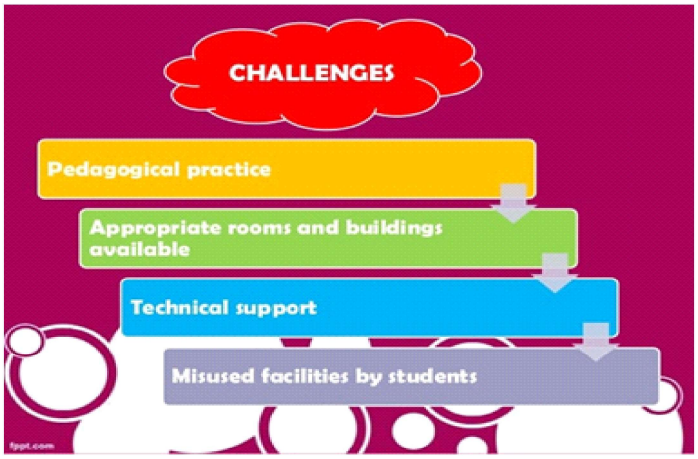

Fig.Key Challenges in Integrating ICTs in Education

Many has shown that the strategy of adding technology to the already existing teaching learning activity in institutes and in the classroom, without changing traditional teaching practices, does not produce good results in student learning, The reason for this is due to the fact that the vast majority of teachers are not competent and skilled users of technology, especially computer technology. There are two

main obstacles according to teacher to using technology which are pedagogical practices to be a lack of resources and training.

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06

Review: ICT-Enhanced Tools for the Teaching, Learning and Assessment of Physics

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Introduction

Due to new innovations and features in information and communication technology (ICT) in the last decade, the teaching, learning, and assessing process of education has changed significantly. This scientific and technological advancement has undoubtedly controlled all parts of life including teaching, learning and assessing process.

Bareq Raad Raheem and M.Amirullah Khan well explained definition and role of Information communication technology (ICT). This technology forms which used to display, create, store, process, transmit, and share information by electronic methods. The ICT tools are varied, some are technologies and some are equipment and services associated with technologies one. To transmit knowledge different technology tools such as a computer, television, mobile phone etc, whereas e-mail,blog, teleconferencing and videoconferen cing considered as tools and services associated with technologies [1]. Many of the mentioned tools have been applied to Physics teaching, learning and assessing process.

Physics is a well-known subject that is studied all throughout the world. The use of ICT technologies in the teaching, learning, and evaluation of physics is an important step toward improving teaching and learning methodologies. Because of the benefits of ICT technologies, they were able to turn it into an excellent educational tool. The present chapter is going to deal with the most common tools in Physics subject.

Advantages of ICTs integration into Physics classroom

In Physics teaching, learning and evaluation process, ICTs have immensely contributed and facilitated in understanding the concepts, laws and experimental data which improve students' performance and encourage successful learning through engaging interactions [2]. In ICT integrated learning process the teacher's role willchanged into a coordinator instead of an instructor.

To make teaching and learning ease way and more effective use of PC's or mobile phone (Android/ iPhone/iPod's) and software are useful in classroom and laboratories

Silvia Moraruetal well explained acceptable of that the use of interactive teaching tools, which provide instant feedback to the student's inputs, improve and accelerate the learning process. The use of simulation and ICT tools secondary education is not a new concept [3].

Teaching and Learning Tools for Physics

Physics teaching and learning content embedded with variety of syllabus patterns that at are useful to development of interestingof students.Some of online resources and tools for physics teachers are discussed below.

1] Electrons

An electron (by Urban Sedlar) is charged particle simulation which allows a user to view particle interactions, make a lightning rod and better visualize all those difficult to illustrate topics very well. An application 'Electron' will assist students in better understanding nature of electricity and

gaining a deeper understanding of it [4].

In this application we should perform the following 10 virtual experiments, which explain the basic concepts and phenomena of electrostatics.

i. Attractive and repulsive forces.
ii. A charged cylinder.
iii. A charged block of metal.
iv. Redistribution of charge.
v. A probe for detecting electric field.
vi. A capacitor and its electric field.
vii. Polarization in strong electric field.
viii. Neutralizing an electric fireld.
ix. Cathode ray tube (CRT).
x. Lightning rod.

Link of this application as follows:

http://electronsapp.com/

Video tour this application is available on You Tube; link of video as given below.

https://youtu.be/BAkHBrGT_x4

2] Vernier Video Physics

To teach and learn about velocity, trajectory and for graphical analysis the Vernier Video Physics application can useful. In this application, first take video objects in motion and application analyse motion; draw their trajectory of motion. Students can now learn more about two-dimensional kinematics and its principles [4].

Features of Vernier Video Physics application

I. Capture a new video using the built-in camera, choose a video from your Photo Library, or use one of our sample videos

II. Track an object automatically or manually add points to the video frame

III. Set the scale of the video using an object of known size

IV. Optionally set coordinate system location and rotation

V. View graphs of trajectory and x/y position and velocity

VI. Export video with points

VII. Email the video and data for further analysis in Vernier's Logger Pro software for OS X and Windows

VIII. Open data files directly in Vernier's Graphical Analysis app

Link of this application as follows:

https://www.vernier.com/product/video-physics-for-ios/

3] Physics Toolbox Suite

Physics Toolbox Suite Pro and Physics Toolbox Sensor Suite, along with other specialized applications, allows students to turn their mobile device into a research tool appropriate for secondary education and university students [5].

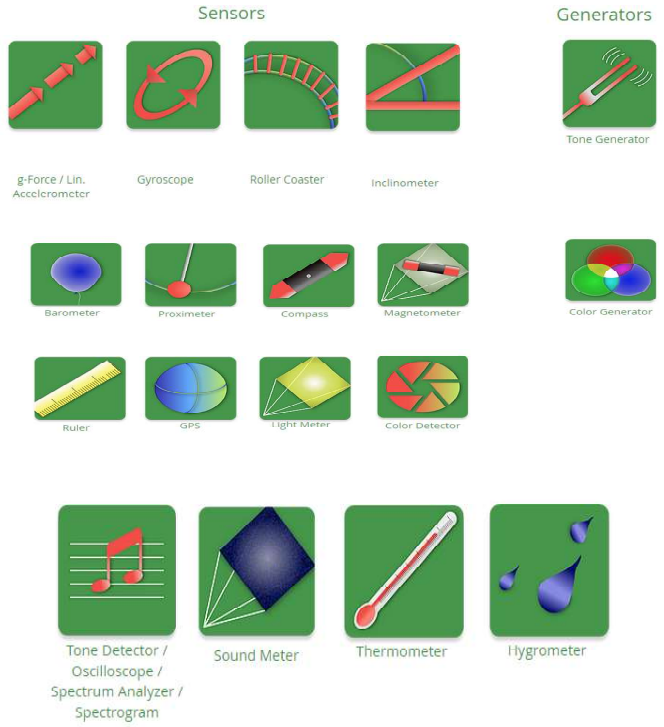


Figure 01: Application layout

This application suite developed by Vieyra Software Company.

Advantage of Physics Toolbox Suite

I. It is free and low-cost data analysis tool
II. Harness the power of mobile sensors
III. Enhance science education
IV. Facilitate research and industrial use

Link of this application as follows:
https://www.vieyrasoftware.net/

4] PhET Interactive Simulator Software

The PhET interactive simulator software project is sponsorby Nobel Prize winnerCarl Wieman. The 'PhET Interactive Simulations' project at the University of Colorado Boulder start with idea to create free interactive math and science simulations. PhET simulations are based on extensive education research and engage students through an intuitive, game-like environment where students learn through exploration and discovery [6].

PhET simulations are versatile tools that can be utilized in a variety of settings. Effective methods like videos and online resources are uses for learning and this all components are integrated with PhET simulations into your classroom are available in this application.

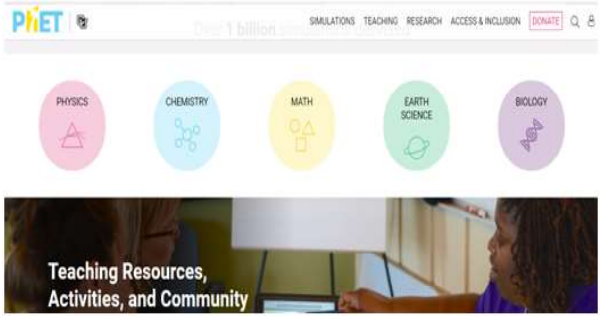


Figure 02: Webpage of Application

Web link of PhET Interactive Simulator Software
https://phet.colorado.edu/

5] VALUE (Virtual Amrita Laboratories Universalizing Education)

Amrita VishwaVidyapeetham (Value@Amrita)

Amrita University aims to change the way science and engineering education is delivered. Laboratory learning is being expanded beyond the boundaries of the classroom with the use of virtual labs, a new technology-enhanced teaching tool. Users can undertake physical laboratory experiments in a computer simulated setting using virtual laboratories, which are immersive media-rich online learning environments [7]. This project is an initiative by Human Resource Department (HRD) Ministry under National Mission on Education through ICT. All experiments and virtual laboratorieswill open access through the main project website.

Figure 03: Webpage of VALUE@Amrita

VALUE Virtual Lab features

I. Vast collection of experiments across broad range of disciplines
II. Scientific simulations
III. Remotely Triggerable Experiments
IV. Interactive animations
V. Guided videos of experimental procedures
VI. Illustrated theory notes
VII. Self evaluation quizzes
VIII. Web based access
IX. Authoring platform for educators
X. Resource-rich learning environment

Web link of Value@Amrita
https://vlab.amrita.edu/

Different Assessment and Feedback ICT Based Tools

In the teaching-learning process, assessment (evaluation) and feedback are critical. For the teaching-learning process to produce beneficial outcomes, adequate analysis of the results is required, as well as the implementation of appropriate teaching remedies. Various assessment and feedback ICT tools are available online for this purpose.

1] Testmoz

It is free and paid version onlinesimple test builder. In this application, distribute test online and get the results instantly.

Features of Testmoz

I. It create question banks/pools
II. Uploading images and file is possible
III. Easily insert math equations
IV. Use on mobile , tablet and desktop computers (even on low bandwidth connections)

Figure 04: Webpage of Testmoz

Web link of Testmoz as follows:
https://testmoz.com/

2] Pollscape

Pollscape is a simple polling tool that lets you design polls, share them with students, and get real-time feedback.

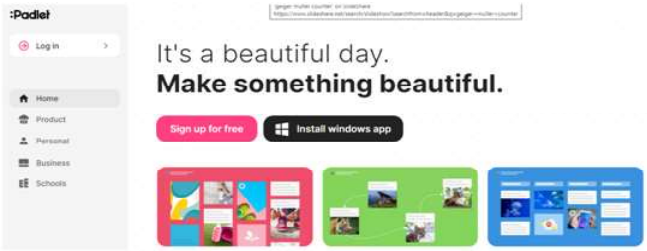
Figure 05: Webpage of Pollscape

Web link of Pollscape as follows:
https://pollscape-d2b4b.firebaseapp.com/

3] Padlet

Padlet is an online feedback board that can be used to amylases and improve teaching. Images, links, videos, and documents can all be shown on this digital notice board, which can be made public or private. This means that students, as well as professors, can post on the wall [8].

It's a terrific resource for instructors and students because the interactive environment is simple to use and accessible from practically any web browser-capable device.



Account on Padletis open through via the iOS or Android app easily. This Padlet board is share using a link or QR code.

Web link of Padlet as follows:

https://padlet.com/

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07

The Role of ICT to Make Teaching- Learning Process Effective During COVID-19 Pandemic

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Abstract:

Everyone is facing COVID-19 pandemic situation to all over the world. To be out of this situation, we all are struggling. All fields are affected due to COVID-19. And education field is also affected. But ICT is very much helpful to teachers and students during this COVID-19 pandemic. There are numerous ICT tools are available to increase the efficiency of teaching and learning process. ICT makes teaching- learning Process more effective. It offers different way to teachers to improve their pedagogy and put it to the next level. This book chapter summarized use of ICT tools to improve teaching learning process, role and scope of ICT to enhance the teaching learning process during COVID-19 Pandemic.

Keywords: ICT, Teaching-Learning, Effective, COVID-19 pandemic.

1. Introduction:

Teaching-learning process is a backbone of any country and plays a vital role in building a good nation [1]. The outbreak of the COVID-19 virus has caused a sudden suspension of schools, colleges, universities and many institutions. In the middle of these hard times, teachers have been utilizing e-learning platforms to impart education to the students. E-learning is described as virtual or online learning. It offers a way to share reading materials using internet through documents, emails, presentations or webinars. Information technology has become an important part of modern education and it shows huge involvement of ICT in the present teaching-learning process. Educators can share study materials and lectures in the form of PPT, PDF or Word document by uploading them on their respective university WebPages, on what's app or through e-mails to maximum students during this lockdown ICT [2-3]. Lectures have been also taken through WeChat, by sharing audio-visual videos through e-mails, by different online teaching apps like goggle meet, Zoom, goggle classroom, g-suite cloud meeting and so on. The development in technologies has offered a favorable domain for teaching-learning processes. It offers different way to teachers to improve their pedagogy and put it to the next level. It enhances the teaching and learning process [4]. The teachers can motivate students to enhance their learning skills through innovative ways. ICT has brought a huge change in the traditional methods of teaching and learning. Through ICT, learning can occur anytime and anywhere. Online course materials, for example, can be accessible 24 hours a day, seven days a week. Therefore ICT provides both learners and teachers with more educational affordances and possibilities. Due to ongoing of COVID-19 an increased number of students are found to use the learning platform and apps [5-7].

2. ICT Tools use in Teaching and Learning Process:

ICT tools can empower the teachers and learners; promote the change and faster development in 21st century skills. ICT defined as "a diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information" [8]. It provides creativity, problem solving abilities, information processing skills and other higher order thinking skill. It gives the more opportunities to use multiple technologies to teacher. Some of the ICT Tools which are used for teaching learning process are as below. These tools help learners to acquire skills required for smooth communication. These tools are helpful to teachers as well as students.

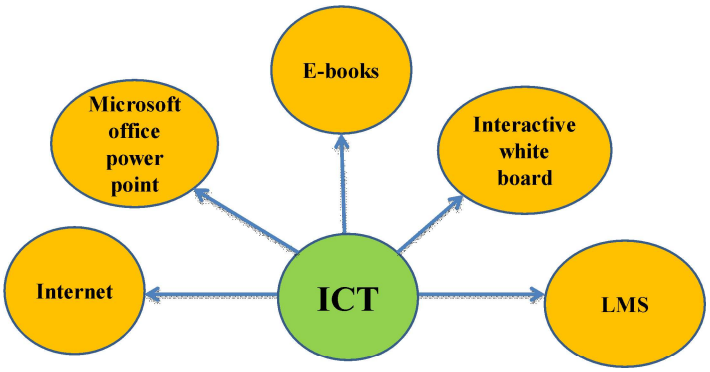

Fig: **ICT Tools**

2.1. Internet

The development of internet in teaching and learning process has an incredible influence. The information from the internet source makes the teaching and learning process very valuable and effective [9]. The usage of internet provides new modes of communication that increases the social interaction among people living in different countries reducing the problems of distance learning by various social networks. Moreover, the effective application of internet in teaching-

learning process improves the pedagogical methods and also saves time [10]. The research of the study indicated that eighty percent teachers use internet to provide online demonstration [11-12].

2.2 Microsoft office PowerPoint

PowerPoint can be an effective ICT tool to present material in the classroom and encourage student learning. You can use PowerPoint to project visuals that would otherwise be difficult to bring to class. It is a part of the Microsoft Office system which is widely used by business people, educators, students, and trainers. As a part of the Microsoft Office suite, Power-Point has become the world's most widely used presentation program. It is a complete presentation program that allows teachers to produce professional-looking presentations in classroom [13].Microsoft PowerPoint could easily be used to develop interesting and interactive learning tools by any teachers to make teaching and learning more effective and break the monotony and passivity of traditional classes [14-15]. During this pandemic PowerPoint is very helpful to make teaching learning process more effective [16].

2.3 E-books

Digital Books make the learning process more interactive and engaging**.** There are several studies involving the use of e-Books in the classroom as a medium of teaching. Most of the studies discuss the effectiveness of e-books in enhancing the learning process [17].It provides a positive response to students. Currently, e-book is becoming more favorable for many students. it is because e-book offers several advantages over printed books, such as e-book is easier to carry anywhere, can be read anywhere and anytime, e-book prices are relatively cheaper when compared to the printed version [18].

2.4 Interactive white board (IWB)

Many teachers and administrators seem to be enthusiastic about using the whiteboard during this COVID-19 pandemic to make teaching learning process effective. Interactive Whiteboard has been widely used recently in educational settings and many studies have been conducted on the impact of technology on education and most of them yielded positive outcomes of IWB in the learning environments [19]. The interactive whiteboard seems to be generating a great deal of enthusiasm among educators, and for good reason. It appears to motivate and engage students, and these are vital components of teaching and learning [20].

2.5 Learning Management System (LMS)

learning management system (LMS) is a software application or web-based technology used to plan, implement and assess a specific learning process. Learning management systems are information systems that administer instructor-led and e-learning courses. Through LMS student progress including training, evaluating, and tracking of results can easily be established [21]. LMS is an engaging and successful source of LMS during the COVID-19 pandemic. Using learning management systems is one approach to online learning. Learning Management Systems have gained popularity among both the educational institutes and students as a software application used for planning, implementing, and examining the whole education process. LMS are also popular with the following titles as knowledge management systems, course management software, and virtual educational or learning environments [22-23].

3. Role of ICT in Teaching Learning Process:

3.1 Platforms for online education:

There are different platforms available for online education. Through theses platforms, online classes can be taken, videos can be uploaded, recorded videos can be send.

So these platforms are helpful to the students as well as teachers. Eg. Swayam, Webex etc.

3.2 Online education:

Due to Covid-19, there is no option without online education. As lockdown do not allows for opening schools, colleges, so online education is only one option through which education can be continued. Student can study through online resources. There are different resources through which it will be helpful for students to understand topic. Students can meet teachers online and get required knowledge about the subject. Students can have no limit of time and place [24].

3.3 Use of different e-content:

Due to online education there is no time limit as well as place restriction for learning. Anyone can learn from any place and at any time. So many type of education any one can take. And different e-contents are also prepared for students. These are helpful for them to enrich their knowledge.

3.4 Use of apps:

Different apps nowadays are used for online education. These apps are helpful for students and teachers to interact. Such type of apps is also used for meetings, online teaching learning process and presentation. Eg. Zoom, Google meet, Google classroom, What's App etc.

4. Challenges and scope of ICT in Teaching Learning Process

There are many problems related with online learning, but we cannot ignore its importance in such pandemic. We can solve these problems in many ways. The online course contents must be self-motivated, exciting and collaborative. Online courses must be creative, collaborative, relevant to the course content and students-cantered. Despite having challenges and problems, adoption and integration ICT for betterment of teaching-learning process and creations of quality culture has become need of the hour. The focus needs to be shifted from challenges to the possible solutions [25].

5. Conclusion:

Use of ICT in today's scenario is very much helpful. There are numerous modern ICT tools are available to improve teaching-learning process and to increase the efficiency of educational system. This book chapter summarized that use of ICT is successfully effective in teaching-learning process.

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08

Role of ICT and Its Impact in Higher Education

K. D. Savant

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Abstract:

Technology changes rapidly and newer, more cost-effective and more powerful technologies will continue to emerge of potential use in education. Theapplications of various ICTs that are the most important determinants of the effectiveness of its tools in education, the choices of tools are quite varied and each has its own advantages and disadvantages. There is a list of reasons which demonstrate how ICT can enhance teaching and learning in the 21st century. However, some of the main ones include: student motivation, student attainment levels, student engagement in subject learningand least time consuming evaluation.The impact of ICT for teaching and learning process has become pertinent as it facilitates teaching and learning process, create conducive learning environment, and help learners develop creative thinking andself-confidence. This paper focuses on the use of ICT in higher education by students and teachers to support theprocesses of learning and teaching. It describes the ways in which teachers could and/or should facilitatestudent use of computer systems, information and

communicationtechnology and how they can progress. This paper thus suggests thateffective introduction of ICT in the teaching and learning process and to analyse whether technology improves learning and students achievements.

Introduction:

Society expects more and more of higher education each year. This stems partly from the continuing expansion of knowledge, and therefore of what must be included in courses and curricula, and partly from growing cognitive challenges and diversity. Progress, convergence, and integration in information technology have driven fundamental change in the information technology faculty, students, colleges, and universities have or might be expected to acquire. A diverse set of ICT tools is being used in colleges to communicate, create, disseminate, store, and manage information. In some contexts, ICT has also become integral to the teaching-learning interaction, through such approaches as replacing chalkboards with interactive digital whiteboards, using students' own smartphones or other devices for learning during class time, and the "flipped classroom" model where students watch lectures at home on the computer and use classroom time for more interactive exercises. When teachers are digitally literate and trained to use ICT, these approaches can lead to higher order thinking skills, provide creative and individualized options for students to express their understandings, and leave students better prepared to deal with on-going technological change in society and the workplace. Integrating ICT in teaching and learning is high on the educational reform agenda. Often ICT is seen as indispensable tool to fully participate in the knowledge society. ICTs need to be seen as "an essential aspect of teaching's cultural toolkit in the twenty-first century, affording new and transformative models of development that extend the nature and reach of teacher learning wherever it takes place".The

Information and Communication Technology (ICT) provides a broad perspective on the nature of technology, how to use and apply a variety of technologies, and the impact of ICT on self and society. Technology is about the ways things are done; the processes, tools and techniques that alter human activity. ICT is about the new ways in which people can communicate, inquire, make decisions and solve problems.

Teaching Learning, computers and ICT tools

Colleges and educational systems must provide the infrastructure and support for students and teachers, and the maintenance of constructive learning environment in which ICT is used. At the same time ICT tools will assist colleges and educational systems in carrying this out. Research has consistently shown that few colleges and teachers implement ICT support to a degree where the potential benefits are likely to be realized. There area number of significant problems which impede and prevent teachers from achieving the full advantage offeredby ICT applications. Cradler (2002) gave seven requirements for effective use of ICT in education: 1. Suiting technology to education goals and standards.2. Having a vision for the use of technology to support curriculum.3. Providing for both in-service and pre-service training.4.Ensure access to appropriate technology5.Provide for administrative support for technology use6. Providing time for teachers to plan and learn how to integrate technology7. Providing for on-going technique support for technology use.

Broadly speaking, computer literacy is a component of technology education, which is distinct fromusing technologies such as computer systems to support learning and teaching processes. The latter is generallyreferred to as educational technology; and is applied to a wide range of technologies such as black boards andchalk, pencils, books, and slide-rules to television, facsimiles and computers. This paper will focus on the use ofcomputer systems as educational technologies

Availability of resources for ICT enabled teaching:

The relative lack of good quality software and associated courseware is well documentedand is being attended to by software producers and educators throughout the world. The problems associatedwith hardware were mainly a lack of it however there is still a major problem with the appropriateness of thehardware used. The use of inappropriate hardware, the lack of useful software and the difficulty in gainingadequate access to computer system were noted as major obstacles to the use of ICT by teachers and students. Considering the total cost-benefit equation, supplying and maintaining the requisite infrastructure, and ensuring investments are matched with teacher/ students support and other policies aimed at effective ICT use.

One laptop per student:

Less expensive laptops have been designed for use in college on a 1:1 basis with features like lower power consumption, a low cost operating system, and special re-programming and mesh network functions. Despite efforts to reduce costs, however, providing one laptop per child may be too costly for some developing countries

Tablets / Cell phone (Mobiles):

Tablets are small personal computers with a touch screen, allowing input without a keyboard or mouse. Inexpensive learning software (“apps”) can be downloaded onto tablets, making them a versatile tool for learning. The most effective apps develop higher order thinking skills and provide creative and individualized options for students to express their understandings.

Interactive White Boards or Smart Boards:

Interactive white boards allow projected computer images to be displayed, manipulated, dragged, clicked, or copied. Simultaneously, handwritten notes can be taken on the board and saved for later use. Interactive white boards

are associated with whole-class instruction rather than student-centred activities. Student engagement is generally higher when ICT is available for student use throughout the classroom.

E-readers:

E-readers are electronic devices that can hold hundreds of books in digital form, and they are increasingly utilized in the delivery of reading material. Students—both skilled readers and reluctant readers—have had positive responses to the use of e-readers for independent reading. Features of e-readers that can contribute to positive use include their portability and long battery life, response to text, and the ability to define unknown words. Additionally, many classic book titles are available for free in e-book form.

Flipped Classrooms:

The flipped classroom model, involving lecture and practice at home via computer-guided instruction and interactive learning activities in class, can allow for an expanded curriculum. There is little investigation on the student learning outcomes of flipped classrooms. Student perceptions about flipped classrooms are mixed, but generally positive, as they prefer the cooperative learning activities in class over lecture.

SWAYAM:

SWAYAM MOOCs platform is World's Largest Online Free E-Learning Platform Portal designed to achieve the three cardinal principles of Education Policy viz., Access, Equity and Quality by covering College /Vocational, Under-Graduate, Post Graduate, Engineering and Other Professional Courses. SWAYAM operates MOOCs learning resources in different ways and structure. Learning in SWAYAM has four parts/quadrants: e-Tutorial, e-Content, discussion forums, assessment (Samanta, Anuva 2018).

The first quadrant is direct teaching means not much

of extra work by students, it could include teaching video, animation, PowerPoint presentation, Podcast and so on. All these depend on what the subject is and what the strategy adopted by the teacher to teach the students. The second quadrant is an e-content which could include e-books, illustrations, Case studies, Open source content, Reference link, further reading sources and so on. The third quadrant is about clearing student's queries. Discussion forum is a part of it means students can interact with other students and faculty to clarify their doubts. The discussion forum is like a doubt counter where any student or faculty can answer the question of a student.[7] SWAYAM is an Indian government programme providing educational opportunities for a vast number of university and college learners(Kumar and Mahendraprabu 2021).The fourth quadrant is self-assessment to check what a student have studied and whether he/she is eligible to get certificate. It could be tests in the form of Multiple Choice Questions (MCQs), or quiz or s hort answer questions, long answer questions, etc. The fourth quadrant also has Frequently Asked Question (FAQs) and their answers to clarify common misconceptions among students.University Grand Commission considers that universities should play a key role in disseminating and popularized SWAYAM courses among their learners and the university, enabling them to gain from Massive Open Online Courses on a more extensive and broader footing.

Networking

The networking of educational technology resources benefits students, teachers and college s byfacilitating information technology learning activities giving ready access to software, allowing a variety ofcommunications, reducing costs of equipment, increasing processing power and facilitating the management ofstudent learning (Cradler and Bridgforth, 2002). It helps to put down the barriers between

information held onseveral (not only computer) systems, thus creating a borderless communication and information environment byallowing users to access remote programmes and remote database either of the same institution or from anotherinstitution with ease. Three categories of network scenario should be considered in the use ofcomputer networks in college s i.e. Intra-college networks, Inter-college networks and External networks (internet)

Impactof ICT on the learning environment:

1. Investigating reality and building knowledge:

ICT allows students to investigate more thoroughly the real world. They can more readily accessinformation sources outside the classroom and can use tools to analyse and interpret such information.Information may be accessed through online systems or through data logging systems. It also makes it easier forindividuals to interact and gain expert knowledge with a very short time, thus making the acquisition ofknowledge to take place easily within a very short period of time.

2. Active learning and authentic assessment:

ICTs potentially offer increased possibilities for codification of knowledge about teaching and forinnovation in teaching activities through being able to deliver learning and cognitive activities anywhere at anytime. In many classroom situations it is difficult to allow students to besufficiently active as participants. Typically students are often passive, spending a lot of time listening orreading. It is well known that students are more likely to be interested and attentive and will achieve a widerrange of learning outcomes if they can be active. Their engagement with the curriculum will increase as they areafforded opportunities to create their own information and represent their own ideas. Expert system can be usedto provide students with learning experiences where they are interacting directly with the computer system, andare not just passive but active participants in the learning

process, thus increasing the quality of education (Salekhovaet.al. 2013).

3. Engage students by motivation and challenge:

The interactive and multimedia nature of modern ICT tools has provided the opportunity forsoftware developers to create increasingly more stimulating features. Computer system does provide theopportunity to create a wide range of interesting learning experiences as it makes learning, participatory and asocial process supporting personal life goals and needs. This is likely to help tomaintain student interest and interest a wide range of students (Cradler &Bridgforth, 2002). The interactive andmultimedia features within software can be used to help students grapple with concepts and ideas.Provide tools to increase student productivity. In the past students have spent a lot of time doing repetitive, low-level tasks particularly involvingwriting, drawing and computation. While it may be necessary for students to developing these skills at sometimes on most occasions they are pre-requisite to some higher level task. Unnecessary repetition of low-leveltasks is inefficient, non-motivational and may obscure the real purpose of the learning activity. Many computerapplications provide the tools to support students in quickly completing these lower-level tasks so that they canfocus on the main purpose of the activity. Word processors, graphics packages, database packages, spreadsheetsand other software support the performance of students. ICT has transformed teaching and learning processesfrom being highly teacher-dominated to student-centred, and that this transformation will result in increasedlearning gains for students, creating and allowing for opportunities for learners to develop their creativity,problem-solving abilities, informational reasoning skills, communication skills, and other higher-order thinkingskills (Bhaurao,2015).

4. Provide scaffolding to support higher level thinking:

There is an increasing range of software tools which can be used to support the development of higherthinking skills such as application, analysis and synthesis Tools can be used to analyze data, present data, link data or information, present informationin different formats, simulate environments and conditions and support interactive communications. This allowsteachers to consider providing a range of activities to assist students to become critical thinkers, designers andproblem solvers.

5.Increasing learner independence:

Computer systems are increasingly being used to provide learning experiences when and where theyare needed. This provides students with greater independence not only in terms of when and where they learnbut also what they learn (Cradler and Bridgforth, 2002).

6. Collaborative and co-operative learning:

The use of ICT leads to more co-operation among learners within and beyond college andmoreinteractive relationship between students and teachers.

7. Overcome physical disabilities:

The variety of input and output devices available provides the opportunity for students who arephysically handicapped to be involved in the same learning activities as other students. For some studentscomputers provide the only environment which they can manipulate and the only tools that reduce their level ofdisability. Modified keyboards and mouse-drivers may be used to allow extremely handicapped students to useregular software packages. For students who are not able to take notes during the course of the class, the systemstores in a database lessons already taken for further studies and provides a more user friendly environment forblind students through audio interpretation of the course (Bingimlas, 2009), thus enhancing their learning

8. Student learning:

There are many potential uses for different ICT tools in the learning process. In some situations changes inrelevant industries makes computer use in colleges imperative. For example, to provide courses in music,technical drawing, statistics, and business which do not incorporate computer use reduces the relevancy of thecourses to the real world. Here the rationale cries out from the work place but needs to be responded to withcareful impact of ICT on learning and teaching

Conclusion:

The study attempts to explain the impact of ICT on learning and teaching, with an aim of enhancing student learning and achievements. The question asked by the researcher is whether technology improves learning and students achievements. It has been found that lCT does not increase learning over and above traditional methods. The more appropriate question should be:- How can the Educational technology together with Technology Education be implemented in the learning environment to facilitate learning and teaching process. When Educational Technology is integrated into classroom, students are able to access more information faster and in an efficient manner. In the absence of these fundamental changes to the teaching and learning process such classrooms may do little but to accelerate the ineffective processes and methods of teaching. The impact of ICT on learning process therefore excites and engages learner's interests. Today, everything that is required for reading, looking up, studying, training, revising, constructing, arranging and informing, saving and reminding, browsing or navigating is available at the click of a mouse. Hence it is necessary for the colleges to jump onto the Technology bandwagon so as to become part of information super-highway and make it possible for their learners to have access to the world's knowledge .

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Application of ICT in College Library: Special Reference to Shivaji Mahavidyalaya, Udgir

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Abstact:

The main purpose of this paper is to assess application of Information and Communication Technology (ICT) in the Library of Shivaji Mahavidyalaya Udgir. The application of ICT has provided more effective and efficient service delivery in the library. The use of ICT facilities is an important tool in the libraries as it supports resource sharing among, increase effective and efficient service delivery, saves time, provide marketing opportunity of its services, provide speedy and easy access to information and to provide more up to date information to users.

Keywords: ICT in Academic Library; College Library; Use of ICT Library Automation; Library Operation; QR Code

Introduction

Information is not only very essential as a resource for national development, but it is also very essential for the success of libraries and information centres in India. The

acquisition and application of ICT facilitate access to a wide range of information resources and databases irrespective of their geographical locations, distance impedance and time. The application of ICT in libraries has helped librarians and information specialists, and researchers to improve their information products and services through enhanced search outcomes in terms of specificities of document retrieval, provision/dissemination and use of requisite information retrieved or generated. ICT has become an important field for all information professionals; this is because of perceived relevance, and practical applications to tasks in libraries and information centers. ICT, therefore, includes the technologies used for communication and information handling.

The application of ICT has drastically transformed the way of collection, storage, and retrieval of information in libraries. Particularly, the internet has completely transformed traditional libraries into digital libraries.

The acronym of ICT is Information and Communications Technology. ICT integrates information processing, computing and communication technologies. ICT has changed human life such as the way we learn, work and live in society and are often spoken of in a particular context, such as in education, health care, or libraries. Information Communication Technology covers any product that will store, retrieve, manipulate, transmit or receive information electronically in a digital form.

Definition of ICT:

1. **Ebijuwa and ToAnyakoha:** define ICT as "tools and as well as means used for collection, capture, process, storage, transmission and dissemination of information".
2. **The American Library Association:** defines IT as the application of computers and other technologies to the acquisition, organization, storage, retrieval and dissemination of information. Computers are used to process and store data,

while telecommunications technology provides information communication tools. Which make it possible for users to access databases and link them to other computer networks at different locations. IT and ICT (Information and Communication Technologies) are used somewhat interchangeably.

3. Aluko: Described ICT as, "enabling technologies (both hardware and software) necessary for the delivery of voice/ audio, data (high speed and low speed) video, fax and internet services from point A to point B (or possibly to multiply B C etc) using wired and wireless media protocol (IP) and non IP networks"

About College:

Shivaji Mahavidyalaya is a multi-faculty college with 3252 square meter campus area. It is a grant–in–aid institution formerly affiliated to Marathwada University, Aurangabad and after the bifurcation of Marathwada University, it is affiliated to S.R.T.M. University, Nanded. The U.G.C. accorded 2(f) status to the college. Today the college is recognized as a well known centers of higher education in this locality and university. The College offers 18 academic programmes with a good number of subject combinations with options to choose the subjects. It has three major streams- Arts, Commerce and Science with one additional Computer based professional course faculty.

There are 1653 students enrolled for formal regular roll and 1243 students in Distance Mode of Y.C.O.M.U. Today the college has 33 regular and 27 CHB & 19 Core Teachers, 65 administrative and technical staff, 22 UG departments, with different academic programmes in different faculties.

The college promotes and motivates the faculty for research activities 29 teachers are Ph.D. and 10 M. Phill. Degree holders. The college has 7 research guides, supervising 29 Ph.D and 10 M.Phil research scholars in the present year. The faculty is actively doing MRPs on financial

assistance by UGC. The college volunteered itself to be assessed and re-accredited by NAAC , Bangalore and the Peer Teem assessed our college on 7-9 Sept. 2015, and re-accredited with B grade (CGPA- 2.78) .

About Library:

The library is the Heart of the organisation or Institute. The library plays vital role in the development of the students as well as the faculty members. Library is the trinity of user, staff and resources. Library builds collection and create tool to support teaching and learning and to provide better service to users. Shivaji Mahavidyalaya has established its own library in the year 1968 for students as well as faculty member.

Our present collection of books is 144209 books, 62 periodicals and 28 newspapers are subscribed by the library. The Library has a subscription to N-LIST database by UGC - INFLIBNET, through which teachers & research students can access & download many e-resources in respective subjects.

Library is fully automated using SOUL 3.0 library management software designed and developed by UGC-INFLIBNET. New purchases, stock verification, issue-return activity is conducted using this software. All the books and I-card of the students have a bar code. The Use of barcodes and bar code scanners makes the process of issue and return more efficient and error free.

OPAC/Web OPAC is made accessible for students and staff. Eight computers are connected to the library database with LAN. Two out of them are exclusively used for OPAC search. With the help of OPAC students can search books by various fields like title, author, class no, publishers etc. Students can get the status of books and they can also check how many books they have borrowed from library and which. The library has started SMS alert facility for library users. Through which students get SMS alerts for overdue items and alerts for borrowed and returned books from the library.

Application of ICT in the Library of Shivaji Mahavidyalaya:

1. Library Automation

The library is fully automated using SOUL 3.0 library management software designed and developed by UGC-INFLIBNET. New purchases, stock verification, issue-return activity is conducted using this software. All the books and I-card of the students have a bar code. The Use of barcodes and bar code scanners makes the process of issue and return more efficient and error-free.

2. Automatic User Tracking System

SMU Library has started automatic attendance of the users with the help of computers, software and automatic barcode scanner. An automatic barcode scanner and computer monitor is placed at the entrance of the library. Library users have an I-card with their complete details and barcode label. Users need to show their I-card in front of an automatic barcode scanner at the time of entrance and exit from the library. Through Automatic user tracking system library can generate particular user wise, day wise, month wise and year wise data of the library users. This data can be used for many purposes i.e. NAAC, for management, principal, library committee, university committees, for parent's etc.

3. Reservation of Books

With this service, students can make a reservation of the books which are not available in the stack room or which are borrowed by some other user of the library. After the availability of the book, students are informed by SMS from the library.

4. SMS Alert Facility

Shivaji Mahavidyalaya Library has started an SMS alert facility for library users. Through which students get SMS alerts for overdue items and alerts for borrowed and returned books from library. Students were also informed after the availability of books reserved by them through SMS.

5. OPAC/Web OPAC

OPAC is made accessible for students and staff. Eight computers are connected to library database with LAN. Two out of them are exclusively used for OPAC searches. With the help of OPAC students can search books by various fields like title, author, class no, publishers etc. Students can get the status of books and they can also check how many books they have borrowed from library and which. SMU Library has Web OPAC also. Students can access web-OPAC from anywhere with the help of the internet. They do not need to come in the library for searching and checking the books. One can access web-OPAC with the help of below link http://117.247.89.152/webopac/. The link of OPAC is available on the college/library website and displayed on the college/library notice board also.

6. SOUL m-OPAC:

INFLIBNET has developed one android application for accessing OPAC for searching books in the library. The name of the application is SOUL m-OPAC. With the help of this app, users can access the catalogue of the library. Shivaji Mahavidyalaya Library has started this service for our users.

7. E-mail Alerts:

Shivaji Mahavidyalaya Library has started an E-mail alert facility for library users. Through which students get email alerts for new arrivals in the library, overdue items, alert for borrowed and returned books from the library. Students were also informed after the availability of books reserved by them through SMS.

8. Library Services Using QR Codes:

The QR Code is a relatively new way to allow users to see what your product/service is all about. Similar to barcode, a customer can wave the camera of his or her Smartphone over the QR code and be redirected to wherever the patron wants. Shivaji Mahavidyalaya Library provides services to its users through QR Codes. The library has displayed various

QR codes at the entrance of library through these QR codes users can get details such as library guide, links to various digital libraries, for giving instructions for using Webopac, library map, link to reviews of library resources, links to various newspapers, links to various e-resources, links to educational websites, videos etc.

9. Use of Barcode Technology:

Shivaji Mahavidyalaya Library has used barcode technology for providing easy access to information. All books of the library have pasted barcodes and users of the library have provided smart ID cards having unique barcode for each user. It has helped for easy and speedy circulation of books through circulation counter and automatic user tracking system.

10. Stock Verification:

The use of the computer in stock verification is the most important. The verification of the stock is carried out with the storage of the library through the database in the computer. Stock available in the library is scanned through a wireless barcode scanner and data are collected. These collected data are compared with the available data in SOUL software. In this way, one can find how many books have been lost.

11. Reprographic Service:

Reprographic technology is used for the reproduction of documents. Using this technology the photocopy and the reproduction of documents have become very easy and accessible. This service is provided to library users for the photocopy of some pages of books, journal articles or other materials.

12. Smart Library Card:

Library provides smart cards for each user of the library. This smart card uses barcode and QR code technology. It helps to track each user of the library and easy as well as fast information dissemination.

Conclusion:

In this way we can see how information communication Technology has changed the way of providing library services to the users. Shivaji Mahavidyalaya Library has tried to do maximum use of ICT for providing better library services to its users.

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Impact of ICT on Teaching & Learning in the Modern Era of 21st Century

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1. Introduction

ICT stands for Information and Communication Technology and it is defined as dissimilar sets of technological tools and resources used to communicate, to create, disseminate, store, and manage information [1]. Now a day the entire world is considered as a global village throughout the use of ICT in various educational, economic, political and social sectors. Almost in all tasks, we find the integration and the use of technology to solve various problems. ICT is considered as one of the main pillars upon which worth education for all can indeed become a reality, because of its exclusive capability to bring the world together, technology will always give more attention and plays an important role in this 21st century and more than ninety percent of jobs created now will need advanced technological trainings.

The use of ICT is a symbol of education in a modern era. The future capable trend varies from boost of digital technology based settings in the process of teaching and learning to the emergence of virtual settings that make sure adjustable learning situations. These trends also make stronger the idea of integrating educational software in order to give rapid and minute response and make the teachers capable to bring the method of learning to the level which suits most of the learners.

ICT is separated into two main approaches in education like ICT for education and ICT in education. ICT for education includes the improvement of information communication technology for learning and teaching purposes while ICT in education includes the implementation of general components of information and communication technology in practical use in teaching and learning processes [2]. Today, technology has ever more become a vital element for firms to compete and develop. Almost in all situations or tasks, we find the integration and the use of technology to solve problems. Accordingly, future teachers need to equip and acquaint themselves to make changes brought about by technology [3]. In present information culture, a person tries to get access of knowledge via information and communication technology (ICT) to maintain speed with the latest developments [4].

Technology is invented to work out on problems linked with human need in more productive ways. If there is no problem to solve, the technology may not be developed and/ or not adopted. By applying this principle to educational technology means that, educational institution should produce and implement technologies that address educational problems, of which there are many. Moreover, a technology will not be developed by educators where there is no apparent need or productivity gain, Cradler [5] gave some necessities for effectual use of ICT in education:

1. Suiting technology to educational goals and values.
2. Having an idea for the make use of of technology to support syllabus.
3. Provide for both in-service and pre-service guidance.
4. Make sure to access suitable technology
5. Offer for administrative support for technology use
6. Provide time for teachers to make plan and study how to integrate technology
7. Provide on-going technique support for utilization of technology

Generally all these requirements come under three areas of impact:

- Providing the infrastructure of hardware and software
- Providing curriculum and technological support for teachers
- School policies, design and practices, organization and management support.

It is supposed that technology can bring our education sector from the dark age to the light age. This is because the achievement of ICT in colleges can bring about some potential benefits. However, to obtain those benefits we have to overcome its enormous difficulties. These difficulties may vary from school to school, from region to region, and from country to country.

2. Traditional Methods in Education

From past few decades, traditional methods of teaching are a thing in which teachers controls the class where they teach and take the total responsibility of the education of the students. All the duties and powers are vested in the teacher and they, being the lecturer in the class, become act like an instructor for the students and also take decisions about how to teach and what to teach.

For the teachers, students come to educational campus to gain the knowledge, which they receive from

teachers. Teachers are the main source of information to educate students and give knowledge to them. Though, for time being the teaching methods have been altered but the main goal remains the unchanged i.e., teaching. The process of learning is the main aim of teaching, as number of student learns, a teacher becomes successful in their profession.

Traditional teaching methods are also known as conventional teaching methods which are still used with wider range in educational campus. In these methods, teachers ask students to recite and memorize the study material and what they teach in the classroom and also students one by one recite the lesson when their turn comes. Then students are asked to memorize the lesson and on the basis of this recitation, teachers take written test, oral test and assignments.

In traditional teaching methods, chalk and talk methods are extremely used and classrooms are teacher-centric. Teachers take the responsibility of knowledge dispensers, not the facilitators. In the traditional method of teaching well disciplined classrooms are focused. As it is teacher-centric, it shows be short of teamwork and group learning in students. Teachers give lectures and students learn. In this method the main intention of teachers is to get good score of students in their exams than educate them and make understand the concept and syllabus.

During the modern era of technology, the method of traditional teaching is not applicable. Now we are in the 21st century, it requires changes in the traditional education system to adjust in the modern education system. Teachers should now try to give the best methods of teaching for students to make them meet the desires of students in a significant way.

3. Advantageous Comparison between Modern Teaching and Traditional Teaching Methods

Now a day the education system has been transforming

and is incorporated novel methods of teaching which have an entirely different approach towards teaching and learning. In modern teaching methods, teachers educate every student on a different level and do not think as everyone one. They assume all students are different and apply different educational practices on them separately. They know the desires of every student and deliver accordingly. Unlike conventional teaching method, modern teaching methods are based on explaining, questioning, activity, demonstrating and also collaboration techniques. Today, student requires innovative teaching methods in educational environment.

In recent times, the improvement of ICT slowly replaces the traditional teaching pedagogy. Face to face classroom communication is getting replaced by on-line communication, traditional white or blackboard is getting replaced by interactive whiteboard whereas books or printed resources are getting replaced by on-line resources.

4. Need of ICT

The essential need of ICT is that, education is a permanent process and therefore it must be available at anytime and anywhere. The explosion of information is rising phenomena therefore there is need to get access to this information. Education should get together the needs of variety of learners and therefore IT is essential in meeting this need. It is a necessity of the society that everyone should have technological literacy. To overcome the challenges of illiteracy and poverty, IT is the only answer to enhance access and lowers the price of education.

5. The Potential Benefits of ICT

ICT can offer considerable advantages in supporting learning. By using technology in their learning, the students can be active learners. They will be aware of what information they need, why they need it, and how they can get that information. As mentioned by Huffaker [6] an active learning

allows the students to decide when they require particular information and whether they have already understood that information or not. This active learning also implies an independent learning. By having access to internet in their school the students will not totally depend on the teachers. They can explore information available in the internet, find information that they need, copy it, and go on to find more and more information. By using this learning system, the students also becomes self-managed in their learning process. As noted by Jarold and Sue [7] self-active learning allows the students to be energetic and independent learners who will be capable to readily, efficiently, and rapidly react to the fast transform of information.

ICT can offer a way for dynamic and mutual learning. With the help of internet our learning is not limited to the school hours, demographically where we are, and who our teachers are. We can access internet as wherever we want. As stated by Uhomoibhi [8] e-learning allows the students to get faster huge knowledge at anytime and from all over the place. Technology also enables us to cross the demography barriers. The students from rural areas can access the information from urban areas, get knowledge and share information with other students or teachers in the same area or different areas of other countries. In addition active learning, ICT helps all the human components of schools and colleges, the principals, teachers, administrators, IT coordinators, and the students to get concerned in the mutual learning and producing learning communities. As mentioned by Moodiel [9] by working together we can do fruitful things which are not possible to do individually.

The most significant learning feature in collaborative learning is that, we want to achieve using ICT is communication and interactivity. The Rodrigues [10] states that, “well-organized learning occurs when students are

interactively busy in learning task." Learning using ICT is more efficient than learning through memorization. It allows the students to experience their learning processes, being interactive, have fun and enjoy with technology.

ICT can guide us to meta-cognitive learning. As noted by Monteith [11] by using ICT in our learning we can learn how to learn rather than learn a particular skill. Due to this we can realize that learning new technology and new knowledge is not more difficult than learning old knowledge/ skills. This understanding is very vital since many people are scared of learning new technology since they consider that learning somewhat new (new technology) is more complex than the old ones. Phelps and Kerr [12] note that there are two important elements within meta-cognitive learning. Those are self-appraisal and self-management. The self-appraisal learners can reproduce and assess their own knowledge competency and growth. Having self-management, the learners can plan, select, and use education strategies which they favor to increase knowledge.

Today we do not need to go anywhere to see some form of ICT in our lives. Whether it is a computer, plasma TV, or mobile phone, we all have them in some part of our lives. In today's society, people as customers of ICT, all tries to attempt for the one dream i.e. connected life. ICT has invaded and transformed many aspects of our lives to the extent that we live in an environment that is dominated by technology which itself is consumer-driven [13]. No matter how we recognize its presence, there is no deny that it is an essential part of our life.

6. Key factors in relation to the importance of ICT in Education

1. E-learning: The presence of ICT in education allows for new ways of learning for students and teachers. Online learning is gradually more admired and with various

unmatched actions occur in our lives, this does not only open opportunities for colleges to confirm that students have access to curriculum materials whilst in the classroom but also allows them to make sure students exterior the classroom such as at home or in hospitals can learn.

2. ICT improves subject learning: It is well known these days that the use of ICT in education adds a lot of value to key learning areas like literacy and numeracy.

3. ICT brings enclosure: The profit of ICT in teaching is such that students in the classroom can all study from the course material. Students with particular desires are no longer at a drawback as they have access to necessary material and unique ICT tools can be utilized by students to make utilize of ICT for their educational requirements.

4. ICT use encourages collaboration: You just have to put a laptop, iPad or computer in the classroom to know how this works. ICT noticeably bring students together where they can speak and talk about what they are doing for their work and this in turn, opens up avenues for communication thus essential to language improvement.

5. ICT promotes better thinking skills: One of the key skills for the 21st century which includes planning, evaluating, monitoring, and reflecting to name a few. The efficient utilize of ICT in teaching demands skills such as elucidation and justifying the make use of ICT in producing solutions to problems.

6. ICT use modify ICT literacy and ICT Capability: Both are 21st-century skills that are best developed whilst ICT remains transparent in the background of subject learning. The best way to improve ICT potential is to give them with significant activities, implanted in focused subject-related contexts.

7. Common Applications of ICT in Teaching & Learning

7.1 Benefits of Radio as an Educational Tool:

1) Radio is cost-effective and results in effective learning.
2) Radio broadcast gives recreation for students along

with learning.

3) Radio broadcast is evenly supportive in enhancement of teachers' knowledge, which they might not be able to get due to lack of time and resources at their places.

4) Radio has a superior value for weak students who promote from radio as an additional learning tool.

5) Radio has the advantage of teaching for those subjects in which classroom teachers may have some problems or are not resourceful.

6) Radio broadcast is very effective tool of teaching in remote areas, where the teaching learning facilities are not enough.

7.2 Benefits of Television as an Educational Tool

1) Students feel more motivated towards television programmes than classroom teaching.

2) Television helps teacher to study new teaching strategies, methods and activities, which they can use in their classroom teaching.

3) The expert in telecast is regarded as master teacher.

4) Television can spread the educational telecast to a large group in remote areas.

5) Telecast is a time saving means of content dissemination.

6) Educational telecast brings uniformity in the content and communication.

7.3 Benefits of using multimedia applications in classroom:

1) Multimedia turn the classroom environment from teacher centered to student centered

2) It provides students with an opportunity to feel a different classroom environment.

3) Multimedia applications are of great use with those students, who have some learning difficulty or disability.

4) You can engage and motivate students to participate

in classroom activities as the use of multimedia in teaching-learning makes it more interesting and interactive.

5) You can use audio-video multimedia applications/CDs in absence of computer/internet facility so that students can get benefitted.

7.4 Mobile Phones in Education can be used in the following ways:

1) Use as an internet browser to access endless information

2) Download and use education programs such as Google Maps, Google books and use as GPS

3) Use SMS to send definitions, small formula, math equations, difficult words, etc.

4) Read news articles and current events and books.

8. Conclusion

In the modern era of 21st century, ICT is a significant technique in the field of education. It gives us a wide range of aids to solving problems and accomplishing tasks. ICT is now a noteworthy part of the basic content of each of the disciplines that students study at the precollege level. In addition, ICT provides generic "productivity tools" that cut across all of the disciplines that students learn. ICT is a dynamic field, growing rapidly in breadth and depth. Basic hardware capabilities of ICT like speed of computer, storage capacity of computer, telecommunications bandwidth, and the installed base are all growing fastly. The next 15-20 years will probable bring us enhancement in computer speed, memory capacity, and telecommunications bandwidth by a factor of 1,000 or more. These hardware improvements, along with continued progress in software, will have a reflective impact on the societies of our world.

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11

Impact and Frontiers of ICT in Higher Education: Teaching learning and Evaluation

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Abstract:

In 21st Century's, the education system is changed from teacher centric mode to the student centric education. For enhancing learning experience of students centric methods such as experimental learning, participative learning and problem solving methodologies are desirable. The use of information and communication technologies (ICT) in the teaching learning and evaluation process is recommended in new education Policy (NEP)to improve ability of students to become the active citizen of society. In present study, a survey of teachers was carried out on the basis of some questionnaire on use of ICT in teaching learning process. From the teacher survey it is observed that, the approach of teacher is more positive towards the use of ICT for improvement of teaching. The survey of basic ICT facilities revealed that the government

educational institutes are partially equipped with ICT facilities and the network bandwidth is also not good even in the urban areas. The teachers were not more familiar with the ICT tool but during pandemic, teachers tried to learn some ICT tools required for the "Work from Home". In this article, we are trying to write the impact of ICT in the teaching learning process along with the limitations of use of ICT by teachers due to lack of ICT facilities in institutes, internet Bandwidth etc. For improvement of use of ICT tools for the teaching learning and evaluation, the proper training programs for teachers are needed.

Abbreviations: Information and communication technology, New Education Policy, Higher Education Institute, Teaching learning process, Learning and Management Tools

Introduction:

Education develop the nation by providing knowledge, techniques, skills, information to the people, the education empowers the people to know the responsibilities, rights and duties towards society. The existing educational system is based on the understanding, acquisition & retention and use of knowledge & skills. As we know, thetechnology has revolutionized our society but the class room teaching learning activities in education are away from the technology(Bitter, Legacy, 2008). In21st Century's, the education system is changed from teacher centric mode to the student centric education. For enhancing learning experience of students centric methods such as experimental learning, participative learning and problem solving methodologies are desirable. To fulfil student centric education the use of various sources and technologies in education is the challenging task in front of the teachers (Bouarab-Dahmani and Tahi, 2015). Nowadays, students acquiring knowledge from various resources, so the better learning of technology and its use in teaching learning is essential for teacher to convey knowledge

to the students. The change in education policy is needed with the time for the development of country. In 2020, India has declared New education Policy (NEP) and the primary focus of education policy is to build up nation with the developing the human resources with specialised skill and knowledge(Cavas, 2011).

In the 21st century, every attribute of life are related to the information and technology. The use of information and technology in teaching learning process is essential to increase interest of learners in core subjects. By keeping this in mind NEP focused on the use of information and communication Technology (ICT) in schools and colleges. As per the UNESCO world education report in 2002, the digitalisation of schools, classroom, colleges and other educational institutes with various ICT tools is the need of future education. So, the teacher must have knowledge of these ICT tools as well as the skill to use such tools in teaching learning process. In 2019, The Covid-19 pandemic has conveyed a new model of learning,everyone in world did "Work from Home" in online mode due to lockdown. As per the research work carried out by Cuban et al, it is observed that, there is no direct link between the impacts of ICT on the performance of students (Cuban et al, 2001). Simultaneously, ICT has many advantages in education to improve teaching learning skills such as, development of problem-solving skills, helping collaborative learning, providing flexible learning opportunities as well as increases productivity (Bitter, Legacy, 2008). The use of ICT tools in education, in IT industries, offices and various activities in the society were saved various life's and economy of countries(Eid Al harbi,2014). So we tried to do the detail study related to the flexibility, problem solving abilities, real world learning,and implementation in cultivating thinking abilities of students along with the limitations of use of ICT in teaching learning by teachers in higher education.

Objective of this study:

The role of ICT in teaching learning and evaluation process in Higher education institutes (HEI's)

Methodology:

The use of technology in education system has some advantages and limitations, by considering all in mind, we prepare questionnaire on use of ICT in teaching learning process and teacher survey was carried out electronically by using Google Form. Along with the teacher survey, we used the secondary data available in books(Moursund, 2005), website, and some research article on the opinion of teachers(Porozovs et al. 2016) about use of ICT in teaching learning and evaluation process. The total 66teachersfrom the higher education institutes were responded to the questionnaire, Out of this, 11.5% of the respondents were 20–30 years old, 42.6% were 31–40 years old, 27.9% were 41–50 years old, 18% were 51–60 years old.

Results and Discussion:

The change in every system is the need of progress of country; time to time reformations are required in Education system for globalisation (Kozma et al., 2002). In year 2020, Indian government announced New education policy (NEP) to make reformations in teaching learning process based on the current requirements from the youth of the country. As per the NEP the use of ICT tools in education will benefits the youth of India. So, the application of technology in the developing countries has some challenges and limitations too. In the present study I am going to interpret the changes and changes which required with the time in education based on the survey carried out with help of questionnaire.

1. Benefits of ICT in education:

As per the previous changes in the education system, the teaching learning process should be students centric rather than the teacher centric. From decades, students are involved

in the meaningful use of computer to build-up knowledge through proper selection of sources, critically accessing and interpreting correct information's from various sources for quality learning. (Castro Sánchez and Alemán 2011). The ICT will produce creative learning environment through which the understanding and visualisation of concepts will be possible. (K. Hew; T. Brush 2007). The e-books from basic to advance level will be easily accessible to the students due to use of ICT tools in education.As per the study carried out on the opinion of teachers about the implementation of ICT in HEI's for lesson preparation, from the data analysis it was observed that, 50% of the teachers were using different ICT tools such as, power point presentations to explain conceptual diagrams, e-books to clear basic concepts, tools to explain 2 dimensional and 3-dimentional views in science subjects, for planning of lectures and taking feedbacks from the students, Learning and management systems (LMS) like Virtual Classrooms, Virtual Laboratories, Assessment tools for taking Assignment and quiz etc.

2. Teachers View: About Use of ICT in the Teaching Learning and Evaluation process

In the reformation and modification of education system, teacher always played crucial role and suggested important recommendations to overcome the limitations of implementations in education systems. Before writing this article, we have collected some data by teacher survey through one of the ICT method i.e. Google form. We asked question as, whether the uses of ICT methods are effective instruments to improve the quality of education. After the estimation of the data obtained from teachers, it was observed that, the 54.5 % teacher respondents are agree whereas 22.7 % respondents are strongly agree i.e. total 77 % of the teachers are agree with the use of ICT will be beneficial for improvement of teaching quality. The implementation and

potential use of ICT in HEI's will bring our education system towards real life problems. Along with the benefit of use of ICT in education sector, the technology has some difficulties also. These difficulties may vary with region to region but for potential use of ICT and to overcome difficulties in its use, there is need to provide basic facilities and training to the teachers. In the questionnaire, we asked teachers for the Use of ICT in their teaching learning process, it is observed that, 47 % of the respondent teachers are using daily computers and different ICT methods in the teaching process, whereas 34.9 % of respondent teachers are using once week, computers and different ICT methods in the teaching process, 10.4 % of respondent teachers use computers and ICT several times in a month, 3% of the respondent teachers use them less than several times in a semester. The teachers from the age group of 50-60 are facing problem to use the software and activities on the computer.

In teacher survey about ICT, we congregated information regarding the usefulness of tool for achieving target of learners? Andit was observed that, 54.5 % teachers are agreed and 22.7 % teachers are strongly agreed with the usefulness of ICT in learning. Whereas on the question related to the use of ICT in evaluation process mixed observations are detected, about 45.1 % of respondent teachers were agreed whereas 12.1 % respondents are strongly agree with the effective use of ICT in Evaluation process. Some of the respondents from the subject's area like Physics, Chemistry, and Mathematics are partially agreed with whole evaluation by using ICT due to its limitations in critical evaluation.

3. Limitations of the use of ICT in the Teaching Learning and Evaluation process:

Before implementation of new tools and technology, we should know about the merits and drawbacks of methods in teaching and learning process. After teacher survey

regarding the use of ICT, we got positive response about the use of such tools in teaching, learning and evaluation but teachers are facing some problem in implementation of these tools in real classroom. We tried to collect information by survey on basis of question as, whether the ICT facilities are available in your institute, in reply of this question 54.5 % teacher respondents from different institutes were mentioned that our institutes are partially equipped with ICT tools or instruments, whereas only 6 % teachers are mentioned that our institutes are completely equipped.From the above collected data it was observed that, even though teachers are ready to use ICT methods to improve teacher quality, the mandatory basic facilities are not available in all institutes. By keeping the requirements of internet in mind, we asked about the accessibility of required Wi-Fi facilities in their institute, in respond 13.6 % teachers were replied as no Wi-Fi facilities are available in college, 45.5 % teachers were cited aseven though facilities are available only few classrooms are connected with Wi-Fi facilities, 37.9 % teachers were replied as Wi-Fi facilities available but all classrooms are not equipped, where as 3% of teachers are stated that all classrooms contains Wi-Fi facility. Along with the facilities, these ICT tools required good quality internet bandwidth also, so we collected information about the internet bandwidth in institute area, in reply 59 % teacher respondents were mentioned good internet bandwidth, whereas 41 % teacher respondents were mentioned poor internet bandwidth. The teacher respondents from institutes from the ruler area are facing more problems with the ICT facilities as well as internet bandwidth problem than the institutes from the urban area. So as per the data analysis use of ICT in teaching learning process is convenient to improve teaching quality but due to lack of facilities, the ruler areas and aided institutes are lagging behind than the urban area and private institutes.

4. Responsibly of Government and Institute administration:

In previous part we already discussed about the limitations to use the ICT in teaching learning process. To overcome these complications government and institutes administrations plays critical role. From the obtained data, it was observed that the basic requirements for the ICT facilities are as follows.

1. The authorities must provide the infrastructure of hardware and software
2. Government should initiates training programs, induction programs, orientation programs for teachers
3. Providetechnical support to the teachers
4. Government should start to afford mandatory facilities in government institutes, aided schools, aided colleges etc.
5. Institutes must design some policies, strategy, clear vision to overcome these difficulties

Conclusion:

The change and reformations are essential with time in education sector. The use of ICT will be beneficial for improvement of teaching learning qualities in education sector. The ICT directly connected teaching with real world problems in day to day life. As per the survey, teachers have positive attitude about use of ICT in teaching and learning process. The teachers in the age range of 50-60 year old are facing problems of computer literacy. The main hindrance for implementation in education field are lack of skills of teachers, shortage of ICT facilities, updated software's and hardware's, triumph of quality ICT teaching materials etc. therefore, for the effective implementation of ICT, the planning of training programs based on ICT tools are obligatory. The survey of basic ICT facilities revealed that the government educational institutes as well as aided institutes are partially equipped with ICT facilities. The basic infrastructure and facilities are mandatory for implementation of ICT in education sector.

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12

ICT BASED EDUCATION SYSTEM

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Abstract:

This paper accentuation on how ICT makes a difference in progressing the quality of instructionexpressing that information and communication innovation is an critical instrument that can exchange the showconfined, teacher centered and book centered learning environment into a understudy. In the world of undertakings. ICT can alter the conventional concept of learning handle and the components of ICT should be coordinateswithin theinstructionprogram in such a way that instructingought to be empowered to confront the new demands and move forward the productivity and adequacy of instruction at all levels in both formal and non-

formal settings. Information of ICT and abilities to utilize ICT has picked upmonstroussignificance for today's instructor. This paper investigates these challenges for empowering smooth usage of ICTsin instruction.

Key words: ICT, Education, Learning.

Introduction:

In differentiate to conventionalinstruction, educational and didactical bolsteralternatives with bolster in ICT have greater affect, making it more proficient than customarily has been done related to the arrangement of a benefit in lowering the fetchedto realize the destinations from the point of view of financialsuccess. The instructor and learner must pick upget toinnovation for making strides learning outcomes. Educational changesincorporateeffectiveplanning and execution of ICT in educating learning system, which is the key to victory. It includesutilize of computers, computer program and other gadgets to change over, store, and handle, transmit and recoverdata and incorporates the administrations and application related with them. ICT tends to extendget toinstruction. Through ICT, learning can happen anytime and anywhere. Online materials, for case, can be open 24 hours a day, seven days a week. Teleconferencing classrooms permit both learner and educator to connect simultaneously with ease and comfort. Based on ICT, learning and educatingnow not depend exclusively on printed materials. Numerousassets are inexhaustible on the Web, and information can be acquired through video clips, sound sounds, and visual introduction and so on. Current inquire about has indicated that ICT helps in changing an instructing environment into a learner-centered one. Since learners are effectivelyincludedwithin the learning processes in ICT classrooms, they are authorized by the educatorto createchoices, plans, and so forward. ICT subsequentlygives both learners and educates with more instructive affordances and conceivable outcomes.

Objectives:

- To study the ICT based education.
- To study role of ICT in Education.
- To study problems to introduce ICT based education system.

Methodology:

This research paper based on the secondary data collected from the various sources.

ICT and Education:

The merits of ICT in instruction have been laudedwithin thewriting. The utilize of ICT has been found to: Assist understudies in getting tocomputerizeddataeffectively and effectively As Brush, Glazewski and Cut (2008) have expressed, ICT is utilized as ainstrument for understudies to discover learning points, unravelissues, and give solutions to the issueswithin the learning process. ICT makes informationprocurement more open, and ideas in learning ranges are understood whereaslocks inunderstudieswithin the application of ICT. Bolster student-centered and self-directed learning Students are presently more regularlylocked inwithin theimportantutilize of computers. They constructunu sedinformation through getting to, selecting, organizing, and interpreting data and information. Based on learning through ICT, understudies are more able of using data and information from different sources, and basicallysurveying the quality of the learning materials. ICT creates students' unused understanding in their ranges of learning. ICT gives more inventivearrangements to diversesorts of learning request. For illustration, in a reading course, e-books are commonly utilized in perusingout loudexercises. Learners can get to all types of writings from starting to progressed levels with ease through computers, portable workstations, personal digital collaborators. More particularly, these e-books may come with a few reading applications, which offer a reading-aloud interface, important vocabulary-building exercises, games

related to perusingaptitudes and lexiconprocurement, and more. In this manner, ICT includes purpose- designed applications that giveinventive ways to meet aassortment of learning needs.

Difficulties to implement ICT based education:

In spite of the fact that the favorites of utilizing ICT within the classroom have been illustrated in previous research, obstructions or challenges related with itsutilize still exist. Needs, and uneasiness over standardized test comes about are the fundamental challenges related with ICT utilize. These challenges can be fathomed by giving more authentic gather- and problem-based learning exercises, and satisfactory learning back (Whelan 2008). Whelan (2008) toodistinguished more obstructions from the understudypoint of view, including: subpar specializedaptitudes that decreaseget to ICT in classroom; andeficiently number of academic advisors and need of opportuneinput from educates; and decreased interaction with peers and educates. Hence, the creatorsuggests the taking aftermethodologies to encourage the learning handle: more acceptance, introduction, and preparing for understudies; an expandedaccentuation on the significance of educatorsget to and successfulorganization; and the development of podcasting and online conferencing tools. In common, capacity building, educational programs development, infrastructure, approach, and government back are required in arrange to lower understudyobstructions and improve the viability of ICT utilizewithin the classroom. In expansion, Castro Sánchez and Alemán energizeunder studies to obtainparticulars pecializedabilities to encourage learning in ICT environments.

Strategy to implement ICT based education:

Innovationought to be utilized for more than fairback of conventionaleducatingstrategies.Agreeing to Tezci, instructorsought to learn not as it were how to utilizeinnovation to enhance conventionaleducating or incrementefficiency, but tooought to learn from a student-

centered point of view how ICT can be coordinates into classroom exercises in arrange to promote student learning.Consequently, Castro Sánchez and Alemán (2011) recommended that teachers keep an open intellectalmost ICT integration in classroom. It is basic that instructors learn new teaching techniques to adjust to the modernrebellious when instructing with technology. However, Yildirim found that instructorsutilize ICT more regularly for the arrangement of handouts and tests than to advancebasicconsidering. So also, Palak and Dividers found that teachers primarilyutili zeinnovation. Got togive appropriate access to technology. Moreover, schools and related regulation systems have to beutilize new policies to includeinstructorswithin the decision-making and planning formswith respect to ICT in their classrooms. ICT integration in schools in arrangeto supplysubstantialarrangements. The comes aboutappeared that the availability of ICT devices, the foundation of disciplinary and instructivestandards and procedures, as well as the division of labor among instructors, educating colleagues and understudies are crucial components to setting up a well-managed ICT-integrated course.

Integrated Education:

Expanding the quality of understudy learning is the mostobjective of the learning handle, subsequently, it become the integration and utilize of innovation in schools and particularlywithin theinstructiveprepare, to have great results. Due to their learning most fruitful, conditions ought to be made for this prepare to be simple for them. Also, to keep pace with their learning capabilities. So the completehandle of innovation integration in instructing is that the students to have simpleget to the data.Arranging, desires for ICT clients; instructors and learners Effectiveexecution of ICT in schools among instructors and learners depends in portionfor learning methodologies and understanding of how ICT impacts on society socially. The

utilize of ICT in an educational situation, has brought aboutwithin thealter of its forms, their affect recognized in connection to the reforms, hence we know that the effect of any innovation depends on how it is utilized, in what setting, and with what reason, since it opens conceivable outcomesto implement.

Conclusion:

The presentation of ICT in schools has driven to major changes for both understudies and instructors. Not the least, it may be contended, it has expanded advanced education conspicuousness in Norwegian schools and at the same time has challenged but too broadened and developed the information bank and educational and learning approaches among staff and understudiesdisplayed with an basic to utilize the instrumentsaccessible. Be that as it may, adjustment and evolvement within thecutting edge world implies that the execution of ICT in Instructioncould be aessentialability and a high priority competency zone that has too raised a few challenging questions regarding our school framework; our pedagogical approach and our learning stageswithin the future. How schools and teachers should rise to meet the challenges has raised a fewcuriously key investigate questions. There might be more inquire about on ways can be adopted to improve ICT usageviably in an educational system by sound way.

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Impact of ICT in Teaching, Learning and Evaluation Process

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Abstract:

Themanuscript devotes the appropriate study on the use of information and communication technology (ICT) in teaching, learning and evaluation process. In education, ICT show dynamic characters in enabling teaching, learning and evaluation process. ICT tools have altered classroom communiquéapproaches and adapted instruction tactics. Also, ICTs have made teaching and learning interactive and collaborative instead of the outmoded teacher- speaking and students attendingstyle.We strained toelucidate all characters of ICT for additional variations.

Keywords:ICT, teaching, learning and evaluation.

1. Introduction:

Phase of evidence and rebellion of communications is the result of communications in Industrial age in a new procedure of Information Communication Technology (ICT). ICT is a part of our lives forthe last few periods moving our society as well as individual life. ICT are those skills for collection, recording, reserving, processing, researching, transfer & receipt of information led to teaching, learning and scope. ICTcomprises computers, the Internet, and electronic delivery systems such as radios, televisions, and projectors between others, and is extensivelycast-off in today's teachingarena.By arrival of ICT into teaching, learningand evaluation process, it is essential to emphasis on up-to-date education pattern in which the beginner is the canter of learning with practical learning chance for the learner. In Ref. [1] , "ICT is a scientific, technological and engineering discipline and management technique used in handlinginformation, its application and association with social, economic and culturalmatters".The teaching staff had a robust readiness to participate ICT into teaching-learning and evaluation processes. The novelties that ICT has brought in teaching, learningand evaluation process come through presentation via computer (PPT), video conference, social networks, e-courses, internet, email to communicate with students. In Ref. [2], the author assumed that a modern labour market is almost unthinkable without ICT, digital literacy is increasingly considered as an essential competence. In Ref. [3] ,Kozma has highlighted and acknowledged that ICT strategies in many countries cut across diverse fields.

This paper emphases on the usage of ICT in colleges/ schools by students to support the processes of learning, teaching and evaluation process. It will purpose to define the behaviors in which teachers could and/or should simplify

student use of computer systems and how they can growth.

2. Impact of ICTs:

The impact of ICT for teaching, learning and evaluation process has developed relevant as it simplifies teaching, learning and evaluation process, generate favorable learning environment, and help students progress creative thinking and self-confidence. In Ref. [4], the author gave suggestions for effective use of ICT in education:

- Provided that the infrastructure of hardware and software,
- Provided that curriculum and technical support for teachers,
- College organization, design, policies and practices, collaging, and management support.

ICT has the following impacts on the teaching, learningand evaluation environment:a)Investigating reality and building knowledge, b) Active learning and authentic assessment, c) Engage students by motivation and challenge, d) Provide tools to increase student productivity, e) Deliver scaffolding to support higher level thinking, f) Collective and co-operative learning, g) Growing learner independence, h) Modifying learning to the learner, i) Overcome physical disabilities, j) Management of learning experiences and k) Educational productivity.

3. Parameters to be considered while integrating ICT:

The major parameters to be considered are context, nature of content, method of teaching/ learning and the type of technology and its features.

- Parameter 1: Nature of Content
- Parameter 2: Context
- Parameter 3: Methods of teaching-learning
- Parameter 4: Technology/Tools/eContent

4. Discussion and Concluding remarks:

The scrutiny of ICTs in the education area is thoroughlyknotted to the objectives of quality, equity and efficiency in Ref. [5].Technology advocates describe a range

of potential impacts that ICT can have when applied to education.Computers have a optimisticinfluence on student attitudes and the learning of new kinds of skills, when ICT is used in aggregation with student-centered pedagogy.ICT can also be used to launch innovation in schools and provide communities with new educational services.Teachers want to senseassured in their capability to simplify student learning with technology in order to take part technology into their classrooms. To attain this goal, more professional development is vital with anemphasis on growing teachers' skills so that they are able to overawed apprehensions allied with using technology. Further, new teaching slants and technical support should be accessible by colleges to allow them to hold control while enabling learning with computers. Overall, implementing effective teaching with technology integration requires changes in teachers'knowledge, beliefs, and college culture.

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A Literature Review: "Impact of ICT on Higher Education"

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Abstract:

Information and communication technology has been widely used and bring tremendous changes in the present word. ICT helped to improve the quality of education not only in school, colleges but also the other private sectors considered as 'Smart'. ICT is considered as a building block of the society.

The present literature review emphasis in the use of ICT's in education and discussing its impact on teaching, learning, evaluation, improving quality of education, and assessment, learning skills of students, teachers, academisions all those working in private sectors.

Kew Words: ICT, Quality education – teaching, learning evaluation.

Introduction:

The term information and communication technology is a very board expression as it is not only dealing with internet or computers but also with the radio to satellites.

The use of information and communication technology (ICT) in the 21st century has good as well as bad impact on the activities related to the education field. It has challenged to the teaching faculty to develop new ideas constantly in learning with the development of ICT which is rapidly developing all over the world.

The development and use of ICT tools are influencing every aspect of life and also discipline including education. In education it affects teaching learning, assessment and also evaluation. As it affect positively to all the stakeholders of related to education fields. As ICT is very useful in day to day life. Internal, computers systems are worldwide systems and they are interconnected to each other. As students of school or colleges used internet facility on phone, ipad or computers for searching information, similarly also used internet and different tools for innovative teachers in teaching.

The students using the various types of devices to operate computer programming. To search the informations. The internet facility provided everything easy in 21st century like use of electronics. The ICT in education classify as computer studies as a subject a tool which helps traditional subject as an administrative tool. It has some good impact on education but also have bad impacts.

Some good impacts are ICT helps to students and teachers to develop communications skill, creativity and innovative idea. The ICT is making total education system smart. It saves our time and have unlimited information. These tools can designed especially for education. It is beneficial for teachers to share resources, advices, guide the students. Similarly ICT have some negative aspects also.

According to Kofi Annan, the former General Secretary of the United Nations, ICT helps to achieve the goal of Universal Education.

Application of ICT in education is divided into two parts as ICT's for education and ICT's in education. ICT's for education identify the development of ICT for teaching and learning while the ICT's in education, have basic elements of ICT in teaching and learning.

Role of ICT in Higher Education - A Review:

From literature survey, it proves that students using ICT's tool can engaged in the process of learning. As the greater number of students using computers as a basic information and intellectual tool the impact of technology in promoting students in learning process will develop spontaneously. Computer with internal facility improves the learning aspects of real life and connect the peoples which also motivate the learners and to get involved in the situation of day to day life, can be called as "ready adaptors of ICT".

The ICT can be used in teaching and learning process, which improve the learning scenario and also help next generation.

Use of ICT can enhance teaching and learning:

The application of ICT is changing the scenario of teaching and learning in higher education. The use of computer with internet is more in the period of pandemic. For the decades course materials were designed according to the text book available. Teachers taught the content of that particular syllabus lecture method.

Now a day, it is a need to promote aptitude and performance of learners, concentrate on the application of ICT rather than factual knowledge. It result is quality education, if used in appropriate manner. Teachers play important role in integrating ICT. The teachers of 21st century should have depth knowledge of our subject as well as knowledge of technology. The application of ICT, changes the

teaching and learning practice, in higher education as well as school in innovation as well as community services.

Use ICT can enhance the environment and motivation of learners:

ICT can change the environment of educational system by transforming knowledge through teaching and learning. Today's system of education is based on research i.e. provided by internet. ICT can change the environment of class room effectively. Present day requirement is to change the classrooms with LCD etc. ICT can change the quality of teaching learning in many ways such as multimedia computers provide audio – video visual effects and creating interest in the students. Learning environment, give attention to the knowledge, skill and beliefs that learners get information about learning skills, called constructivism. In this article, students personally engaging the learning task through internet facility.

Benefits of ICT:

ICT uses major literature survey reveals that, since 20 years, computers were used by educationist with wide range of applications (Volume 2005). Students were using computers in different branches of science and technologies got higher percentages. The use of ICT in education is, more beneficiary in teaching, learning and evaluation and need greater responsibility of students with teachers support, and guidance to enhance the knowledge.

Drawbacks of ICT in Education:

In modern era, ICT used in education, simplifies and provide facilities. It has tremendous advantage and also vast number of disadvantages. As ICT has limitations in education related to teachers and students activities. As some teachers have positive attitude towards the used of ICT tool in teaching learning but have low self-efficacy, or not qualified to teach technology. Teachers attitude towards ICT play an important role, for operating and handling of computers and internet in teaching and learning. Literature survey reveals that used of

ICT by teachers are not clear, that how to used the tools as well as the benefits of technology.

So motivation self-efficacy, used of computer internet is the major factors affecting on the teaching and learning and also lack of enthusiasm.

The other drawback of ICT in education is student behavior, i.e. misuse of the technology and giving lesser time for study. Students giving more time for online gaming, use of facebook, chat and many more things using technology. Lot of time students spending for such type of activity and less time for assignment and learning. Students using internet may confused by multiple choices available. For that teachers required more time for control students for maximum used of ICT. Other limitations are high cost of technology and maintenance of facilities, virus attack on software, use electric power and so on.

Conclusion:

Literature survey reveals that in the 21st century impact of ICT in education system increases considerably in practice which enhance the education system, motivate new learners and improve academic performance. ICT is a very positive and powerful tool which is now a day's using in teaching learning process. As it has large number of applications such as in motivation to learners, creating awareness, changing environment and also improving academic performance, flexibility but also have some disadvantages.

The use of ICT tools increased during COVID-19. It has many advantages and disadvantages. As it provide lot of knowledge to the students through literature. Teachers taken lot of pain and delivered lecture on zoom, teachmint, Google classroom etc. Students are benefited. But students misused the technologies in clearing online examination and also other bad effect of Google, YouTube to teenagers, small children as well as other stakeholder. People always scared of hacking

of the account, facebook etc. A lot of challenges and opportunities are there using ICT. Grab the opportunity, face the challenge and get success.

Need of ICT in present scenario but precaution because it effect directly on the human being as well as environment. As it is constructive and destructive, but adopt positive part.

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Is the use of ICT in education good our bad?

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Introduction:

Use of ICT has been a controversial issue for centuries but it had become a serious havoc in last few decades and an inevitable realityin last couple of years. This is because the two parties involved in teaching and learning process see Technology with two different perspectives. Many people among education and other fields also think that Information and communication technology has or will disrupt the conventional education system or at least the conventional recommend learning process. That the use of digital devices, self-paced video material and auto accessed quizzes will completely replace the tutor in the class and there will be no need of even classes, as the material is downloadable and accessible to everyone.

Making the University building and infrastructure look useless. Many of us see such photos of comparison of classrooms in 1685 vs 2018. People get too excited while making such claims that nothing has changed in classroom since centuries but everything has changed everywhere else. The excitement of these people is confusing the listener to make perception of them as appreciating or regretting this situation. But no matter how people think about ICT in education is disruptive or not, this is not the matter of fact in actual.

This is not the first time that education system, conventional class room teaching and teaching learning process are challenged by disruptive technologies. All such attempts to replace the conventional methodologies don't even stand waters in actual practice. To be frank, not even close...!

The same attempt we made when radio was invented. people used to think that the bright minds of the nation will record their lectures and those will be broadcasted using the radio across the nation for the students to get advantage of it disrupting the complete education system conventionally being followed since centuries.

The invention of Television motivated people to read think about the use of ICT in education as there was no possibility for the radio to replace the conventional education system, the television will. the students across the globe will have access to the audio-visual lectures of experts in the top universities. But unsuccessful.

Computer had changed the creation, recording and distribution of the education material in the form of videos and interactive assessment tools. this was a great leap in the path of application of ICT tools in education and this time it proved a little bit of its extent but still the role of a physical tutor was not being challenged neither to be sufficed for obtaining the desired results in cognitive learning of the students.

This was now a psychological problem for the inventors of these technologies and educationists to brainstorm. What actually is being missed in this system which is not even close to replace the existing education system? Educationists and people involved in designing the curriculum and education system and policies reinvented the pedagogies which will suffice the use of ICT as a full-fledged education application rather than just a teaching aid.

The Bloom's taxonomy was re-defined as the digital bloom's taxonomy for the use of ICT in education and many more.

Now it's the internet…. internet not only connected the experts across the globe to share their views and experimental analysis to solve this problem but also it gave an infrastructure that can be utilized to enhance the effectiveness of the use of ICT in education.

As a result, we can see the outburst of online courses, self-paced education programs and automatically assessed examinations in recent years. Still, with all the benefits that ICT offers, it is not disruptive enough to replace the presence of a human tutor in the classroom.

Genuine Attempt:

Let's look at the solutions and the findings of the education is in this matter we have to begin from the beginning of use of ICT in education.

The use of e classrooms was initiated in the year 1972 after the widespread of internet. This gave the experimenters to use computers and internet as a creation studio for the curriculum courses for the better education teaching aids to be availed at top institutions and universities. The idea itself was inceptive in its nature that if we are able to show the digital teaching aids in the classroom why we should not show it at a remote location with the use of the internet.

This gave birth to self-paced online courses and the

platforms to cater these services. Eventually people have started seeing Coursera.com, edx.com, udemy.com, mit.opencourseware.org, Harvard and Oxford online platforms. Many such online course teaching platforms have tied up with top ranked universities and catered across the globe approximately 2.17 lakh students for a single course that was conventionally being taught to 120 students in physical classroom.

This all happened because of the advantages the use of ICT provides an individual to provide the course and to receive it.

Advantages and Challenges:

Convenience: There is no need to be physically present, neither teacher not student (experienced in pandemic), best lecture prepared with correction and error removal, self-paced, on demand, multiple time watching play and pause feature. Non restricted connectivity with experts and teachers at platform of our choice. Safety from environmental and hygienic threats.

Challenges:

Practical Challenges: All those who have no exposure take time getting used to it Economical Challenges: Device, gear, internet availability, band width (statistics of sales of digital devices)

Ethical Challenges: Cheating class, proxy presence, unaccountable behavior of students.

Intellectual Challenges: Reduction of cognitive ability to learn by 20% what is being taught.

But what is the main cause apart from these challenges?

Learning theory.

The main reason for the ideology of learning is deep rooted in the method which is well tested for the centuries no let's talk about the solution to the century old problem for the

educationists. This finds its root in psychology.

A well-known fact in psychology is that all humans can be categorized in three types of personalities number 1. visual personality number 2. auditory personality and number 3 Kinesthetic personality.

If simply stated a visual person is the person who experiences and remembers the physical world more through the visual root of sensors rather than audio and touch.

According to psychologists 80% of world's population lie under this group. Contrary to visual person and auditory person is the one which remembers the facts and his physical experiences in this world better in the form of sounds and voices. These people are generally introvert in nature and more emotionally e sensitive than the visuals whereas the visual persons are more dynamic and extrovert in nature. Very little fifteen percent of the world's population lie under this group.

The third and the rarest one is the Kinesthetic group which are the people who Store there memories better in the form of feelings and sensory root of touch. These people have very different choices from those who are audio and visual people. The Kinesthetic people give more preference to the things which feel good rather than look or sound good.

Theory says that the same type of three groups is also identified among students as three styles of learning. This theory also tells that a visual student will get better perception of the concept if taught with the help of visual teaching aids, and similarly the auditory student and the Kinesthetic student will learn better with auditory teaching aids and touch mode teaching aids.The ICT applied teaching courses are designed based on this theory.

Learning theory Debunked:

But if we look on the other side of the applications of this theory, we can find so many different versions of this theory that explains that this theory is completely flawed.

That simply means that a visual student can also get a better understanding for some concepts with audio tools and touch tools and vice versa for the other two groups. This theory suggests that the personalities being present in three different psychological groups is true but the same does not hold true for the learning types.

To prove this experiment a group of students was selected and divided according to their nature in visual audio and kinesthetic group.

Case#1:

The students were then given a set of learning material with specifically designed teaching aids for that personality traits that means the visual students were given visual teaching aids the audio students were given audio teaching needs and the Kinesthetic students were given Kinesthetic teaching aids. And their performance was gauged.

Case#2:

For the second set of experiment the same students' group was given the different mode of teaching aid to their personality that means the visual students were given audio teaching aids and so forth. The performance was again gauged.

Case#3:

For the final stage of the experiment the students were given all three types of teaching aids at the disposal and they were allowed to choose among the three types of teaching aids at their will. Contrary to the expectation sometimes the visual students intentionally chose the other type of teaching aid rather than the usual one. And the performance gauged during this third level of experiment was compared with the first two cases.

The results were astonishing and quite counter-intuitive. The students performed well when they were given the tools aligned to their personality type, that was expected.

But when they were given the tools which were not matching their personality type even then they have performed equivalent to the case one performance.

But the best performance of the students came up when they were allowed to select the tool at their will. Even when this performance was best among the three cases the students were not able to tell why they have selected the tool that does not match their personality type. Hence the experts concluded that the teaching style for the learning theory does not resemble exactly as the personality type of an individual.

Aur simply stated the person does not learn concepts and perceive this world according to its personality type but how he feels right at the moment of learning that concept. And this is the place where the tutor helps the student to think to feel and to perceive the physical world for better understanding and cognitive learning.

Being in education we all have experienced that the physical presence of a teacher does wonders in real-time assessing the faces of the students getting their grasping abilities and accordingly fine-tuning the delivery method that is impossible for a machined educational program.

This is something more human more organic beyond the capabilities of electronic and artificial intelligence systems.

CONCLUSION

We are asking the wrong question, and that's the reason we are unable to get answer.

Instead of asking whether it is good or bad to use ICT, we should try to find out how to treat it to get it work as good. because ICT has unlimited power, enormous potential to do huge things, and in no way it's going to decrease in future. We have to admit it's inevitability to be used in education.

Pros of ICT

1. It provides free access to infinite source of information.
2. It is a globally accessible resource.
3. It breaks the barriers of obstacles in the way of students to get what they want for better understanding and learning.

Cons of ICT

1. It is equally easy for a student to get distracted in the entertainment content created free and accessible across the globe.
2. The morals and the ethical element of the education is getting diminished because of the fast pace media consumption which lacks the teachings of such values.
3. Cyber bullying and cyber-crimes are taking place at much faster pace and much lower ages posing challenges both psychologically and emotionally to the young minds which they are not ready to handle.

Many institutions have restricted the use of technology in the classroom considering himself to be protectors of these young lions but on the contrary they have made the problem worse. Once the stool is out of the class, he or she reaches to the world which is beyond the classroom in the cyber world. Where they have no accountability e neither being watched for their actions and hence, they get pray to the wishes intentions and practices that does not suit to the morals of the society. And they have no help from their elders to handle such problems.

We should treat use of ICT as a responsibility.

We should teach our students how to live with the technology rather than living without it which is impossible. We have to build their conscience strong enough to withstand against the wishes and the malpractices being performed using the technology. Because for the Teachers the technology e is the tool that has been introduced since last 20 years in

their lives. But for the students it's the inevitable part of their life. The way which we have learn how to live with this world is different for these new age tools because their online presence is equally important for them as their offline presence.

Because it's one thing to which teachers and students look differently.

Show the one-line solution to the problems posed by ICT can be as follows.

"Use of ICT as responsibility not a tool."

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Digital Library : ICT Information Reterival, Networking

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Abstract:

Information explosion, shrinking budget and new information communications technologies changed the role of library. Due to these factors the demands of users are increasing, but traditional library is unable to fulfill these needs of users. To break up with these problems libraries have has converting as digital libraries. This paper tries to define a concept of dig. hal library. Described the required components of, it and identified the advantage acid dis advantage of digital library.

Introduction:

The term digital library refer to a new way of carrying out the functions of libraries encompassing new types of electronics information resources, new way to acquisition, access to other library's collection and sharing it. It is method, of storage, preservation new way for cataloging and classifications. Today's electronics library which is based on digitized data is gradually replacing paper based records and by means of networking One can have access to resources 24 hours a day: It is an evolving area of research development and application. Library is the hub of institution which provides

information' to users. It uses new technologies for collection development and providing various services to its users. Creation of digital library is one such programme. Digital library is the set of services offered by library to its users for the management and dissemination of reading materials in digital format

Digital libraries are essential to enable more people to create and use vast amounts of distributed information and to contribute to the quality and quantity available via the web and future access frameworks. Digital libraries remain closely linked to advances in high performance computing and networking and both contribute to and validate these technologies. Digital libraries are inertly international - knowledge is recorded and stored in many forms, often using different languages and symbol systems.

Definition

The term "Digital Library" has a variety of potential meanings, ranging from a digitized collection of material that one might find in a traditional library to the collection of all digital information along with the services that make that information useful to all possible users. In simple a DL is a library having all it's holding in the digital form or in a form that can be stored, processed by the computer system. It is nothing but a large database for the people who are working on hypertex environment. It is a system of organized collectioi of multimedia, data that are globally available direct!: or indirectly across a network.

Historical Background of Digital Library

The digital computer age began when a automated sequence controlled calculator (Harvai Mark 1) started working in August 1944. Th machine was based on the mechanical technology rotating, shafts, electromagnetic clutches al punched card tabulating machinery. It w constructed by IBM, following the ideas of How Diken; whose original proposals

go back at least 1937.The digital computer is an electronic computer machine that uses the binary digits (bits) 0 and I represent all forms of information internally in dig form. The concept of first digital library did not cl until late 1980's.The emergence and developer of digital libraries at this stage were driven by main forces. First, digital technological developm especially in multimedia and networking, off(more efficient and sometime new ways in inform2 processing and management. Second, people wa better share of important information likeilit materials, scientific databases in education research. So, digital library systems came into In 1989, the world wide web project was proposed and in mid 1993, it quickly grew exponential rate in the world. User could brows set up a mode on the network to put information on it. It was called by some people beginning of a true digital library, but the we library without a card catalog, and many search or services were crude at the early stage. High of attention and funding were First given to libraries in the early and mid 1990s, which led to a booming era with large number of visions and projects. Scholars in the field wanted to find ways to apply or create technologies in order to better use and share information on the network systems, which themselves are developing at an amazing speed. The shared vision is best illustrated in the mission statement of Digital Library Initiative, Developing technologies to print and non print materials came into being in the year 1995. Digital library Magazines an addition avenue for disseminating and came into being in 1995, brought together researchers for a workshop investigating the social aspects of digital libraries presented the notion of remote reference services based on a model of the digital library. Suggested topics for educational offerings in E. University settings and noted programs of study that offer course work in digital libraries. Journal Information Processing and Management was created by the end of 90's

the electronic journal relating to digital libraries counts over 225 articles .that serves as an additional avenue for disseminating sand locating information.

Need for a Digital Library:

The below mentioned points can explain the need; of digital library.

Easy to Understand: The visual or graphical information system of digital libraries is more popular as compared to text based information system. Shifting of the Environment: The new generation user becomes only happy when they will be able to read from the computer screen. The new generation whose demand for information is never met demands that traditional libraries should be developed as a well equipped and interconnected DL.

Multiple Function of Same Information: In case of digital libraries by using hypertext it is possible to structure and organize the same digital information in a variety of ways which serve multiple functions. Information Explosion: Digital library is expected to be able to handle the problem of information explosion somehow. It will be able to handle and manage large amount of digital content by simply providing link, without actually procuring the document.

Searching Problem in Traditional Libraries: By using digital library one will be able to retrieve information specifically for e.g. a particular image, photo, a definition, etc.

Advantages of the Digital Library:

· No Physical Boundary: The user of a digital library need not go to the library physically; people from all over the world could gain access to the same information, as long as an Internet connection is available.

· Round the Clock Availability: Digital libraries can be accessed at any time, 24 hours a day and 365 days of the year

· Multiple Accesses: The same resources can be used at the same time by a number of users.

· Structured Approach: Digital library provides access to much richer content in a more structured manner i.e. we can easily move from the catalog to the particular book then to a particular chapter and so on.

· Information Retrieval: The user is able to use any search term bellowing to the word or phrase of the entire collection. Digital library will provide very user friendly interfaces, giving clickable access to its resources.

Disadvantages of the Digital Library:

· Copyright: Digitization violates the copy right law as the thought content of one author can be freely transferred by others Without his acknowledgement. One difficulty to overcome for digital libraries is the way to distribute information. How does a digital library distribute information at will while protecting the copyright of the author?

· Speed of Access: As more and more computer are connected to the internet its speed of access is reasonably decreasing. If new technology will not evolve to solve the problem then in near future interne will be full of error messages.

· Initial Cost is High: The infrastructure cost of digital library i.e. the cost of hardware, software, leasing communication circuit is generally very high.

· Band width: Digital library will need high bandwidth for transfer of multimedia resources but the band with is decreasing day by day.

· Efficiency: With the much larger volume of digital information, finding the right material for a specific task becomes increasingly difficult.

Digital Library Initiative in India:

Some of the major initiatives on Digital Libraries in India are furnished below: Indian Institute of Science NCSI (http://vidya-mapak.ncsi.iisc.ernet.in/cgi-bin/library)

· Indian Institute of Management Kozhikode (http://

intranet.iimk.ac.in/cgi-bin/library)

· Search Digital Library SDL at DRTC Bangalore (https://drtc.isibang.ac.in/index.jsp)

· Nalanda Digital library, National Institute of Technology (NIT) Calicut (http:// vvww.nalanda.nitc.ac.in)

· Vidyanidhi Project (http:// www.vidyanidhi.org.in) Million Book Universal Digital library Project -Carnegie Mellon - IISc - ERNET (http:// vvww.dli.ernet.in)

· Indira Gandhi Centre for the ARTS (IGNCA Digital Library) -(http://ignca.nic.in)

· INDEST, Ministry of HRD, GOI (http:// paniit.iitd.ac.iniindest)

· National Tuberculosis Institute (NTI), Bangalore (http://ntiindia.kar.nic.in/) Rajiv Gandhi University of Health Sciences, Karnataka (RGUHS) http://www.rguhs.ac.in/d1/index.html) Traditional Knowledge Digital Library (TKDL) (http://203.200.90.6/tkdl/langdefault/common/ home.asp)

· Indian School of Business (http-//www.isb.edu/ lrc/index.html) • Indian Institute of Technology, Kharagpur (http:/wwvv.library.iitkgp.ernet.in/usr/elib/digital.htm)

· Indian Institute of Technology, Mumbai (http:// wvvw.library.iitb.ac.in/ mnj/gsdl/cgi-bin/library)

· IITMK Trivandrum (http://www.iiitmk.ac.in/ iiitmk/digitallibrary.htm)

· National Chemical Laboratory (NCL,CSIR) Digital Repository
(http: //dspace.ncl.res.in)

· University of Hyderabad (http:// 202.41.85.234:8000/cgi-bin/gw_42_6/ chatheleon

· Information and Library Network-AHmedabad, www.inflibnet.ac.in

· Center for Development of Advance Computing-Noida (C-DAC) in association with Gujarat Vidyapith-Ahmedabad (www.dli.ernet.in)

Conclusion:

With the application of ICT and in the modern library system, the information stored digitally and made accessible to user through digital system and network. Digital library is essentially a fully automated information system with all resources in digital form. It not only facilitates the library function but also saves the precious time, strength and the energy of the users. Libraries adopt the ICT an undertake the process of digitization the network in (LAN, MAN and WAN) would become feasibility which is the need of the day. The electronic media will replace thoroughly the printed media in the of electronic, digital and virtual respectively. Therefore, it is essential for the librarian and the information professional to adapt to the emerging scenario by improving the skills of using new digit telecommunication technology from its tradition one. Each and every time the librarian should have innovative and user oriented approach for maximum utilization of latest technology and other learning material. Digitization is the boon to success of eve library in this ICT era librarian to serve existing and user communities.

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17

The Dual Impact of ICT In Teaching, Learning

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Abstract

Computers are the forerunners that revolutionized the communication and technology. Technical competencies need of the hour. ICT increases access to education. Helpful for both teacher and students. The latest technology in ICT is utilizing for power learning. Provide sufficient material and freedom for a new learning experience.It provides sufficient material and freedom for a kind of new learning experience. A technology used for power learning. There is an observable decline in human and social behavior. Weakening of creative interpretation of human experience, waning of lifelong learning behavior outside the academic scenario. Human touch is fading. Knowledge alone is not important, feeling must also be involved.

Keywords: Computers, ICT, technology,teaching learning, knowledge, human, feeling.

1. Introduction:

Computers are the harbingers of the present era. ICT have revolutionized communication and technology.The rapidity **of the increase of digital knowledge in the recent centuries, is apt to give students and teachers the**

impressions that no sooner is a problem stated than the answer is forthcoming.(1998.p. 13) It's commonplace expertise that our destiny lies in many of today's rising technology. In the years to come, technical competences will be more essential in the place of business, as well as the growing effect it' will have on day-to-day life. One of the best blessings of present youngsters to technology is the fact that they'll be nicely-organized to jump right into a pool of available, high-paying tech jobs. The combination of IT with teaching made a formidable force for cultural and educational change. Again it is important to note that Computers, the way it has manifested on our lives, as nothing less than. ICT enabled teaching is getting better every year and more and more simple. ICT increases the access to education. It improves the quality of education by developing new ways of interaction and also makes teaching learning process more interesting. It provides equal opportunities to the large number of learners to gain education and information. ICT used in various ways where it helps both teachers and students to learn about their respective subject area. It also helps teachers to design their teaching plans in an effective, creative and interesting approach that would result in student's active learning. ICT tools like interactive whiteboards, Video projection units, and microscopes connected to computers spreadsheets prepared to capture and model data. electronic grade books, digital portfolios, learning games and real time feedback on teacher and student performances are few latest technology utilizing to power learning.

Further the role of this technology –mediated system have become more and more easy. Its obvious advantages for the teachers that it is an effective tool, that present a means of amplifying or extending the effectiveness of teacher's natural talents and capabilities. Above all, it provides sufficient material and freedom for a kind of new

learning experience. It is difficult to create in a traditional classroom. The use of ICT offers the unique opportunity for the learner.

But natural,these technological manifestation yields exposure to new ideas and exposure to new ideas and experience, development of logical thinkingand reasoning abilities; promote training in skills.

ICT is a wonderful example of computer teaching people/students. Generally, a teacher burdened with work, hastening to cover everything in the syllabus. The teacher has a little opportunity to ensure that the pupil have engrossed even half of what is being taught.ICT let pupil learn as fast or as slow as they can…testing at each step to ensure that the teaching learning is operative. As a matter of fact it enhances teaching in the sense that teachers now teaches with pictures and videos with the help of ICT tools like computer projector and printers. On a more widespread scale, India is making use of strong combination of ICT such as open source software. Undoubtedly, use of ICT in education develop higher order skills such as collaboration across time and place solving complex real world problems. Viewed in a certain light and notable for the retrospective attention with increasing importance of IT and ICT there is an observable decline in the teacher student relation, civic behavior, loss of creativity, weakening of creative interpretation of human experience.

2. **Literature Review :**

many surveys have been conducted suggesting the advantages of using ICT in teaching learning process. A report of UNICEF showed concerned that digital technology pose significant risks to children's safety, privacy andwell-being. Astudy was carried out by Purcell, Buchnan and Fedrich in 2013 it delves on teachers opinions on using ICT tools and its impact on high school students' writing skills. In the given article, details related to the adverse effects of ICT will be present.

3. The ICT has dual influence on students:

There are many education experts who believe that that generation has upgraded the system of learning , that is true to some extent, however there are numerous different views of thinkers who thoroughly consider that this advancement of era also has a bad effect not only on education but the entire life..The students are getting notably depending on the gadgets to complete their work as opposed to relying on their personal knowledge and this is obviously a bad signal in the direction of the increase of schooling and humanity.. There are many tremendous and negative consequences of era in learning. ,This is especially true that it will give personal space of learning but its implication of wide scale will be fearful. The student will become more isolated, no social interaction, we hear so much about student unrest, of student disruptiveness, and there have been incidents which have pained and saddened us.. These results are unlimited inclination towards destruction, ,riots, cyber crime disinterestedness in creating or building social contact, lack of friendliness, absence of robust teaching learning environ, hindrances to speak language with command.**The root cause of for this unrest is the absence of any close link between the teacher and the student.The temples of learning, breaking away from the straightlaced education of the day, and seeking to reach out into the higher realms of knowledge by first developing personality and soul** will become a past story.(1998.p. **102)**This technological boom is the very antithesis of all that humanities stands for.

The picture of the traditional classroom is more justifiable as compare to the use of ICT enabled sources. Many acknowledged that online lectures can be distracting. The students are not able to concentrate. If the teacher is engaged in teaching by presenting live show on “Interview Techniques”or any other drama or short story, the

advertisement distract the class. Additionally, the teacher is continuously under pressure to an unwanted porn advertisement disturbing the class, which would pollute the innocent mind. The eternal companionship, which life have ever offered to man, come to an end. Circumstantially, within coming few years, **such a relationship is no longer possible. Things have swung to the other extreme. The close bond is no longer there: worse, there is no meeting of minds at all.** This is the price we are paying for the excessive of the ICT.

4. Loss of Creativity:

We are crushing what little creativity our children are having. We are "brain washing" their minds so they can focus on ICT teaching. At a first glance the ICT learning does not seems to be harmful so sharply from that of the traditional one. Excessive use of these machines has slowed down the thinking process of the students In the following time the thinking ability, the creative skill, fanciful imagination of a child affect badly and it compels him to rely on ready made products. Then, with charts prepared by students are now replaced by stickers, drawing is restricted to horizontal and vertical lines on computer screens, clay work, embroidery, cooking all depends on virtual world.Devices like laptops, desktops, tablets, Smartphones and apps like Voice- typing have already replaced the use of a normal pen and paper, absence of writing or very little writing, resulted in people losing the habit to write, hence the handwriting speed have becomes worse than it was before.**This Leviathan', a mythical sea monsteraccording to the Jewish beliefs, is available in many areas and at many levels of education, including pre-packaged curricula that are not designed by the teacher of a particular course. (2019 p.14)** There is no longer a universal hope of freedom to mend the world.

5 Emotional relation:

A teacher's influence on the student last long even

after the schooling years, the student develop a meaningful connection with their teacher, and they are more likely to form similar relationship in other relations. As a matter of fact, this relationship provides the student the essential direction and support they need to develop. It is essential to nurture them. Furthermorethe students trust on their teachers more than their parents. What is so exceptional and unique about this? The wisdom, knowledge and guidance the teacher provides them is,sincere. The teacher encourage the student to learn to read and prepared them to achieve their goals. If electronics will play a prominent role in the lives of the students nay every human; any information we want will be easily available with the press of the button and computers will be there to do all our work. Unknowingly, we have moved into the machine age, where there will be very little work left for human to use their brains.

Indeed, there is a lack of interaction and student face social isolation. This badly impact on a student's mental health. The use of ICT enabled online learning lead to the feeling of loneliness, emotional strain, lack of motivation and isolation. It is the teacher who can motivate and guide young people at the young age and the lack of respect for him only leave anemptiness in the youthful mind which roguish passion rush into fill.Facial expressions plays a crucial role in teaching learning process. The human face is extremely expressive and can translate a wide range of emotional being. Although it is important that the ability to understand facial expression is not for everyone. From this perspective, the students have hard time to express themselves clearly. While on the other hand, the teacher is mature enough to read the expressions of the student. The teacher has simply no difficulty decoding what the particular student is feeling. If this is the case, the teacher can easily determine what the reason of the trouble is and can help the student to learn the skills to

cope. A students' facial expression can convey much more than the words. These expressions of students work as the feedbacks to the teachers on their teaching.

6. Motivation:

Motivation steadily bonds teacher emotionally with students. Frequently, it is seem that emotional support of teachers resulted in mastery motivation and academic engagement.Use of ICT in education develops higher order skills so also it improves the perception and understanding of the world of the students. In addition to the matter of fact the primary concern is not with the concreteness of the ICT but the abstracted generalization in terms of 'make sense'. In the present context, ICT may be defined as a device for progress. Less systematically, but effective, the motivation of a teacher embark a student with enthusiasm, academic progress and achievement, self-discipline, pride, hope and enjoyment. While it debilitate negative emotions that include,anger,anxiety, hopelessness and boredom.

With the progression of technology, there is appalling change in the behaviour of the children, they are less concerned in communicating with the members of the family. Unfortunately, this technology have made them confined to themselves. This kind of behaviour give parents immense stress. This impact have bring forth negative interaction or no interaction. There isnoticeable decreased feeling of family closeness.

Conclusion-

The world with which human deals is the world into which the human beings are born, live and lastly dies. Every human being is aware of this multifarious world. The technologists have acquired their massive and growing power to control, direct and modify the world in which human beings are condemned to live. Living alone in the world is not an easy task working alone is even more difficult .We all need to

use and share resources with other people or even computers. The development of networking has been a landmark in the world of computers. The computer world has raced on to newer and newer…… knowledge some old debts on the way. A pity though, students **The fatalistic streak is that we should not lost in the virtual world, so much that one day our next generation students would do with a sigh thinking about the old schools and colleges they had when their grand parents' parent was a little boy. Children came laughing and shouting playing in the school yard and college campus, sitting together in the classroom, going together at the end of the classes. They learn the same things so they could help one another on the home work and discuss about it. And the teacher were people.**

Unfortunately, the over emphasis, on ICT neglecting the fundamental issues will not lead us to anywhere. Though much has been done in this direction a great deal still remains. Thus besides being, plainly and simply the generation of knowledge, diffusion of knowledge, storage and retrieval of knowledge and utilization of knowledge all should be pursued. if one acquires real knowledge, he will also know how to apply it, use it and limit it.**There can be no doubt that this inner development powerfully influences the outer environment. But a painful reality is looming over head that the technological academic development has far out stripped the inner. The words theology, philosophy, morals, ethics, spirituality, metaphysics, duty etc are slowly losing their meaning. This is of serious concern that we are trying to up bring non feeling, non-thinking machines henceforth we are throttling our future writers, dreamers, actors, painters, sculptors, musicians, singers due to the excessive impact of ICT.**

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Covid-19's impact on students and its merits

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Introduction:

Epidemic Covid-19 has spread all over the world and has forced human society to maintain social distance. This has created a significant hurdle in the education sector, which is an important determinant of the country's economic future on 11 February 2020. The World Health Organization has proposed the official name of the virus, COVID-19, an acronym for Corona virus Disease 2019. Wuhan, China On December 31, 2019, COVID-19 epidemic in India were reported in the state of Kerala on January 30, 2020, and the history of affected China's Wuhan. The first death due to Covid-19 was on March 12, 2020 in India. It has afflicted over 4.5 million people all across the world (WHO). In India, more than 32 crore students have been affected by various restrictions and nationwide lockdown for COVID-19. According to a UNESCO assessment, the two most affected levels in India are basic and secondary education, with 14 crore primary and 13 crore secondary pupils affected[1].

No one would have guessed that a virus like COVID-19 would come and change people's lifestyles without making

a difference. Due to COVID-19, many changes took place in our world and it took a while for everyone to adopt the new normal. The COVID-19 effect was widespread, resulting in the closure of schools and other educational institutions. Initially, most governments have decided to temporarily close schools to reduce the impact of COVID-19. They were then reopened for a few grades, increasing the rate of infection and then reopening.Even though schools are closed, students are attending their classes through various educational activities such as online classrooms, radio programs. While this is a good thing happening on the other hand, there are many students who do not have the resources to attend online classes, they have to suffer a lot. Many students are struggling to find the gadgets they need for online classes.Teachers who are all experts at teaching blackboards, chalk, books and classes are really new to this digital teaching, but they are adopting new methods and treating students as supporters to help with the current situation. But on the downside, many teachers are looking for alternative jobs to support their families.

Educated parents are supporting their children throughout the peer period, but we need to understand that there are some illiterate parents and there is a sense of helplessness to help their children with their education.There are students in India who came to school just to get a meal. The great lunch plan has helped many children who cannot bring food from home to get nutrition. The closure of the school has left many students struggling to make ends meet. Exams are always delayed or canceled, which confuses many students and leaves no space for the course.Most school-going children engage in child labor to support their families.It is likely that the education of women children and transgender children will be affected, as their parents may see, at the expense of financial and opportunity to do so.The epidemic has affected not only students but also low-budget institutions

and schools, resulting in their closure. Both positive and negative things are happening around us during COVID-19. Technology paves the way for learning, helping students and teachers to literally connect through online classes, webinars, digital exams, and more. But the sad truth is that it is not available to many students across the country. Everything is happening for the welfare of the students so that they can stay safe at home without being affected by the deadly virus.We are not ready for this, but it came, so we have to go through this together, but we have to update the infrastructure and consider ways to handle the situation and educate every child during the epidemic to help the next generation in the future. Stay home Stay safe[2-4].

Merits:

There are no significant benefits because there has been a huge loss in jobs, lives and the country's economy. But when it comes to children, there are some merits.

1. Holidays to schools and colleges:

Students can use their quality time in studies and other activities in which they are interested. Spend time at home without going out and enjoy watching movies and doing some sculpting.

2. Time to spend with family:

Great time to spend with grandparents, cousins, mother, father and other relatives as there is enough time to spend (if possible, according to government norms). Moreover, everyone is working from home. No need to get out of the house and visit relatives you can pick up the phone and call them and build more family ties. This is the only time you can watch a movie with your family and enjoy it. Spend time with parents and explain career planning approaches and think of them to get on the path to the right trait.

3. Save time:

COVID-19 saves time to avoid having to travel, praying, playing games and conversing with friends. For online classes,

set aside five to six hours of quality time. I spent ten hours at school. It gives extra time for self-study if you use it wisely to avoid watching movies or playing video games on your phone[5-8].

Conclusion:

Covid-19 has had a major impact on India's education sector. Although it has created many challenges, it has also developed various opportunities. The Government of India and various stakeholders in education have explored the possibility of Open and Distance Learning (ODL) by adopting various digital technologies to address the current crisis of Covid-19 of. India is not fully equipped to bring education to the corners of the country through digital platforms. The current choice of other platforms will hurt students who do not have the same privileges as others. But universities and the Indian government are trying to solve the problem. The use of digital technology should be a priority to create a profitable place for millions of young students in India. It is time for educational institutions to strengthen their knowledge and information technology infrastructure to deal with situations like Covid-19. Although the crisis of Covid-19 is protracted, there is an urgent need to make maximum use of the online platform so that students will not only be able to complete their degree this academic year but also be prepared for the future digital oriented environment. The concept of "work from home" is more relevant in such epidemics to reduce the prevalence of Covid-19 of. India should develop a creative strategy to ensure that all children have sustainable access to learning during the Covid-19 era. For effective delivery of education, Indian policies need to include diverse individuals from different backgrounds, including remote areas, neglected and minority groups. Students are benefiting a lot from online practice, it should continue even after lockdown. The following detailed statistical study can be done to find out the effect of Covid-19 of on the education system of India.

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Role of ICT in Teaching-Learning Process

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Objective: Role of ICT in teaching-learning process.

Abstract:

a very short period of time Information and communication technology (ICT) has become one of the basic requirement of modern society. Many countries have understood the importance of ICTand started to integrate it for educational improvement and reform. The use of ICT in education makes teaching – learning process effective and interesting, The Information and Communication Technologies (ICT) is Like an umbrella which covers the communication device or application, encompassing: radio, television, cellular phones, computer, and network hardware and software, satellite systems and so on, This chapter focuses on how much important is the ICT and ICT-enhanced education. ICT can be considered as a subfield of Educational Technology.

Keywords: ICT, Professor, research scholar, CBI, CAI. CMI, e-learning, e-coaching, e-education, OER etc.

Introduction –

Information and Communication Technology (ICT) is a broader term which includes all computer oriented and

communication technologies having multiple uses and applications throughout the world. Now a days, ICT includes wireless network, internet connections, software, computers, cell phones, social networking, video conferencing, multiple media applications and services whichhas occupied every sector such as education, business, transportation, E-bookings, E-bankingetc. ICT is an integral part of everyone's life and covid pandemic proved it in real sense.

Methodology:

Present Study is done by using secondary sources like journals, book chapters, articles, thesis, websites, online sources, expert's opinions etc.

ICT in Teaching and Learning-

ICT was limited to fast transmission of information and various communication platforms. But now it has opened various new avenues in teaching and learning like audio,video,media transmission, e-coaching, e-learning, e-education, virtual learning, e-journal, virtual university, Computer Assisted Instruction(CAI), Computer Managed Instruction (CMI),Computer Based Instruction (CBI) etc(Hayes et. al 1987) Students can gain lot of information and knowledge by busing ICT. Students can use ICT for easy understanding. Along with traditional classroom, now digital classroom also developed in education process for improving teaching learning process. Government has started digitalization of classroom in Z.P.Schools,private school as well as in colleges and higher education. Government, private, Cooperative bodies, multinational cooperation, individual have started to ensure provision of functional ICT facilitiesin both private and public secondary schools which improve quality of teaching and learning(EserogheneAvwiriet.al)Maharashtra gov recently declared that they have a plan to start online universities in Maharashtra to reach and access education to everyone remotely also. Teachers started using various ICT tools for

improving quality of teaching-learning processes along with traditional methods of teaching.Now teachers getting more familiar to ICT tools and instructional strategies.It will also help to enhance quality of education byuse technology in teaching (Senthilkumaret.al.)The ICT can be used at school,colleges, universities and higher education institutes in thefollowing areas:

- Teaching
- Computer aid practical
- Diagnostic testing
- Remedial coaching
- Evaluation
- Development of virtual laboratory
- Online Tutoring
- Development of reasoning &thinking
- Group discussions
- Online internal assessment

With the use of computers and the Internet students can:

- Search the desired information;
- Find and explore variety of topics;
- Develop the capacity for finding and gathering information.
- Collaborate with other students on projects and other curricular activities

Education Technology plays a vital role in education system that's why many educational institutes educate their student by using these technologies. Education Technology refers to technology that helps facilitate active learning and improving performance. It helps to create digital textbooks, practical manuals, assign homework, quizzes, tests, google classroom, animated lessons, take attendance, declare result and to prepare other teaching materials, models, presentations, posters etc. (https://tophat.com).

Importance of ICT in Teaching-Learning:

1. To apply ICT tools and applications in all subjects to enhance quality of education.

2. To improve professional as well as personal development and educational management by applying tools of ICT in active learning of teachers and trainees.

3. To develop knowledge among students as well as teachers to learn various tools,skills and attitudes for using technologies in their learning, teaching, communication, research, problem solving resulting their professional growth.

4. To apply various different tools in education system such as database, spreadsheet, excel sheet, documentation, word processing etc.

5. To design new teaching and learning apps, new study materials, innovative method in teaching, practical as well as research field.

6. To use ICT in social service like spreading social awareness during COVID-19 pandemic. Also, can use in social study for research purpose.

7. To provide student teacher with the knowledge by using application software, multimedia, audio, videos, ppts, mailing, communities, websites etc

8. ICT act as 'Assisting tool' which help in evaluation, making assignments, preparing presentations, collecting data, communicating with students, conducting research, documentation, providing research articles, journals to students, to store information etc.

9. To provide better understanding in learning by using animations, motion pictures, computer simulated practical, to prepare 3D models, videos etc.

10. To help teachers to access with institutions, universities and other organizations.

Advantages of ICT in Teaching-Learning:

1. To make learning more interesting, interactive and easier for both teacher as well as student.

2. To eliminate time barrier in education for both teacher and learner.

3. To eliminate geographical barrier as learner can join from any place throughout the world.

4. Distance learning as well as teaching is possible due to ICT.

5. Enhance the mode of communication and interaction throughout the globe.

6. Paperless work

7. Internet based ICT tools, LMS tools helps to connect students, teachers, educators, research scholars, education personal together from different areas, states and countries etc.

8. Help to maintain international relations, to share knowledge, to exchange thoughts and skills.

9. To apply new approaches in education and business sector.

10. To prepare teacher and student for an integrated society dominated by ICT developments.

ICT Tools in Teaching Learning:

There are various ICT tools/ technologies currently used in teaching learning process which have improved the understanding of students.

1. Computer and internet in Classroom:

Computer became an important part of education system as teacher use it to illustrate and demonstrate new lessons to students for their better understanding. By using different websites, power point presentations, animations, multimedia like audio, videos teacher improved quality of education.

2. Google Classroom:

In COVID-19 pandemic most of the teachers have

started to use google classroom having multiple uses like to assign homework to students, to conduct test, quizzes, assignment submission, to share ppts or study material and responses of students can also collect in this tool.

3. College website/Class website:

We can design this webpage for college work/class work of students which is visible to them after visiting this website. We can share home assignments, old question papers, practice papers, quizzes, tests on this webpage. Nowadays schools and colleges provide teacher webpages on school/college website that can be easily available for students.

4. Digital video:

By using multimedia like audios, videos,animations, motion pictures on LED projectors, DVD players we can improve teaching learning skills of teacher as well as students.

5. YouTube Channel:

Teacher can create their own YouTube channel by using email id and can conduct online classes on YouTube.Also they can upload their lectures video on this channel so that students can see it even after completion of live session.

6. Interactive whiteboard:

By using computer screen and application it controls touch screen. This not only provide visual learning but also students and teacher can draw diagram, write or manipulate images on this interactive whiteboard.

7. Online study tools:

Tools that motivate students to study more fun and interesting. There are various OER (Open Educational Resources) like Swayam, MOOCS etc. for teacher as well as students. (Senthilkumaret.al.)

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Impact of Using ICT in Teaching English Literatre

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Abstract:

In the age of globalization and technology the Information and Communication Technology has gained a huge significance in each sector. Especially in the field of education it is being applied in a great extent. Teaching English literature has become very interesting due to the advent of ICT in teaching. Each and every topic of literature can be taught by using ICT effectively. Various online resources and virtual tools play a vital role in teaching literature. One may use online images/ pictures from Google search; YouTube videos, lectures delivered by the scholar academicians to teach literature. Online webinars and workshops also positively impact on teaching. There are various films recorded on the various literature topics, by watching these films one can easily sense the literary genres. By asking students to prepare online presentations and seminars one can make the literature influential. While teaching poetry, we can prepare similar slides to the atmosphere depicted in the poem. The ICT tools indeed, have the positive impact in teaching English literature.

Keywords: ICT, Online teaching, e- Learning, evaluation, e resources, ICT tools etc…

Introduction:

The teaching learning process has changed in the modern period a lot. The globalization has brought an immense change in every field and become habitual for human beings. An educational field is no exception for this. In the country like India people believed in Gurukul education system, in which the students have to go to their teachers and reside there for the years. But it is replaced by the techno- savvy education system, in which the place of teachers is acquired by the Machines and virtual ICT tools. Online education has also become an inclusive tool, which covers social, political, cultural and economic status of human. The education given by using ICT tools is supposed to be most reliable and easiest way of gaining education in modern era. The education system teaches how to be an ideal citizen and develops the social concerns. It also enables to enhance the skills to peep out in a global market with sustainable growth and development. Teaching, learning and evaluation process is influenced by ICT.

ICT: Meaning and Scope:

In a document of UNESCO shared online, the ICT has been defined with broader perspective advocating its scope, importance and nature of use, especially highlighting in the field of education. It says: "Information and Communications Technologies (ICTs) are a diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information. Communication and the information are at the very heart of the educational process, consequently ICT-use in education has a long history. ICT has played an educational role in formal and non-formal settings, in programs provided by governmental agencies, public and private educational institutions, for profit-corporations and non-profit groups, and secular and religious

communities." (unesco.org)

According to the definition, the role of ICT tools is very wider and has multidimensional and multifunctional task as it can be used to "communicate", "to create", "disseminate", "store" and "manage" information on diverse levels—teachers-students, teachers-management, students-management, teachers-students-administration, teachers-students-public, etc. The tools and resources of ICT include all modern day inventions in the field of internet, software and hardware tools which are used to communicate through satellites, computers, mobile phones, tablets and similar devices and also the old day tools like telephone, television and radio. It hasenhanced theprogress ineducation sector rapidly. Most of the institutions use it at its best to reach a wide diversity of social communities or public. ICT must become a priority in the Indian colleges diversely spread over vast rural geography, as it is in most of the European countries. It's a challenge for the country like India but can be achieved. The present hon. Prime Minister of India often talks about digitization of education system and emphasizes the need of skilled manpower production from the educational institutions promoting the world level digital teaching and learning. Many steps have been and being forwarded in this connection by University Grants Commission.

The process of teaching-learning has become more students centric and its set aim is to produce skilled work-force. 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. Education satellites also have made its stake in the process of teaching-learning and evaluation; e.g. India has launched world's first education

satellite called EDUSAT in 2004 to impart distance learning to millions of Indians and have developed virtual digital classrooms.

The use of ICT tools and resources is highly increased in recent years even the main focus is to promote such learning by reaching at every nook and corner of the country. To implement this type of teaching-learning program, highly qualified and well trained man power is needed and hence teacher education becomes an issue of the first attention. The significance of teacher education/ training is highlighted as:"The quality of basic education provided to our children is largely influenced by the quality of our teachers in the schools. As no nation can afford to provide poor quality education, it is necessary that we build a strong system of quality teacher education—on which depends the quality of the teacher and ultimately the Nation's education." (Menon and Rama)

Hence teacher training programs have an immense importance in the transaction of teaching-learning and it needs to be imparted by using ICT resources with a wide range. The accessto ICTtools for teachersand students providean interesting and mutual communication while teaching and learning. It benefits both teachers and students on a greater scale. Here an example/ model of how to use ICTs in literature classroom is furnished which can also be exploited in other streams of study. British Council has developed a lot of tools and online courses to educate teachers all over the world and they offer special kind of programs on demand.

Use of ICT in English Literature Classroom:

Teaching English Literature in classroom has really become a pleasurable and an innovative activity with use of ICT tools. Teachers can use overhead projectors as well as visual screens for teaching literature. A number of online resources are easily available at hand. An effective power point presentation can fulfill the purpose of teaching. Different

types of online resources can be supplied while teaching the play like Othello—one may use pictures/ images from Flickr or Google search, you tube videos, delivered lectures by scholars or can have an online workshop or webinar on the same topic.

Most of the literary books have theme based movies in Hollywood/ Bollywood. We also can show the Hollywood/ Bollywood movies based on particular play or novel. E.g. Bollywood movie Omkara is based on Othello. If we watch the film Omkara, we can easily understand the theme and characterization of the play. So, it becomes an impressive activity to teach and show the documentary or the movie shoot on the particular genre. This creates an interest among students and causes to change their habits of learning. Students get complete understanding of the play with its various facets. 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. The outcome of such activities is very fruitful and these techniques are being used on a larger scale in Indian classrooms. There may be other many ICT tools and resources which can be exploited while teaching language and literature. The only thing is how effectively we use ICTs to improve teaching and learning quality and be able to produce the solid outcomes. According to Devi,

"The role of technology is significant in language teaching, especially in English language teaching. The use of technology enables English language teachers to make the Learningexperience motivation for learners byproviding themenjoyable activities. In addition, use of various multimedia tools helps learners use various learning styles and develop creativity and critical thinking. They make them acquire and practice the language skills. Some of them also

promote collaborative learning. They provide automatic examples of the target language and culture."

ICTs save large amount of time, money and energy making the process of teaching-learning and evaluation more fascinating and all involving with a smoother application. In the country like India, we need to have abundance of resources and at the same time an expert teacher community to implement and to reach at the very rural outset where most of the illiterate population resides. And this target can only be accomplished through the impressive and active use of ICTs in education.

Literature teaching and ICT has very closer relationship. The use of ICT can be called as the use of graphic cards, visual boards and direct live chat to the expertise having enough knowledge of that particular field. The use of ICT in teaching any kind of literature makes the process much interesting and enjoyable. There is a positive impact of using ICT tools in the classroom of literature teaching in the age of technology. The teachers, now a days have become more techno- savvy and adapting the mastery in recent software and modern applications of teaching, so that, the process of teaching has become more friendly and student centric.

Conclusion:

The modern age has forced the teachers to use more ICT tools in order to last in the competition. The use of ICT enables them to compete in the technology oriented world. The pandemic situation has introduced online teaching at each institution and it has created ample opportunities for the teachers to use more ICT tools and different online software to teach effectively. They feel more confident with the use of ICT in classrooms and during online teaching. One has to admit that the use of ICT in literature classroom and other such classrooms has become more impressive and draws positive impact on the students.

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Information Communication Technology- a Panacea in Covid 19 Pandemic Era

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Abstract

Teaching, learning and evaluation process is a backbone in schools and in higher education system. Information Communication Technology plays a pivotal role during COVID 19 enabling these processes. In the year 2004 ICT was implemented and in 2010 it was revised. The main aim to launch ICT was to build capacity and to aware as well as to adapt computer education. The education during COVID 19 becomes a part of ICT education. The tremendous and drastic change in education system by ICT influenced users to involve in rapidly altering globe in which activities are progressively distorted by access to budding technologies.

ICT has changed the education scenario in the last few decades by emerging as one of the most efficient tools used in the teaching, learning and evaluation process. ICT become an integral of future education system in all sectors at globe.

Introduction

Education raises people's productivity and creativity and promotes entrepreneurship and technological advances. Countries all over the world understand the importance of education and are working hard to improve educational needs by implementing various government policies (Abbott et al., 2019). The impact of education policies occur on educational fields like school, undergraduate and university level education.

These policies directly impact all the forms of the education sector, such as pre-schools, kindergarten to higher education, and then the university level education. The students and teachers are affected most by these educational policies[1]. Therefore, policymakers play a very significant role in economic education growth. Information and Communication Technology (ICT) has helped the sector to survive and adapt to the new ways of online learning. Stakeholders across the country have been trying their best to come together and innovate with various ways to support the students and teachers[2]. Considering the various challenges of digital education in the country, efforts have been made by the country to optimize the potential of the existing and new educational platforms to be made available for everyone.

COVID-19 is a disease caused by a new strain of Corona virus. 'CO' stands for corona, 'VI' for virus, and 'D' for disease. Corona virus disease 2019 (COVID-19) is a diseases due to SARS-CoV-2. It was first identified in December 2019 in China's city Wuhan. The massive spreading of COVID19 in all over world took place in short period[3]. The schools and colleges were closed to avoid spreading of disease. Naturally

lockdown declared throughout word. Due to this pandemic situation all fields get affected. Education field was also getting affected and teaching-learning process stopped[4].

The word ICT is the technologies utilized for edition, collection and communication of information in different formats. ICT involves computer based technology and internet to make information and communication services accessible in an ample variety of users[5]. ICT contains technologies to store information and regain the same later. It is a set of tools, supports, and channels for the treatment and access to information.

The scenario of the classroom is changing from chalk and talk to digital classroom. Now ICT become an integral part of teaching and learning process in educational field. The widely use of ICT in teaching and learning process making it interesting and easy. A competent teacher has several skills and techniques for providing successful teaching[6]. ICT helps to a teacher for teaching the new concepts by making it easy and interesting way. 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". The teachers should be trained to acquire advanced knowledge in handling and use of digital tools to make teaching-learning process in a digital approach. The academic standard may be enhanced by students by handling and using new digital tools. The hybrid combination of traditional teaching methods and learning management system is used in developed and developing countries. However, this hybrid combination of education and learning management tools were never taken seriously. The ICT was not entirely integrated into the learning management system as we have learned that during the current world pandemic COVID-19.

Traditional education to digital education

Traditional education system emphasizes on intellectual, moral and physical development of individuals. It helps to create respect for others, discipline, humility, self-reliance and truthfulness. In the traditional method of teaching teacher is the source of information. Teacher is the resource. Teacher will have the lesson plan for teaching and uses chalk and board. In this system of teaching Teacher's Talk Time is more (TTT). Interaction between teacher and student takes place for short time due to less time period. There is less chance for the teacher to pay attention on slow- learners. This is Teacher centered classroom, where Student Talk Time(STT) is less. Teacher tries to concentrate only on syllabus designed as per the curriculum. To make the teacher –centered classroom a learner-centered STT should be more and TTT should be less, because the method of teaching must become interactive. The role of a teacher should be changed as mentor, monitor, planner and facilitator. Teacher gives pair work and group work activities to make TTT to STT. Here student gets an opportunity brainstorm and share the knowledge to peers.

Impact of the COVID-19 Pandemic on Education

The COVID-19 wave was spread all over world, due to this reason every week of school closure will mean a massive loss in human capital development with major long-term economic and social implications.

The teachers face following factors in order to efficiently apply inclusion of the technologies and implement them in teaching-learning process.

- Inadequate knowledge in use of advance technologies.
- Frequent training to teachers to enhance competence in use of technologies.
- Motivation to the teachers to take part in training programmes of handling ICT tools

➢ Inadequate infrastructural facilities like poor internet speed, non continuous electric supply etc.

On the other hand, teaching staff, as a teaching worker, must also adapt their work methodology, which implies carrying out a training process that serves as a guide to assimilate the context caused by the corona virus crisis. In this sense, it is necessary to approach teacher training in the use of ICT in two lines of work: firstly, the acquisition of different levels of competence of teachers in ICT and, on the other hand, the improvement in a series of pedagogical, social, ethical, legal, technical, and school and school management.

ICT Education for holistic development:

Education enhances people's productivity and creativity and promotes entrepreneurship and technological advances. The distribution of economic improvement of peoples enhanced by making economic and social improvement. Therefore ICT plays a pivotal role in pandemic period. Policymakers were thinking during pandemic situation about education system.[6] Learning ability of any one's may be enhanced by acquiring ICT based education. It also provides platform of interaction amongst teacher, student and members of education sector. ICT naturally shifted traditional classroom to virtual classroom. It involves:

Facilitating- thinking and problem solving:

ICT enabled teaching involves video lecture method. Videos are stimulus to classroom activities. Watching moving images along with the sound to communicate a topic enables the learner memory process. It also enables students to acquire a range of transferable skills like research skills collaborative working, problem solving, technology, and organizational skills[7].

Engaging and motivating to the students:

Teachers can record programmes related to their topics

and use them in the classroom. Computers support learning across the curriculum and communication networks provide learners with searchable access to vast amounts of information[8]. Students in the class may be engaged by showing new and advanced videos about curriculum. The careful attention of the students towards video helps to the students to grasp and to inculcate innovative aspects of curriculum. If this method is incorporated into student centered- learning it will motivate the learners for self-study. The students get motivated, deep learned, and communication skill get enhanced by observing video lectures[9].

PowerPoint Presentation- an efficient teaching:

The teaching through PPT makes effective. The conversation between facilitator and learner becomes more easy and effective when learners take part enthuhastically in teaching process.

The professional development of the teacher with ICT skills brings lot of change in method of teaching and learning. A trained teacher with the knowledge of technology can bring changes in teaching scenario. ICT training Programs with hands on practice help the teacher to develop their technological skills in using Internet, Preparing PPTs, projecting the slides on the screen by using LCD projector using pen drives to learn. The traditional textbook can no longer fulfils the need in the rapid changing and the information-explosion world. The traditional teacher-centered approach makes classroom no longer an effective system. The traditional methods cannot prepare students for the realities which they face in the near future.

Conclusion:

The educational institutions have modified the educational system from face-to-face teaching to online teaching causing the use of ICT to avoiding interruption in educational system at a globe. The spreading of COVID 19

disease controlled by closing the doors of educational institutions by adaption of ICT based education which supports to maintain societal and mental health[10]. The teachers role in use of ICT tools enhanced by acquiring frequent use of such tools and training to acquire advance knowledge enabling ICT teaching[11,12]. Though ICT based education save time and hectic of attending regular classes in institutions, the face to face interaction between teacher-student, collaborative work with participation and interaction through forums, group discussion prohibited during pandemic period. This directly affects on societal and mental health of students (classmates).

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Impact of ICT in Teaching Learning and Evaluation Process

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Abstract

Present paper explains how the impact of ICT in teaching learning and evaluation process. Impact of ICT on higher education and academic libraries is discussed with examples. ICT impact is noticed in every aspect of libraries. We are living in an information age. Various ICT based enabling technologies that can be used for teaching, learning and evaluation process. This paper we discuss the impact of ICT in teaching, learning and evaluation process.

Keywords: Information Communication Technology, Impact of ICT in teaching, Learning and evaluation process.

Introduction

This paper describes ICT plays a vital role in teaching, learning process. Technology is developed to solve problems associated with human need in more productive ways. If there is no problem to solve the technology main not be developed. Applying this principle to educational technology would mean that educational institution should create and adopt Technologies that address educational problems of which

there are many. Since the development of first computers many have argued that computers should be used to support learning these arguments have amplified as computers have evolved into powerful relatively low cost technology available today. Present paper focuses on the use of ICT in teaching, learning and evaluation. It will aim to describe the ways in which teachers should facilitate student use of ICT and how they can progress.

What is mean by Information Communication Technology

The term Information Communication Technology was defined as "All kind of electronic system used for broadcasting telecommunication and mediated Communications". It includes personal computers, Video games, Cell phones, Internet etc. Telecommunication technology, multimedia technology, Computer technology, Reprographic technology, Databases these are components of ICT.

Impact of ICT on teaching learning process

ICT has the following impact on the learning process

1.Student Learning

There are many potentials uses for ICT in the learning process. In some situations, changes in relevant Industries makes computer use in school imperative. For example, to provide courses in statistics, technical drawing and business which do not incorporate computer use reduce the relevancy of the courses to the real world. Here the rationale cries out from the workplace but needs to be responded to with careful impact of ICT on teaching and learning.

2. Increasing learner Independence

Computer systems are increasingly being used to provide learnings experience when and where they are needed. This provides students with greater Independence not only in the terms of when and where they learn but also what they learn.

3. Active learning

In many classroom situations it is difficult to allow students to be sufficiently active as participant. Typically, students are often passive, spending a lot of time listening or reading. It is well known that student is more likely to be interested and attentive and will achieve a wider range of learning outcomes if they can be active.

4. To Motivation

The interactive and multimedia nature of modern computer system has provided the opportunity for software developers to create increasingly more stimulating features. Computer system does provide the opportunity to create a wide range of interesting learning experiences as it makes learning, Participatory and social process supporting personal life goals and needs.

Conclusion

The ICT revolution has deep and wide impact on teaching, learning and evaluation process. The role of ICT in today's era is changing very fast. Technology has created many tools and techniques for teaching, learning and evaluation process.

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ICT devices and their impact on teaching, learning & evaluation process

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Abstract

In today's scenario, our education sector is facing the challenges that the process of learning must continue with all Covid protocols. To overcome these teaching, learning and evaluation problems ICT plays a key role. Using different web conferencing software's like Zoom meetings, Microsoft team, Google meet, Cisco WebEx and many more. We can communicateour thoughts and ideaswith students and professionals effortlessly, no matter where they are. Learning becomes so convenient, comfortable and user friendly.With mobile applications like Coursera, edx and YouTube.Enormous databases in the form of videos, audios and PDF are available for learners, anyone can access it in their convenient time and place. Even the process of evaluation also becomeseasier and simpler using google forms, zoho, type-forms and similar kinds of applications.

To tack advantages of ICT software to teach, learn or

evaluate we need to have some important devices that are necessary to know how to operate and use them. This study highlights these devices and helps to examine impact of it on teaching, learning and evaluation.

Key words:ICT tools, Teaching and learning TechnologyAdvantages&Disadvantages

Introduction

Nowadays the online learning process has become more familiar to all of us. Use of computer and the computer-oriented devices increased.There are several ICT tools we can use in our day-to-day life and they have much impactful on our learning.We can observe that there is increase into the use of those devices. From last two years because of the lockdown situation that arises due to Covid-19,most of the peoples were got affected to the covid, in such pandemic there is need to maintain safe distance.As we know that there are many software's which were used for the interface between the employees, teachersand students. As the days goes on the uses of the information & communication technology (ICT) increased since last few years. Due to this pandemic people gets aware to the health to maintain safe distance, the school's offices were forcefully shut downs. There is a huge loss of the students as well as the industries. The education industry also faced many challenges in this pandemic, comes with the use of ICT for the teaching learning & evaluation process. Today many devices like mics, cameras, tabs, Bluetooth, desktops, laptops, pen tabs, etc. which were used widely into the teaching learning process, many software's also found beneficial in the field of teaching learning and evaluation.

The present paper gives the detailed information about the tools used for the betterment in the field of education. Commuters, educators and businesses across the world have experienced a drastic shift from physical to digital spaces. While there might be some problems associated with this

pivot, technology has done a brilliant job providing the tools required to maintain a high level of efficiency and remote collaboration.The educators and the students nowadays use the teaching learning applications which are iOS or as android based which are user friendly such as google meet, google classrooms, zoom app, Coursera, Khan Academy, edX, Future Learn, Open Learn, Solo Learn, Codeacademy, Udemy etc. also to produce content, transmission of it, there is the need for the devices which are available easily and user friendly. As the result of these devices and software's, peoples were cautious about the use of ICT. The impact is found to be very crucial that students and teachers were able to teach and learn on online platform at their place, what they have is some gadgets like, laptop, mobile and the internet connection. There are few advantages of the ICT such as-easy to access information, greater interest in learning, increased retention of information, robust information storage, better presentation of information, teaching is made more interactive, knowledge share easier, it can make teaching more effective, and organization of matter can beeasily done.

Model of teaching & learning through ICT

1. Finding out & considering ICT tools
2. Learning the application method of ICT tools
3. Understanding the manner and time of applying ICT tools
4. Finding specialties in ICT application

Following are the few devices which were used for the teaching, learning & evaluation process.

1. Webcam

Not all computers come with quality webcams and some more affordable devices lack this hardware entirely. A basic webcam is also a great option for those looking to enhance their e-learning experience.

2. Headphone

Learning at home can be distracting for students and

teachers alike. Headphones are a great option for individuals who want to block outside distractions and tune in for the lesson at hand.

3. Bluetooth Speakers

Computers are not generally designed with top-notch speakers onboard. At higher volumes, these factory components can pop and crackle, greatly diminishing the sound quality. In an online lesson, clean crisp audio is imperative. A Bluetooth speaker is a great option for those looking to turn up the volume and dial in for a lesson. During independent learning, students can also use the speaker to play their favorite study playlists.

4. Microphones

A dedicated external microphone is another easy way to give your virtual collaboration a boost.

5. USB data hub

For an optimal online learning experience, many students need to leverage numerous devices, often at the same time. Many newer laptops have few USB ports to help with external recharges. Moreover, running all these devices from the laptop can quickly drain its battery midway through the school day. For this reasoning and others, a dedicated external USB charging hub is a great way to keep all your devices fully charged without burying your laptop under a mountain of cables and dongles.

6. Wi-Fi router

A child's remote education experience is wholly hinged to a household's Wi-Fi connection. Perpetually being booted from a lesson can be a drag on engagement and information retention. For some households, upgrading their home network may be the necessary first step to making online learning better.

7. Whiteboard

Any sketch app can technically be turned into a digital whiteboard if you must sketch out many ideas for your students.

As if you have been on zoom, Webex or google meet for remote meetings, you may already be aware that those apps offer a simple board that on which you can draw anything during the meetings. However, there are many features that helps to highlight something in the presentation or make remark or write anything that helps to giving you the best digital white boarding experience.we can easily attach files, images, and presentation etc. using whiteboard for easy reference.

8. CD/DVD drive

One of the biggest challenges when teaching online is giving yourself the opportunity to do everything that you would do if it were a face-to-face classroom. You won't even think of half these things until you want to do them, but the one thing that I've found needs even more preparation than in traditional contexts is how to use listening material. But using these drivers we can port files easily.

9. Projectors.

Since last many decades the use of ICT has been increased in education field, as the use of projector founds to be too much beneficial for the interface and in the teaching, learning process so the learning process becomes easier.

10. Monitors/ HD screens.

The screens which were used for the teaching and learning process could be found beneficial for the visual study which can directly impact on to the memory of students.

ICT application pattern in learning cycle

According to the mentioned model for technology applications in learning cycle. It has been assumed in this pattern that for completion of required learning cycle all learners are obliged to use computer. This is because of practical and observable experiences are necessary for further learning purposes. In addition, the professors have an excellent role in learning of learners as well.

Advantages of ICT.

In education, use of ICT has become imperative to improve the efficiency and effectiveness at all levels and in both formal and non-formal settings. Education even at school stage must provide computer instruction. Profound technical knowledge and positive attitude towards this technology are the essential prerequisites for the successful citizens of the coming decades.

Some of them are listed below :

1. These devices are Cost-efficient
2. ICT Provide the facility for easy student management
3. Using ICT direct classroom teaching can engage
4. Improved modes of communication
5. Eco-friendly-Eliminate the usage of paper
6. Direct classroom teaching
7. Minimize cost and saves time
8. Improved data and information security
9. Web-based LMS tools link teachers, students, researchers, and scholars and education together.
10. Teachers can teach better with graphics, video and graphics.
11. Teachers can create interesting, well-designed and engaging classroom activities.
12. Provide better teaching and learning methods
13. To spread awareness about the social impact of technological change in education.

14. Promoting and improving the digital culture in universities, colleges, and schools.
15. Automated solutions to paper-based manual procedures and processes.

Disadvantages of ICT Tools

There are various disadvantages of ICT Tools:

1. Unemployment
2. Lack of security/privacy
3. Cyber bullying
4. Reliance on technology
5. Social media privacy issue
6. Preparation time

Conclusion

The entrance of ICT into educational field is a valuable chance for performing some modifications and innovations resulted into efficiency increase and more effects of education system. By recognizing any factors of betterment, the learning/ teaching Education School Learner Coach Effective learning process and submission a conceptual model. We tried to explain all educational- training roles of ICT for further changes. ICT is a valuable chance for specialists and involved people in education and changes of teaching learning methods and educational goals.

Using any required hard devicesat the time of using ICT applications they result of different to researchers and students in all fields, finally any submission of a conceptual and applicable model needs proper tool to convey proper massage to the audience and make it possible to have a combination of ICT and education in better way. Since ICT provides greater opportunity for both teachers and students to adjust learning and teaching to individual needs, therefore, it is necessary to enhance the integration of ICT concept and anyone should aware about the use of above devices and apply it specially in School education.

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IMPACT OF ICT ON SOCIAL SCIENCE RESEARCH

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Abstract:

Due to rapid advancements in the field of science and technology along with education new technologies are indeed suggesting new social patterns and new social habits. Social networking tools have captured the imagination of youth and researchers. Researchers today prefer to use internet for surfing the World Wide Web to access relevant material and data including e-journal and e-book. As more and more ICT tools being developed and used in social science research, it is a good idea to reflect how ICT had social science research as a whole as there is a lacking of such study. The information seeking patterns were derived from interviews. The methodology adopted for the interviews and analysis was qualitative and based on the grounded theory approach.

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..There are many positive things regarding using ICT in research (e.g. the use of ICT shortens the research duration,

increases the research quality expectation, raises the number of academic articles published before promotion, etc.). ICT is a new norm and an essential enabler to increase the productivity of a researcher (Deshmukh, 2015). It is expected that ICT will further accelerate and multiply the overall body of knowledge in science research together with redesigning research work with effective use of information and communication technology, which should also lead to networking of experts and expansion of opportunities for them to collaborate, share and communicate. ...

... oach how researchers had conducted their science research. Nowadays we should aim to encourage, support and enhance the use of ICT in the conduct of research, the development and use of digital research resources and tools, and the exploitation of ICT in disseminating and making available the results of research (What is Humanities Research, 2020).Deshmukh (2015) said that ICT had effects on many facets of science research. She classified them into three categories that include: 1) ICT application in pre-data analysis, which refers to examples how ICTs are applied on activities of social science research before reaching the stage of data analysis; 2) ICT application in data analysis, which inclu ...

... Three categories of ICT effects on science researc.

There are many positive things regarding using ICT in research (e.g. the use of ICT shortens the research duration, increases the research quality expectation, raises the number of academic articles published before promotion, etc.). ICT is a new norm and an essential enabler to increase the productivity of a researcher (Deshmukh, 2015). It is expected that ICT will further accelerate and multiply the overall body of knowledge in science research together with redesigning reasearch work with effective use of information and communication technology, which should also lead to

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... use of ICT in the conduct of research, the development and use of digital research resources and tools, and the exploitation of ICT in disseminating and making available the results of research. The application of these ICTs had effects on the approach how researchers had conducted their social science research (What is Humanities Research, 2020).Deshmukh (2015) said that ICT had effects on many facets of science research. She classified them into three categories that include: 1) ICT application in pre-data analysis, which refers to examples how ICTs are applied on activities of social science research before reaching the stage of data analysis; 2) ICT application in data analysis, which inclu There are many positive things regarding using ICT in research (e.g. the use of ICT shortens the research duration, increases the research quality expectation, raises the number of academic articles published before promotion, etc.). ICT is a new norm and an essential enabler to increase the productivity of a researcherIt is expected that ICT will further accelerate and multiply the overall body of knowledge in science research together with redesigning reasearch work with effective use of information and communication technology, which should also lead to neptworking of experts and expansion of opportunityies for them to collaborate, share and communicate.

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Impact of ICT in Teaching, Learning and Evaluation Process

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ABSTRACT:

Information communication technologies (ICT) at present are influencing every aspect of human life. They are playing salient roles in work places, business, education, and entertainment. 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 communication technologies. In this digital era, ICT use in the classroom is important for giving students opportunities to learn and apply the required 21st century skills. ICT improves teaching and learning and its importance for teachers in performing their role of creators of pedagogical environments. ICT helps of a teacher to present his teaching attractively and able to learn for the learners at any level of educational programmes. Today in India teaching training programmes making useful and attractive by the term of ICT. Information and Communication Technologies (ICTs) exemplified by the internet and interactive multimedia are obviously an important focus for future education and need

to be effectively integrated into formal teaching and learning – especially in a teacher education institution. Keywords: Communication, technologies, education.

INTRODUCTION:

ICT is a stand by 'Information and Communication Technology' schools use a diverse set of ICT tools to communication, create, disseminate, store and manage information.

When teachers are digitally literate and learned to use ICT these approaches can lead to higher order thinking skills, provide creative and individualized options for students to express their understanding and prepared to deal with technological change in society and there workplace.

Today in India teaching training progammes making useful and attractive by the term of ICT. Information and communication technologies exemplified by the internet and interactive multimedia are obviously an importance focus for future education and need to be effectively integrated into formal teaching and learning especially in a teacher education institutions.

In this digital era, ICT use in the classroom is important for giving students opportunities to learn and apply the required 21st century skills. ICT improves teaching and learning and its important for teachers for teachers in performing their role of creators of pedagogical environments.

ICTs are making dynamic changes in society. They are influencing all aspects of life. The influences are felt more and more at schools. Because ICTs provide both students and teachers with more opportunities in adapting learning and teaching to individuals needs, society is, forcing schools aptly responds to this technical innovation.

It is similar to information technology (IT)but focuses primarily on communication technologies. This includes the internet, wireless network, cell phones and other

communication mediums. It means we have more opportunity to use ICT in teachers training programmes now day's and improve quality of teachers for teach effectively. According to UNESCO "ICT is a scientific, technological and engineering discipline and management technic used in handling information, its application and association with social, economic and culture matters". Teacher is the main part of the educational field in our society. He more works for the improvement level of society in the every filed. Skilled teachers and make the creative students in form of the good social worker, politician, poet, philosopher etc. for the society.

DEFINITION:

- "ICT stands for Information and Communication Technologies and is defined, as a "diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information".
- "ICT implies the technology which consists of electronic devices and associated human interactive materials that enable the user to employ them for a wide range of teaching learning processes in addition to personal use".

MEANING:

- The term "Information"refers to "any communication or representation of knowledge such as fact, data or opinions in any medium or for including textual numerical, graphic cartographic, narrative or audio visual forms.
- "Technology" the sum of the ways in which social groups provide themselves with the material objects of their civilization.
- 'ICT is a technology which increase the rate of learning by enabling the teacher to teach and the learner to learn more".
- Technology is the practical form of scientific knowledge or the science of application of knowledge to practical.

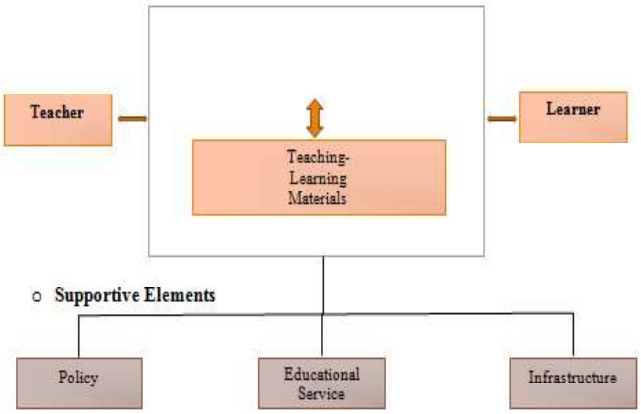
WHY ICT IN EDUCATION:

- Information and Communications Technology (ICT) is technology that is used to handle communications processes such as 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, in some ways, more broad. ICT is often used to describe the convergence of several technologies, and the use of common transmission lines carrying very diverse data and communication types and formats.
- The rapidly growing usage of technology in todays world is pushing teachers to consider the integration of ICT into the classroom.
- ICT can be used as a tool for motivating student to learn in different way.
- ICT can be effective and efficient.
- It can be dynamic and interactive.
- The presence of ICT in education allows for new ways of students and teachers.
- One of the key skills for the 21st century which includes evaluating ,planning, monitoring, and reflecting to name a few.

SCOPE OF ICT IN EDUCATION:

- Teaching and Learning with ICT to familiarize students with the use and workings of computers and related social and ethical issues.

Core Elements



ADVANTAGES AND LIMITATIONS OF ICT IN TEACHING AND LEARNING PROCESS:

Advantages: -

1. Communication - Speed / time – money can be saved because it's much quicker to move information around. With the help of ICT, it has become quicker and more efficient.

2. Globalization - Video conferencing saves money on flights and accommodation. ICT has not only brought the countries and people closer together, but it has allowed the world's economy to become a single interdependent system to contact either a business or family member.

3. Cost effectiveness - It feels free to send an email (although it isn't); it's without doubt cheaper than phone calls. ICT has also helped to automate business practices, thus restructuring businesses to make them exceptionally cost effective.

4. Greater Availability - ICT has made it possible for businesses to be automated giving clients, access to a website or voicemail 24 hours a day, 7 days a week.

5. Bridging the cultural gap – Greater access to technology has helped to bridge the cultural gap by helping

people from different cultures to communicate with one another, and allow for the exchange of views and ideas, thus increasing awareness and reducing prejudice.

6. Creation of new jobs - Probably, the best advantage of ICT has been the creation of new and interesting jobs.

7. Education – Computer's along with their programs and the Internet have created educational opportunities not available to previous generations.

8. Through ICT, images can easily be used in teaching and improving the retentive memory of student.

9. Complex structure - through ICT, teachers can easily explain complex structure,instruction and ensure students comprehension.

10. Through ICT, teachers are able to create interactive classrooms and make the lesson more enjoyable.

Limitations:-

1. Computer based learning has negative physical side effects such as vision problem.

2. Computers limit students' imaginations.

3. Students may be easily distracted from their learning and may visit unwanted sites.

4. Students may have less opportunity to use oral skill and hand writing.

5. ICTs alone are insufficient for significant benefits to emerge.

6. Risk of Cyberattacks and hacks.

7. Technology is a resource that not all families can afford.

8. It can be boring sitting in front of computer for long time.

9. Computer cannot interact on a personal level. E.g. fuller explanation.

10. It become harder for the teachers to organize the teaching of new concepts.

CONCLUSION:

The above study indicate that teachers and learners have strong desire for the integration of ICT into education but they encountered many barriers.I think that if ICT is successfully integrated in Education then it enables wider learning opportunities into teaching and learning process.ICT and e-learning offers opportunity to raise educational standards in education.Involvement of teachers and parents is important.ICT has an advantage and disadvantage as well when we use it. ICT in education also has impacts to teachers and student.ICT has made education more easier and simpler for learning and teaching.

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The WWW Journey of Web 1.0 to 3.0

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ABSTRACT

The most important event following the establishment of the internet network (www) was the web introduced by Tim Berners-Lee. The websites give their owners and features that allow to sharing of information with which they can publish their own thinks, content with user's visitors. The World Wide Web has been based on the internet and passed through different advanced development stages started since 1960. The main purpose of the article is the geographical development of the web from web 1.0 to web 3.0 and the first generation web like a connecting to an ARPANET (Advanced Research Project Agency Network) the network that ultimately evolved into what we know the internet. It supports human communication and thinking via social media to access digital information by many applications or software including the World Wide Web. The internet has been proved to be a spawning ground for a large and growing number of e users.

Keywords- Internet, WWW, Web 1.0, Web 2.0, Web 3.0, Wiki, Social Network, Instant Messaging.

Introduction

Information service plays the main role in this journey of web development to get new stages of web and one must

keep in mind that this involves challenges that go beyond new technology. It is mainly a change in attitude on behalf of the current information society. The World Wide Web simply known as the web is not synonymous with the internet but it is the most prominent part of the internet and that can be defined as a technology social to interact with humans based on social networking. In today's era of the web, technology can be easily defined by users in a different Broadway. But the matter is the fact many users are quite unknown to the information that forms where the WWW was searched the first time. As the article stated the journey of the web so it is important to initiate a story from the beginning of web1.0 to web 3.0. The web was introduced by Tim Burners Lee in 1989 for the first time. It was immense that progress had been made about the web and related technologies.

World Wide Web (WWW)

The World Wide Web (WWW) or just the Web is a hypermedia information service on the internet sites, which has been in the place of 1991. It has begun as a distributed hypertext-based information system developed at CERN by Tim Berners-Lee but found its true home on the internet becoming almost a synonym for the internet itself. It interfaces with most other internet services (Telnet, FTP, HTTPS, etc.). It allows the easy production of documents containing

multimedia as well as text media and hyperlinks by means that of a simple mark-up HTML. A web document is a text and typically referred to like pages, is stored on the server's rooms and retrieved by the client's software known as web borderers. A page is retrieved by quoting its URL in a browser, which then fetches copies of web pages from its servers using HTTP.

Web 1.0 [PUSH] (READ ONLY)

Web 1.0 refers that the first stage of the internet of the world wide web of the journey. The recent journey of there were only a few content creators in web 1.0 a (read-only) huge of applications of a few users who are used to users of the content. In the first stage of the web 1.0 journey is the term used for the earliest version of the internet as it emerged from its origins with the Defense Advanced Research Project Agency (DARPA). The personal web pages are founded in common websites in that web 1.0, consisting mainly of static pages are hosted on ISP run on web servers. The early web journey that was started on the internet was mostly composed of web pages joined by hyperlinks, without the additional visuals pages controls, and forms that we see when we log on that day. Web 1.0 experts refer to it as the read-only web, a web that was not interactive in any significant sense. The web pages are developed in web 1.0 is first generations of WWW were static and we're not changing commonly. Products and services are providers started publishing online catalogs for the read-only advertisements of their products or services.

The main goal of the websites was to publish the information providers and the web pages are showing the read-only situations and online formats. The web pages are showing of shopping carts encouraged people to purchase goods and services online rather than offline market places. That period of time web pages are black and white, information dissemination to the customers was done through Push Models because customers could not interact or contribute to the content creation by giving their valuable feedback. Web 1.0 page we developed in HTML and basic communication of ISP was HTTP, and basic version of HTML Gmail, Hotmail.

Characteristics

Web 1.0 technologies are includes core web ISP protocols URL, HTTP, HTML. The major characteristics are of web 1.0 are as follows.

1. Sites are not interactive.
2. Applications are proprietary.
3. They have read-only content.
4. Established an online presence and make their own information available to anyone at any time.
5. It includes that static web pages and uses the basic version of hypertext markup language.

Web 2.0 (Participative)

Web 2.0 is also known as participative creator and users or participatory. Web and the social web are referred to websites and emphasize the users and creators and ease of use participatory and participative culture and the interoperability for the end-users. Web 2.0 was discovered by Darcy DiNucci and later most of the popularized man in technologist by Tim O'Reilly and Dale Dougherty at the first time of O'Reilly media-based web 2.0 launched in the conference in late 2004. Tim O'Reilly was changed Web 1.0 to Web 2.0 although the term was the numbering of software versions, and it doesn't denote a formal change in the nature of the World Wide Web. The Web 1.0 read-only websites are a general modern change that occurred during that period of time and as interactive video conferencing of the creation of software and instant messaging services and to the overshadow of the older read-only websites more static and read and write of the original websites.

This was a Web 2.0 era of users generated to read and write content and a huge of social applications interact with creators and users. The interaction with web blogging, sites read and writes, instant messaging, videos conferencing, podcasting, pictures sharing, social websites bookmarking, voice chatting, web hosting, video messaging sharing, chatting, web application, library 2.0, weblogs, mashup, and folksonomies or tagging, etc. all categorized of applications are using online interactivity became possible and has to improve the to be a great achievement to web 1.0 to web 2.0 generation. One of the main keys of web 2.0 drivers of the development of web 2.0 is then read and write generation of Web related technologies and standards.

Characteristics

- Web based social media chatting.
- Participation not publishing: Blog.
- Web 2.0 read and write.

- (SaaS) Software as a service
- Rich user experience
- Bookmarking and tagging sites.

Web 3.0 (Semantic web)

The John Markoff of the New York Times suggested web 3.0 as this www generation of the web. This concept of the idea of web 3.0 is to be defined as a structure of data and link them into the web creators and users and in order to most of the effective discovery, virtualization, integrations, and reuse across various software. It is read, writes, and virtual web 3.0 and able to improve data management. The mobile internet simulates creativity and innovation, encourages factors in globalization phenomena, enhances users' satisfaction, and helps to organize collaboration in social web pages. It is added to machine readability and virtualization features to the web document which didn't exist in web 1.0 and web 2.0. Web 3.0 is also called Semantic Web. The semantic web was conceptualized by Tim Berners – Lee, the inventor of the WWW. The meaning of Semantic web is an extension of the current web, in which information is given well defined as better enabling computer and people to work in cooperation Berner-Lee.

The semantic web is a web of data. There is a lot of big data we all users every day, every second and it is not a part of the web. Users can see the bank statement on the web, and user photography. The semantic web is about two things. It is about common formats for the integration and combination of data drawn from diverse sources. That allows users or a machine to start off in one database, and then move through an unending set of databases that are connected not by a wire but by being about the same things. It is represented that the meaning of using ontology and providing reasoning through the relationships, conditions, and logics in those ontologies.

The Journey of (WWW) Web 1.0 to Web 3.0

That section given journey of www and generation by different aspects as shown in the following chart.

WEB 1.0	WEB 2.0	WEB 3.0
1996-2004	2004-2016	2016+
The Web	The Social Media or Social sites	The Semantic Web
Tim Berners Lee	Tim O'Reilly	Tim Berners Lee
Read only	Read and Write only	Read, Write and execute web
Information Sharing	Interaction	Immersion
Millions of users	Billion of users	Trillion of users
Brain and eyes	Brain, eyes, ears, and voice	Voice, Brain, Ears, and Eyes
The Hypertext web	The community web	The Semantic web
Pushed web	Wikis, chatting, publishing, and sharing	Virtualization, representation, and interoperable
Content Management	Wikis and Wikipedia	Semantic web
Personal Websites	Blogs, chatting, and instant massaging	Semantic blogs, web blogging

Conclusion

The article presents the journey of the WWW generations of the webs and their contents. The journey of the chart shows which content is used in Web 1.0, Web 2.0, and Web 3.0. In that journey gives an idea of a variety of contents related to these web generations. Web 1.0 provides that only reading the websites to users. Web 2.0 facilitated that users chatting, bookmarking, tagging, instant message, conferences, and sharing ideas with other users across the world through the social sites. Web 3.0 is a semantic web and to add for machine learning of the web pages which reduces mankind cognitive efforts required to deal with webs.

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The Impact of ICT in Rural Education

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ABSTRACT:-

Rural areas are economically and geographically dispersed and if socio-economic educational programs for such backward rural areas Due to the lack of knowledge and use of information and communication technology (ICT) rural areas development is at a very low rate information and communication technology are developing . The education system a super power aspring people needs to go through tremendous change to keep pace with the Indian education system of developed and super developed nations .

Day by day but are less applicable in rural areas lack of communication and resources are the case of education are of the worlds greatest populations has been steadily increasing and there is expectation that technology many make education affordable for those who are so far the unable to benefit from same :-

Keywords :- education technology developed nations education impact , lack of communication persistant challenge for educational policy makers and planners releted to the potential use of informational and communicational

technologies (ICT) in remote , low income communities around the world is that most product , expertise and research releted of ICT use in education come from high contnts and environments .

The basic principles or approaches to Consider when planning of introduce ICT in to remote rural areas low in come educational environments.

Strategies to veach remote aur communites impact of using ICT.

The learing experience of children in remote facations has been of concern for both political and arrmunitg leders of most countries whether developed or developing thes concerns have expression by nter nationad development agencies like UNICEE,UNESCO,The world bank and the asian development bank.

One of the many strategies purposed by the meeting was to use ICTl's extensively we would like you to watch you the development of said fedailogy in rural India is insufficient and in many cases worngiy applied to need gaps and solve problems

There have been corresponding issues of over exploitation land & water inequitable distribution of technology in round regions due to political and administrative reason ICT offer an opportunity to inter education, new acticites, new services and applications into round area or to enhance existing services ICT's can paly a singiticant role in comblting round and urban poverty and sustainable develpemnt through creating and supporting livelihoods ICT's is a very important and powerful media that inhanced knowledge and educational in our round community.

The inhancement of knowledge and education wile lend to development in our round community as it cover huge area in lesser time what is the impact of ICT information and communication technology on round development and its acceptance ?

I prefer no to talk about impact analise social appropriation its better . in some rural communities ICT its being accepted but it we talk about development its more complex ICT don't bring development it self its important to investigate the link between social appropriation of ICT and innovation for example .

ICT is a very powerful media if it can be used with proper caution . I believe that enhancement of knowledge and educationwill lead .

Ibelive the impact will be very positive to take advantage of the benefit of ICT for the care of local interests Any new technology will have early adopters in India with low education leads ICT would be the medium to reach population at affordable cost ICT in education is likely to have better assimailation as student are open to adopting and learning new things .

This is a key factor in rural development as any fravation / technology social issues etc. any beneficial if the community is proper informed any involved .

ICT in rural doing farmers its getimpact emergency animal treatment rural part during co-oprative many animals save after ICT and easy during management .

I think the important at ICT in rural area by providing a new network between the rural community can expressthomselines and may have power to take decisions , the helping the local development thus creating a democray local steng therned .

The ICT as such may impact rural areas in many confecting ways . it is very important to see ehich social forces are implementing the ICT and how it is releted with other resources of development . ICT may be used to control the resources of development of the rural areas a more effective way and for it may be used ampower local community .

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USE OF E-CONTENT IN TEACHING ENGLISH LITERATURE : A CRITICAL STUDY

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Abstract :

The present research is an attempt to exert ICT tools and its use in E-content development in Teaching English Literature. It is said that visualization has more impact on the readers than Listening and Reading. The research paper also examines the significance of information seeking, purpose for use of ICT, Impact of ICT on preparing lecture, presenta tion, research, entertainment, teaching and learning. It also tries to find out Information seeking behaviour, Social Networking Sites, Satisfication level of ICT tools and problems while using ICT's by the English teachers in India.

Keywords: ICT, ICT tools, E-Content, Lecture, English Teachers, SNS etc.

1.1. Introduction:

Day by day, the use of ICT [i.e. Information and Communication Technology] is enhancing in Teaching and Learning process. The students perceive the idea in detail if

they happen to learn lesson, poem, essay, drama, novel etc. in visual form. The outbreak of COVID 19 demanded use of ICT in exuberance. Hence, ICT has played a vital role in human life. It is used to acquire, store, process and transfer of knowledge and information of a certain field. ICT is also beneficial for enhancing teaching learning process. In this regard, a well-critic critic, P. Tynjal, said –

"Technology based learning environments provide opportunities to deal with a simulated reality and thus help to close the gap between learning and working". [2006: 102] Thus, ICT has marvelous influence on college teachers for enhancing the students' ability to perceive a lesson, chapter, poem, drama, novel etc. It also helps to fulfill their individual and professional competencies.

1.2. Aims and Objectives:

The aims and objectives of the present research paper are to find out the answers to the following questions -

- For what purpose teachers need ICT?
- How ICT has impact on the students?
- Which are the problems in using ICT in learning?
- Which ICT tools are used by the teachers in Teaching English Literature?
- What is the satisfaction level of the students after the use of E-Content in Learning English Literature?

1.3. Difference between Creation and Use of E-Content in Teaching English Literature:

Every teacher has to understand the difference in between Creation and Use of E-Content. Creation of E-Content requires special efforts to prepare presentation by using ICT tools or Social Networking Sites. Use of E-Content is nothing but to use the presentation already there on Social Networking Sites which is made available by other Teachers. The Social Networking Sites which are commonly used are Google, Yahoo, Instagram, Facebook, Youtube, StreamYard, G-meet, Zoom,

Teamviewer, Camstudio, Vmcap etc. These sites also include online teaching-learning apps. They are used on smart phones and Laptops.

1.4. Online Teaching-Learning Resources of MHRD:

Today, online teaching-learning has become the need of the hour. The entire world is in the situation of havoc. So is the condition of schools and colleges. Hence, most of the schools and colleges are using their separate LMS [Learning Management System] apps. Besides this, there are various resources made available by the Government of India through its Ministry of Human and Resource Development. These apps and sites are very useful in Teaching-Learning process. They provide Digital Platforms to the teachers and learning of any subject. Even Teachers of English Literature are using them at large. Few of the sites and apps provide a large number of open access online courses which are very useful in understanding the target or main theme or subtheme of the Topics in the Subject. The details of the sites are as under –

1.4.1. SWAYAM [https://swayam.gov.in/]:

SWAYAM is an acronym for Study Webs of Active-Learning for Young Aspiring Minds. It is a programme initiated by Government of India and designed to achieve the three cardinal principles of Education Policy viz., Access, Equity and Quality. Thus, it provides Massive Open Online Courses with 140 universities which approved credit transfer feature. For instance, the Students enrolled in Jan-20 and in total are 26 Lakhs and 1.57 Cr respectably. Total 1900+ courses are available on this site that cover school and higher educational courses.

1.4.2. FOSSEE [https://fossee.in/]:

FOSSEE is an acronym for Free / Libre and Open Source Software for Education. This pilot project of the Government of India promotes the use of FLOSS tools in academia and research. It is a part of the National Mission on Education

through ICT. The list of projects which are promoted by the FOSSEE comprise Scilab, Python, eSim, Osdag, DWSIM, OpenFOAM, OpenModelica, OpenPLC, FLOSS Arduino, SBHS, R, QGIS, FOCAL and SOUL. Thus, FOSSEE is developed to promote open source software for education as well as for professional use.

1.4.3. SWAYAMPRABHA [https://www.swayamprabha.gov.in/]:

It provides high quality educational programs 24*7 through 32 DTH channels. Around 56,000 total videos have been telecasted covering school & higher education. It has 3+ crores total views on Youtube since inception.

1.4.4.National Digital Library [NDL] [https://ndl.iitkgp.ac.in/]:

It is a repository of e-content on multiple disciplines from primary to PG levels. It has 4.3 crores content [Text / Audio / Video / Simulation / Graphics], harvested from 250 sources in 300+ languages. NDL has 55 Lakhs + registered users.

1.4.5.E-Yantra [https://www.e-yantra.org/]:

It provides hands on experience on embedded systems. It has about 380 Lab and made 2300+ colleges benefited.

1.4.6.Virtual Labs [http://www.vlab.co.in/]:

This has developed Web-enabled curriculum based experiments designed for remote operation. Its 275 labs with 2200+ experiments made 18+ Lakhs students benefitted.

1.4.7.E-gyankosh [http://egyankosh.ac.in/]:

It is a National Digital Repository to store and share the digital learning resources. Its content is developed by the Open and Distance Learning Institutions in the country.

1.4.8.Gyan Darshan [http://www.ignouonline.ac.in/gyandarshan/]:

It is a web based TV channel devoted to educational and developmental needs for Open and Distance Learner.

1.4.9. Gyan Vani [105.6 FM Radio] & Gyandhara [web radio] [http://ignouonline.ac.in/Gyandhara/]:

Gyan Dhara is an internet audio counselling service where students can listen to the live discussions by the teachers and experts on the topic of the day and interact with them through telephone.

1.4.10. DIKSHA [https://diksha.gov.in/]:

It is a National Platform for the Teachers and all other learners.

1.4.11. Epathshala [http://epathshala.gov.in/]:

It provides Free access of e-books [Class I to XII] through website and app.

1.4.12. E-PG Pathshala [https://epgp.inflibnet.ac.in/]

It is a gateway for e-books upto PG which provides High quality, curriculum based, and interactive content in different subjects across all disciplines.

1.4.13. E-ShodhSindhu [https://ess.inflibnet.ac.in/]:

It is a collection of e-journals, e-journal archives and e-books on perpetual access basis. It has 10,000+ e-journals, 31,35,000+ e-books.

1.4.14. Shodhganga [https://shodhganga.inflibnet.ac.in/]:

It is a platform for research students to deposit their Ph.D. theses and make it available to the entire scholarly community in open access.

1.4.15. Shodh Shudhhi [PDS] [https://pds.inflibnet.ac.in/]:

It is a Plagiarism Detection Software that encourages original information by preventing plagiarism.

1.4.16. VIDWAN [https://vidwan.inflibnet.ac.in/]:

It is an Expert Database and National Research Network which has profiles of scientists / researchers and other faculty members working at leading academic institution Spoken Tutorial [https://spoken-tutorial.org/] is a Tutorial in IT application which provides self-training in IT fields.

1.4.17. NEAT [https://neat.aicte-india.org/]:

It is an AI adaptive learning portal. This is an initiative for skilling of learners in latest technologies through a PPP model.

1.4.18. SAKSHAT [https://sakshat.ac.in/]:

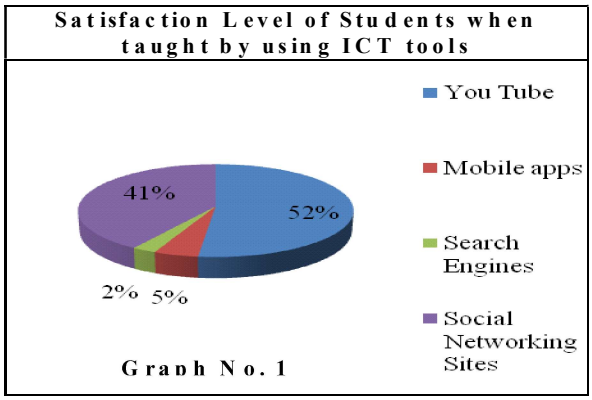
It is one Stop Education Portal for addressing all the education and learning related needs of students, scholars, teachers and lifelong learners.

1.5. Effect of ICT in Teaching English Literature:

The impact of Information and Communication Technology in Teaching English Literature is enormous. Most of the poems, dramas and novels are taught by using ICT tools and SNS. There are problems in using E-Content in rural areas. However, most of the students are using these ICT tools and SNS in their learning. Even the teachers of English are using them widely. For instance, there are so many lectures available on YouTube and Facebook on 'Eco-criticism'. We have enormous material / varied lectures on W. B. Yeats' famous poem, A Prayer for My Daughter. There are so many power point presentations available on Language and Structure on YouTube and Google Image. Thus, the use of ICT Tools is very effective in Teaching English Language and Literature. The students can learn any Topic or Lesson, Poem, Drama, Novel, or Short Story by availing these sources as and when he / she wants.

1.6. Satisfaction Level by using ICT Tools:

In a survey, it is found that the satisfaction level of students is more when they are taught by using SNS and various Apps. The Graph No.1 illustrates the satisfaction level of Students when they are taught William Shakespeare's famous Sonnet, Let Me Not to the Marriage of True Minds. The various ICT tools are used for teaching this poem by English Teachers in Nanded. Its shows that the satisfaction level of students is more than half percent 52% and 41% respondents are using correspondingly you tube and social networking sites for learning the above poem.



Thus, the use of ICT tools has excellent impact on the learners and teachers as well. Hence, it is more demanding and effective in today's world.

1.7. Conclusion:

On the whole, the use of ICT tools in Teaching English Literature or anything has become most powerful in 21st century. This is significant because it has enhanced the level of understanding of any text among the learners. The teacher no doubt plays vital role in education system. We cannot imagine teaching learning process in academic organization without teacher. his they didn't used of ICT resources. The college teachers should adopt ICT in teaching learning process for effective teaching. If he / she uses Blended Learning Method in his / her regular teaching, it will be most fruitful for the learners. Hence, teachers must equip themselves for the use of E-Content or creation of E-Content for effective teaching-learning process. This is what meant by the use of ICT tools in today's setup.

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हिंदी में सूचना प्रौद्योगिकी : वर्तमान परिप्रेक्ष्य में

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भूमिका :

वर्तमान युग वैज्ञानिक व तकनीकी क्रान्ति का युग है। सूचना क्रांति ने पूरे भूमंडल को समेट कर छोटा कर दिया है. राष्ट्रभाषा की जगह अब विश्वभाषा की बात चल रही है. राष्ट्रीय स्तर से आगे बढ़कर एक राष्ट्र दूसरे राष्ट्रों के साथ विविध मामलों में संपर्क करता है। उसे सांस्कृतिक, वाणिज्य परक तथा शैक्षणिक आदान प्रदान करना ही पड़ता है। सूचना प्रौद्योगिकी एक सरल तंत्र है जो तकनीकी उपकरणों के सहारे सूचनाओं का संकलन, प्रक्रिया एवं सम्प्रेषण करता है। सूचना प्रौद्योगिकी के क्षेत्र में कंप्यूटर का अत्यंत महत्व है जिससे व्यावसायिक वाणिज्यिक, जनसंचार शिक्षा, चिकित्सा आदि कई क्षेत्र लाभान्वित हुए हैं। कंप्यूटर और सूचना टेक्नॉलॉजी के क्षेत्र में आज जो नया विस्फोट हुआ है वह भाषा में भी एक मौन क्रांति का वाहक बनकर आया है। अभी तक भाषा को मनुष्य की आवश्यकताओं को पूरा करना पड़ता था लेकिन आज इसे न केवल मनुष्य की आवश्यकताओं को पूरा करना पड़ रहा है, बल्कि मशीन और कम्प्यूटर की नयी भाषाई माँगों को भी पूरा करना पड़ रहा है. हिन्दी एक सशक्त भाषा है। सदियों से भारत जैसे बहुभाषी देश की सबसे बड़ी संपर्क भाषा होने के साथ—साथ,

आज यह विश्व की तीन सबसे बड़ी भाषाओं में से एक है. लगभग एक करोड़ बीस लाख भारतीय मूल के लोग विश्व के १३२ देशों में बिखरे हुए हैं जिसमें आधे से अधिक हिन्दी भाषा को व्यवहार में लातें हैं। गत पचास वर्षों में हिन्दी की शब्द—सम्पदा का जितना विस्तार हुआ है उतना विश्व की शायद ही किसी भाषा में हुआ हो। विदेशों में हिन्दी के पठनदृपाठन और प्रचार—प्रसार का कार्य हो रहा है। दूर संचार माध्यमों, फिल्मों, गीतों, हिन्दी पत्र—पत्रिकाओं आदि ने भी प्रचार—प्रसार में अपनी अहम भूमिका अदा की है. तकनीकी एवं प्रौद्योगिकी के क्षेत्र में भारत का वर्चस्व तेजी से बढ़ रहा है। आज टेक्नॉलॉजी की भाषा को आम आदमी के नजदीक पहुँचाने की आवश्यकता बढ़ गयी है। मुक्त बाजार और वैश्वीकरण के दबावों ने हिन्दी को जरूरत और माँग के अनुकूल ढालने में भूमिका निभाई है। विश्व में अब उसी भाषा को प्रधानता मिलेगी जिसका व्याकरण संगत होगा, जिसकी लिपि कम्प्यूटर की लिपि होगी। चूँकि हिन्दी भाषा का व्याकरण वैज्ञानिक आधार पर बना है इसलिए देवनागरी लिपि कम्प्यूटर यंत्र की प्रक्रिया के अनुकूल है।

महत्वपूर्ण शब्दः

सूचना प्रौद्योगिकी, इन्टरनेट, आयसीटी, तकनिकी, साहित्य, अध्ययन—अध्यापन, सॉफ्टवेयर—हार्डवेअर, युनिकोड, कंप्यूटर, शिक्षा आदि.

पध्दति :

प्रस्तुत शोधालेख के लिए विश्लेषणात्मक तथा वर्णनात्मक शोध पध्दति का अवलंब किया गया है। अंतरजाल पर स्थित अनेक वेबसाइटो का अध्ययन कर इस शोधालेख में निष्कर्ष सिध्द किए है. साथ ही अध्ययन—अध्यापन सन्दर्भ में उपलब्ध पुस्तकों का भी सहारा लिया गया है.

उद्देश्य :

प्रस्तुत शोधालेख के माध्यम से निम्न उद्देश्य स्पष्ट करने का प्रयास किया गया है।

१. सूचना प्रौद्योगिकी का अर्थ तथा परिभाषा को विश्लेषित करना।

२. अध्ययन—अध्यापन में सूचना प्रौद्योगिकी का महत्त्व प्रतिपादित करना।

३. हिंदी भाषा के विकास में सूचना प्रौद्योगिकी का महत्त्व विषद करना।

४. हिंदी साहित्य के अध्ययन—अध्यापन में सुचना प्रौद्योगिकी के महत्त्व को विश्लेषित करना।

५. सूचना प्राद्योगिकी के विभिन्न घटकों को विश्लेषित करना।

६. वर्तमान समय में सुचना प्रौद्योगिकी के क्षेत्र की पर्याप्त पर्यायों को रेखांकित करना।

सार :

कम्प्यूटर के हिंदीकरण के लिए लगभग एक दर्जन भारतीय संगणक निर्माता प्रयत्नरत हैं। उनके अथक परिश्रम से आज बाजार में हिन्दी में कार्य करने के लिए लगभग डेढ़ दर्जन छोटे बड़े द्विभाषिक प्रोग्राम, सॉफ्टवेअर, हार्डवेयर के रूप में उपलब्ध हैं। इनका प्रयोग करके हिन्दी भाषा और प्रकाशन उद्योग को विकसित किया गया है। बिल गेट्स ने भी स्वीकार किया है। कि कम्प्यूटर की भाषा हिन्दी हो सकती है। क्योंकि रोमन लिपि की तुलना में देवनागरी लिपि अधिक वैज्ञानिक है। हिन्दी ध्वनि, विज्ञान दृष्टि से आसान और सरल है, उसमें जैसा बोला जाता है वैसा लिखा जाता है। कम्प्यूटर में हिन्दी की बढ़ती संभावनाओं को ध्यान में रखकर इलेक्ट्रोनिक विभाग ने भारतीय भाषाओं के लिए टेक्नॉलजी विकास नामक परियोजनाओं के अंतर्गत कई प्रोजेक्ट शुरू किए हैं। इस प्रयास में आई. आई. टी कानपुर और सी. डैक (प्रगत संगणक विकास केंद्र) की भूमिका प्रमुख थी। यूनिकोड इस दिशा में एक बड़ी क्रांति है। हिन्दी का यूनिकोड फॉन्ट मंगल एवं अन्य सभी भारतीय भाषाओं के फॉन्ट इनबिल्ट है। हम सभी को यूनिकोड समर्थित सुविधा का प्रयोग शुरू कर देना चाहिए ताकि पूरी दुनिया में हिन्दी कामकाज में एकरूपता लाई जा सके और

एक कम्प्यूटर से दूसरे कम्प्यूटर में, दुनिया के किसी भी कोने में हमारी हिन्दी की फाइल खुल जाए आज विंडोज प्लेटफॉर्म में काम करने वाले अनेक हिन्दी सॉफ्टवेयर मार्केट में उपलब्ध हैं, जैसे, सी दृ डैक का इज्म आफिस, अक्षर फॉर विंडोज, सुविंडोज और आकृति माइक्रोसॉफ्ट ऑफिस, हिन्दी में स्क्रीन का समस्त परिवेश जैसे कमान, संदेश, फाइल नाम आदि भी हिन्दी में उपलब्ध हैं. बीसवीं शताब्दी में जैसे—जैसे भारत ने विज्ञान और तकनीकी, अन्तरिक्ष विज्ञान, अणु विज्ञान एवं उद्योग आदि के क्षेत्र में नई मंजिलें तय कीं, वैसे—वैसे देश में इन विषयों के हिन्दी शब्दावली को विकसित करने की कोशिश की गयी है. सूचना प्रौद्योगिकी के तहत मशीनी अनुवाद एवं लिप्यंतरण सहज एवं सरल हो गया है।

सुचना प्रौद्योगिकी का अर्थ तथा परिभाषा :

सूचना प्रौद्योगिकी को सूचना से संबंध माना गया है। सुचना प्रौद्योगिकी इस संकल्पना को अनेक संघटनों तथा विद्वानों ने परिभाषित किया है, उसमे से निम्न कुछ परिभाषाओं को देखते हैं— इस प्रकार के विचार कंप्यूटिंग (कम्प्यूटिंग) का शब्दकोश (डिक्शनरी ऑफ कंप्यूटिंग (कम्प्यूटिंग)) में भी व्यक्त किए गए है। 'मैकमिलन डिक्शनरी ऑफ इनफोर्मेशन टेक्नोलोजी'में सूचना प्रौद्योगिकी को परिभाषित करते हुए यह विचार व्यक्त किया गया है कि ''कंप्यूटिंग (कम्प्यूटिंग) और दूरसंचार के संमिश्रण पर आधारित माईक्रो—इलेक्ट्रानिक्स द्वारा मौखिक, चित्रात्मक, मूलपाठ विषयक और संख्या संबंधी (सम्बन्धी) सूचना का अर्जन, संसाधन (प्रोसेसिंग), भंडारण (भण्डारण) और प्रसार है।''

अमेरिकी रिपोर्ट के अनुसार सूचना प्रौद्योगिकी को इन शब्दों मे परिभाषित किया गया है—

''सूचना प्रौद्योगिकी का अर्थ है, सूचना का एकत्रिकरण, भंडारण (भण्डारण), प्रोसेसिंग, प्रसार और प्रयोग यह केवल हार्डवेयर अथवा सॉफ्टवेयर तक ही सीमित नहीं है। बल्कि इस प्रौद्योगिकी के लिए मनुष्य की महत्ता और उसके द्वारा निर्धारित लक्ष्य को प्राप्त करना, इन विकल्पों के निर्माण में निहित मूल्य, यह निर्णय लेने के

लिए प्रयुक्त मानदंड (मानदण्ड) है कि क्या मानव इस प्रौद्योगिकी को नियंत्रित (नियन्त्रित) कर रहा है। और इससे उसका ज्ञान संवर्धन रहा है।'' युनेस्को के अनुसार सूचना प्रौद्योगिकी की परिभाषा ''सूचना प्रौद्योगिकी, ''वैज्ञानिक, प्रौद्योगिकीय और इंजीनियरिंग विषय है। और सूचना की प्रोसेसिंग, उनके अनुप्रयोग की प्रबंध तकनीकें है। कंप्यूटर (कम्प्यूटर) और उनकी मानव तथा मशीन के साथ अंत:क्रिया एवं संबद्ध (सम्बद्ध) सामाजिक, आर्थिक तथा सांस्कृतिक विषयसूचना एवं संचार तकनीकी से तात्पर्य उस सूचना सम्प्रेषण तकनीकी से है जिसके माध्यम से सम्प्रेषण कार्य अत्यधिक प्रभावी ढंग से समपन्न किया जाता है। इसका संबंध वैज्ञानिक तकनीकी के ऐसे संसाधनो व साधनों से होता है जिसके माध्यम से त्वरित गति से सूचनाओं का प्रभावी आदान—प्रदान होता है।''

इनसाइक्लोपीडिया ब्रिटेनिका के अनुसार— ''एक व्यक्ति या संस्थान से दूसरे व्यक्तियों या संस्थान तक एक बात का पंहुचाना सूचना कहलाता है जबकि संचार का अर्थ है सूचना या अन्य किसी तथ्य का एक स्थान से दसरे स्थान तक गमन."प्रो. पीटर्स का मानना है कि ''सूचना तकनीकी ज्ञान, कौशल तथा अभिवृति प्रदान करने की एक नवीन तथा उभरती हुई विशिस्ट आवश्यकताओं की पूर्ति करने वाली एक शैक्षिक प्रक्रिया है जिसमें समय और स्थान के आयामों का शिक्षण एवं अधिगम में कोई हस्तक्षेप नहीं होता है। इस तकनीकी के माध्यम से दूरस्थ विद्यार्थियों को भी उत्तम गति से शिक्षा प्रदान की जा सकती है। यूनेस्को के अनुसार ''सूचना प्रौद्योगिकी, वैज्ञानिक, प्रौद्योगिकीय और इंजीनियरिंग विषय है। और सूचना की प्रोसेसिंग, उनके अनुप्रयोग की प्रबंध तकनीकें है। कंप्यूटर और उनकी मानव तथा मशीन के साथ अंत:क्रिया एवं संबद्ध सामाजिक, आर्थिक तथा सांस्कृतिक विषय ''इसे सामान्य अर्थ में यह कहा जा सकता है कि किसी तथ्य या सूचना को जानना एवं उसे तुरंत उसी रूप में आगे पहुँचाना जिस रूप में वह है, सूचना संचार प्रौधिगिकी कहलाता है।

सूचना प्रौद्योगिकी के विभिन्न घटक :

सूचना प्रौद्योगिकी में संचार क्रान्ति के फलस्वरूप अब इलेक्ट्रानिक संचार को भी सूचना प्रौद्योगिकी का एक प्रमुख घटक माना जाने लगा है और इसे सूचना एवं संचार प्रौद्योगिकी (ICT) भी कहा जाता है।ICT का फुल फॉर्म इंफॉर्मेशन एंड कम्युनिकेशंस टेक्नोलॉजी (Information and Communications Technology ICT) होता है। शैक्षिक अवसरों को विस्तृत करने, उच्च शिक्षा के क्षेत्र में उल्लेखनीय विकास एवं शिक्षा की गुणवता बढ़ाने के लिये ICT एक प्रभावशाली साधन है। उच्च शिक्षा में बढ़ता नामांकन अनुपात तथा शिक्षा के विस्तार में प्रशिक्षित शिक्षकों की उपलब्धता में ICT की भूमिका पर नेशनल मिशन ऑफ एजुकेशन बल देता है। इसके अन्तर्गत स्मार्ट स्कूलों एवं ई—किताबों के प्रयोग को बढ़ावा दिया जा रहा है। सूचना प्रौद्योगिकी के विभिन्न घटक निम्न प्रकार से हैं—

१. कम्प्यूटर (Computer): एक ऐसी इलेक्ट्रॉनिक डिवाइस है जिसके द्वारा डाटा को प्रोसेस किया जा सकता है. जिस प्रकार का डाटा हम कम्प्यूटर को हम देते हैं उसी के अनुसार हमें परिणाम प्राप्त होता है।

२. इंटरनेट (Internet) : इंटरनेट एक ऐसा साधन है जो देश—विदेश के लोगों को एक दूसरे से जोड़ता है, यह आजकल के युग में सबसे आधुनिक प्रणाली मानी गई है, इंटरनेट किसी भी एक कंपनी या सरकार के अधीन नहीं होता है, इसमें बहुत से मतअमत जुड़े हुए होते हैं, जो कि अलग—अलग संस्थाओं और प्राइवेट कंपनियों के होते हैं.

३. स्मार्टफोन (Smartphone): स्मार्ट फोन उन मोबाइल को कहते हैं जिनकी कम्प्युटिंग क्षमता तथा कनेक्टिविटी आधारभूत फोन की तुलना में अधिक उन्नत होती है। स्मार्टफोन में मिडिया प्लेयर, डिजिटल कैमरा, जीपीएस, टचस्क्रीन, वेब ब्राउजिंग, वाई—फाई, अन्य पार्टियों के — मोबाइल अनुप्रयोग (ऐप्स), गति—संसूचक (motion sensor), मोबाइल पेमेंट आदि विशेषताएं होती हैं. वर्तमान समय में लगभग ८०: स्मार्टफोन गूगल के एंड्रॉइड तथा ऐपल के पवेमोबाइल

प्रचालन तंत्रों पर आधारित हैं।

४. मुक्त शिक्षा संसाधन (Open Education Resource OER): इसके अंतर्गत ''कौशल संवर्धन कक्षाएं, अनुदेशात्मक कक्षाएं, पाठ्यक्रम कक्षाएं, संकल्पना कक्षाएं, कक्षा से परे'' आदि क्रियाओं को संचालित किया जाता है।

५. डिजिटल शिक्षण सामग्री (DigitalTeaching Aids): डिजिटल शिक्षण सामग्री विशेष रूप से बच्चों के सीखने के लिये यह बहुत प्रभावी माध्यम साबित हो रहा है क्योंकि मौलिक ऑडियो—वीडियो सुविधा बच्चे के मस्तिष्क में संज्ञानात्मक तत्त्वों में वृद्धि करती है, बच्चों में जागरूकता, विषय के प्रति रोचकता, उत्साह और मनोरंजन की भावना बनी रहती है। वे सामान्य की अपेक्षा अधिक तेजी से सीखते है।

६. शिक्षण सम्बन्धी एप्प्स (Teaching Related Apps): इस विषय में हम डिजिटल शिक्षण सामग्री के वितरण के लिए तथा प्रत्येक बच्चे तक पहुँचाने के लिए स्मार्टफोन में जिन एप्प्स का विकास भारत या राज्य सरकार द्वारा किया गया है उनके बारे में जानेंगे जैसे — दीक्षा एप्प, मोबाईल शिक्षा आदि।

७. शिक्षण कौशल विकास (Teaching Skill Development): शिक्षण एक विज्ञान है। इस आधार पर प्रशिक्षण द्वारा अच्छे शिक्षक तैयार किये जा सकते हैं. उनमें शिक्षण के लिए आवश्यक कौशलों को विकसित किया जा सकता है. इन्हीं कौशलों का उपयोग कर कक्षा में प्रभावी शिक्षण कर अच्छे शिक्षक बन सकते है। अत: शिक्षक प्रशिक्षण में इन कौशलों का विकास महत्त्वपूर्ण स्थान रखता है।

८. कक्षा शिक्षण तथा स्कूल प्रबंधन में ICT की भूमिका (Role of ICT in Classroom Education and School Management): उच्च शिक्षा में बढ़ता नामांकन अनुपात तथा शिक्षा के विस्तार में प्रशिक्षित शिक्षकों की उपलब्धता में ICT की भूमिका पर 'नेशनल मिशन ऑफ एजुकेशन बल देता है। इसके अन्तर्गत स्मार्ट स्कूलों एवं ई किताबों के प्रयोग को बढ़ावा दिया जा रहा है।

हिंदी में सूचना प्रौद्योगिकी : वर्तमान परिप्रेक्ष्य में सी— डैक, पुणे ने सरकारी कार्यालयों के लिए अँग्रेजी—हिन्दी में पारस्परिक कार्यालयीन सामग्री का अनुवाद करने हेतु मशीन असिस्टेड ट्रांसलेशन मंत्र पैकेज विकसित किया है। हिन्दी वेबसाईट के माध्यम से हिन्दी एवं देवनागरी लिपि को कंप्यूटर भाषा के रूप में विकसित करने में मदद मिल सकती है। अब वर्तमान स्थिति में वेबसाइट पर हिन्दी में इलेक्ट्रोनिक शब्दकोश उपलब्ध है। इसी तरह अँग्रेजी तथा भारतीय— भाषाओं में पारस्परिक अनुवाद प्राप्त करने की सुविधा भी उपलब्ध है। कंप्यूटर एवं इंटरनेट के सहारे शिक्षा का प्रसार तीव्र गति से होने की संभावना बढ़ गयी है। सूचना प्रौद्योगिकी में हिन्दी भाषा का प्रचलन धीरे—धीरे बढ़ रहा है। माइक्रोसॉफ्ट, याहू, रेडिफ, गूगल आदि विदेशी कंपनियों ने अपनी वेबसाइट पर हिन्दी भाषा को स्थान दिया है। भारत सरकार के नेशनल सेंटर फॉर सॉफ्टवेयर टेक्नालजी इंस्टीट्यूट ने सभी भारतीय भाषाओं की लिपि को कम्प्यूटर पर स्थापित करने के लिए विशेष अभियान चलाया है. अमेरिकन माइक्रोसॉफ्ट कंपनी ने एन.सी.एस.टी. (NCST) के साथ एक संयुक्त योजना के तहत विश्व प्रसिद्ध विंडोज प्रणाली पर भारतीय भाषाओं को विकसित करने का कार्य शुरू किया है। इंटरनेट सेवा के अंतर्गत ईदृमेल, चौटिंग, ई—ग्रीटिंग आदि बहुपयोगी क्षेत्र में हिन्दी भाषा का विकास एवं सम्प्रेषण की संभावनाएँ अधिक हैं। कंप्यूटर पर हिन्दी भाषा ध्वनि, चित्र,एनिमेशन के सहारे विकसित की जा रही है। कई इंटरनेट साईट में प्रमुख भारतीय—भाषाओं के लिए उपयुक्त संपर्क सूत्र, ई—मेल,सॉफ्टवेयर आदि जानकारी उपलब्ध है, जैसे www-rajbhasha-com www-indianlanguages-com www-hindinet-com आदि. भारतीय—भाषाओं को विकसित करने हेतु सी. डैक मुंबई में इंडियन लेंग्वेज रिसोर्सेस सेंटर के तहत कम्प्यूटर के क्षेत्र में अनुसंधान जारी है। अब तक हिन्दी शब्दों का विशाल भंडार हिन्दी वर्ड नेट पर विकसित किया गया है। इससे हिन्दी भाषा को विश्व की प्रमुख भाषाओं के साथ जोड़ा जाएगा इक्कीसवीं सदी में विज्ञान व तकनीकी क्षेत्रों में राजभाषा हिन्दी की संभावनाएँ अच्छी हैं। यह तथ्य

सबके सामने उजागर हो चुका है कि आज रेडियो, हिन्दी सिनेमा, दूरदर्शन पर आनेवाली देशी—विदेशी कार्यक्रम हिन्दी की साइटें मोबाइल के संदेश बड़ी मात्रा में हिन्दी को फैला रहे हैं. एक बड़ा वर्ग है जो अंतर्राष्ट्रीय स्तर पर इस क्षेत्र में हिन्दी को अपना रहा है। इस वर्ग को ध्यान में रखकर डबिंग कला हिन्दी पेज— मेकिंग कला मनोरंजनीय हिन्दी (सिनेमा, दूरदर्शन आदि) का लुत्फ उठाने के लिए हिन्दी को सीखने हेतु पाठ्क्रम चलाने की आवश्यकता हैं। हालाँकि हिन्दी में कंप्यूटर शब्दावली के निर्माण में प्रयास किए जा रहें हैं फिर भी अभी भी हिन्दी तकनीकी दृष्टि से पूरी तरह विकसित नहीं है। आज भी इंटरनेट की ८३ प्रतिशत सामाग्री अँग्रेजी में उपलब्ध है। भारत के लिए आवश्यक है कि इंटरनेट की प्रौद्योगिकी से अपने को जोड़े रखे और तकनीकी को हिन्दी सहित भारतीय भाषाओं में विकसित करें शिक्षा के स्तर को बढ़ावा देने के लिए हिंदी भाषा के माध्यम से सूचना प्राद्योगिकी को बढ़ावा देना आवश्यक है। हिंदी जनसामान्य की भाषा होने के कारन भारत के विभिन्न भागों में इसका प्रचार—प्रसार करना संभव होगा। यदि इसके साथ सूचना प्राद्योगिकी को जोड़ा जाए तो और बेहतर परिणाम मिल सकते है।

निष्कर्ष :

पिछले कुछ वर्षों में विज्ञान के क्षेत्र में अनेक परिवर्तन आये हैं. विश्व में चारोंओर सूचना ओर प्रौद्योगिकी क्रान्ति चल रही है, जिस कारण सूचना युग का प्रारम्भ हो चुका है। जापान और अमेरिका जैस देश अपनी विकासशीलता के कार पहले स हीऔद्योगिक समाज से सूचना समाज में बदल चुके हैं। मानव सभ्यता ने पिछलेपचास—सा वर्षों में जितना वैज्ञानिकता को ग्रहण किया है, वह मानव सभ्यता के इतिहास का नब्बे प्रतिशत बैठता है। इस ज्ञान में सबसे ज्यादा हिस्सा सूचना प्रौद्योगिकी का है। हिन्दी लेखन भी आधुनिक विज्ञान एवं प्रौद्योगिकी से प्रभावित हुआ है। हमारी भाषा हिन्दी अब देश की सीमाओं को लाँघकर विदेशों में पहुँच रही है। हम कह सकते है की सुचना प्राद्योगिकी के साथ यदि हिंदी को जोड़ा जाता है तो यकीनन

हिंदी भाषा दुनिया पर राज करेगी. हिंदी में वह ताकद है की जो दुनिया के लिए एक आदर्श भाषा के रूप में नेतृत्व करेगी आज शिक्षा के क्षेत्र में सुचना प्राद्योगिकी ने बुनियादी बदलाव निर्माण किये है। हिंदी को इसी बदलावों को स्वीकार कर आगे बढना होगा। समय के साथ बदलने वाली भाषा दुनिया की बहतरीन तथा सफल भाषाओँ में से एक बन जाती है।

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सूचना प्रौद्योगिकी में हिंदी

डॉ. नितीन कुंभार
सहायक प्राध्यापक हिंदी विभाग
कला, वाणिज्य एवं विज्ञान महाविद्यालय,
किल्ले धारुर जि. बीड महाराष्ट्र

भारत जैसे बहुभाषी देश में अधिक से अधिक लोगों को उनकी अपनी भाषा में सूचना और सेवाओं के लिए सार्वभौमिक पहुँच उपलब्ध कराना अंतर्निहित प्राथमिक चिंता और चुनौतीपूर्ण विषय है। चूंकि दुनिया भर में प्रौद्योगिकी क्रांति सूचना और संचार प्रौद्योगिकी (आईसीटी) के आसपास केंद्रित है, अंत: मानव भाषा प्रौद्योगिकी (एचएलटी) के क्षेत्र में उन्नति से लोगों के लिए यह सुविधाजनक हो गया है कि वे मशीनों के साथ बातचीत कर सकते हैं। चूंकि भाषा विविधता का समर्थन करने के लिए उपकरण और भारतीय भाषा प्रौद्योगिकी के क्षेत्र में सूचना सशक्तिकरण की अहम जरूरतों को पूरा करते हुए इसमें विविध पृष्ठभूमि वाले लोगों, एक अनपढ़ भूमि टिलर जो अपने छोटे से खेत के प्रासंगिक भू—अभिलेखों को जानना चाहते से लेकर एक उच्च अंत कंप्यूटर पेशेवरों जो समस्या फिक्सिंग पर ध्यान केंद्रित कर अत्याधुनिक प्रयोगशालाओं में ध्यान केंद्रित कर रहे हैं, को लाभान्वि त करने की शक्ति है। किए गए अन्य प्रमुख प्रयासों में क्रॉस लिंगुअल इंफर्मेशन एक्सेस एंड रिट्रिवल, मानव मशीन इंटरफेस प्रणाली, स्वचालित भाषण पहचान (एएसआर), टेक्स्ट टू

स्पीच सिस्टम (टीटीएस), भाषा प्रसंस्करण और वेब उपकरण, भारतीय भाषाओं में आईटी उपकरण और समाधानों का अनुकूलन, भाषा प्रौद्योगिकी में मानव संसाधन विकास शामिल हैं।

भारत में, बहुभाषी वेब सामग्री त्वरित विकास के लिए तैयार है और इसलिए, वहाँ उपयोगकर्ता के अनुकूल और लागत प्रभावी उपकरण, अनुप्रयोगों और ऐसी सूचना सामग्री प्रदान करना एक बड़ी चुनौती है, जो विभिन्न भारतीय भाषाओं में आईसीटी बुनियादी अवसंरचना के लिए पहुँच सक्षम बनाते हैं। इलेक्ट्रॉनिकी और सूचना प्रौद्योगिकी विभाग में एक महत्वाकांक्षी कार्यक्रम (भारतीय भाषाओं के लिए प्रौद्योगिकी विकास) चल रहा है, जिसका उद्देश्य भाषा बाधा के बिना मानव—मशीन संपर्क की सुविधा के लिए सूचना संसाधन उपकरण और प्रौद्योगिकी का विकासय बहुभाषी ज्ञान संसाधनों का सृजन और मूल्यांकन और अभिनव उपयोगकर्ता उत्पादों और सेवाओं को विकसित करने के लिए उन्हें एकीकृत करना है। प्राथमिक उद्देश्यों में सभी २२ आधिकारिक तौर पर मान्यता प्राप्त भारतीय भाषाओं के लिए सॉफ्टवेयर उपकरण और अनुप्रयोग विकसित करना, भविष्य की प्रौद्योगिकियों के सहयोगी विकास में योगदान करना जिसके परिणामस्वरूप अभिनव उत्पाद और सेवाएं उत्पन्न होंगी, भाषा प्रौद्योगिकी उत्पादों के प्रसार हेतु एक उत्प्रेरक के रूप में कार्य करना और सभी स्तरों पर समाधान और मानकीकरण सेवाएं उपलब्ध कराना है। माननीय वित्त मंत्री द्वारा बजट २०२१ में राष्ट्रीय भाषा अनुवाद मिशन (एनएलटीएम) नामक एक मिशन की भी घोषणा की गई है। इससे उपरोक्त लक्ष्यों की प्राप्ति में तेजी आएगी।आज का युग वैज्ञानिक व तकनीकी क्रान्ति का युग है। सूचना क्रांति ने पूरे भूमंडल को समेट कर छोटा कर दिया है। राष्ट्रभाषा की जगह अब विश्वभाषा की बात चल रही है। राष्ट्रीय स्तर से आगे बढ़कर एक राष्ट्र दूसरे राष्ट्रों के साथ विविध मामलों में संपर्क करता है। उसे सांस्कृतिक, वाणिज्यपरक तथा शैक्षणिक आदान प्रदान करना ही पड़ता है।

सूचना प्रौद्योगिकी एक सरल तंत्र है जो तकनीकी उपकरणों

के सहारे सूचनाओं का संकलन, प्रक्रिया एवं सम्प्रेषण करता है। सूचना प्रौद्योगिकी के क्षेत्र में कंप्यूटर का अत्यंत महत्व है जिससे व्यावसायिक वाणिज्यिक, जनसंचार शिक्षा, चिकित्सा आदि कई क्षेत्र लाभान्वित हुए हैं। कंप्यूटर और सूचना टेक्नॉलॉजी के क्षेत्र में आज जो नया विस्फोट हुआ है वह भाषा में भी एक मौन क्रांति का वाहक बनकर आया है। अभी तक भाषा को मनुष्य की आवश्यकताओं को पूरा करना पड़ता था लेकिन आज इसे न केवल मनुष्य की आवश्यकताओं को पूरा करना पड़ रहा है, बल्कि मशीन और कम्प्यूटर की नयी भाषाई माँगों को भी पूरा करना पड़ रहा है।

हिंदी एक सशक्त भाषा है। सदियों से भारत जैसे बहुभाषी देश की सबसे बड़ी संपर्क भाषा होने के साथ—साथ, आज यह विश्व की तीन सबसे बड़ी भाषाओं में से एक है। लगभग एक करोड़ बीस लाख भारतीय मूल के लोग विश्व के १३२ देशों में बिखरे हुए हैं जिसमें आधे से अधिक हिंदी भाषा को व्यवहार में लातें हैं। गत पचास वर्षों में हिंदी की शब्द—सम्पदा का जितना विस्तार हुआ है उतना विश्व की शायद ही किसी भाषा में हुआ हो। विदेशों में हिंदी के पठनदृपाठन और प्रचार—प्रसार का कार्य हो रहा है। दूर संचार माध्यमों, फिल्मों, गीतों, हिंदी पत्र—पत्रिकाओं आदि ने भी प्रचार—प्रसार में अपनी अहम भूमिका अदा की है। तकनीकी एवं प्रौद्योगिकी के क्षेत्र में भारत का वर्चस्व तेजी से बढ़ रहा है।आज टेक्नॉलॉजी की भाषा को आम आदमी के नजदीक पहुँचाने की आवश्यकता बढ़ गयी है। मुक्त बाजार और वैश्वीकरण के दबावों ने हिंदी को जरूरत और माँग के अनुकूल ढालने में भूमिका निभाई है। विश्व में अब उसी भाषा को प्रधानता मिलेगी जिसका व्याकरण संगत होगा, जिसकी लिपि कम्प्यूटर की लिपि होगी। चूँकि हिंदी भाषा का व्याकरण वैज्ञानिक आधार पर बना है इसलिए देवनागरी लिपि कम्प्यूटर यंत्र की प्रक्रिया के अनुकूल है। इसमें विश्व की किसी भी भाषा एवं ध्वनि का लिप्यांकन किया जा सकता है। कम्प्यूटर के हिंदीकरण के लिए लगभग एक दर्जन भारतीय संगणक निर्माता प्रयत्नरत हैं। उनके अथक परिश्रम से आज

बाजार में हिंदी में कार्य करने के लिए लगभग डेढ़ दर्जन छोटे बड़े द्विभाषिक प्रोग्राम, सॉफ्टवेअर, हार्डवेयर के रूप में उपलब्ध हैं। इनका प्रयोग करके हिन्दी भाषा और प्रकाशन उद्योग को विकसित किया गया है। बिल गेट्स ने भी स्वीकार किया है कि कम्प्यूटर की भाषा हिंदी हो सकती है। क्योंकि रोमन लिपि की तुलना में देवनागरी लिपि अधिक वैज्ञानिक है। हिंदी ध्वनि, विज्ञान दृष्टि से आसान और सरल है, उसमें जैसा बोला जाता है वैसा लिखा जाता है।

कम्प्यूटर में हिंदी की बढ़ती संभावनाओं को ध्यान में रखकर इलेक्ट्रोनिक विभाग ने भारतीय भाषाओं के लिए टेक्नॉलजी विकास नामक परियोजनाओं के अंतर्गत कई प्रोजेक्ट शुरू किए हैं। इस प्रयास में आईऊ आईऊ टी कानपुर और सी दृ डैक (प्रगत संगणक विकास केंद्र) की भूमिका प्रमुख थी। यूनिकोड इस दिशा में एक बड़ी क्रांति है। हिंदी का यूनिकोड फॉन्ट मंगल एवं अन्य सभी भारतीय भाषाओं के फॉन्ट इनबिल्ट है। हम सभी को यूनिकोड समर्थित सुविधा का प्रयोग शुरू कर देना चाहिए ताकि पूरी दुनिया में हिंदी कामकाज में एकरूपता लाई जा सके और एक कम्प्यूटर से दूसरे कम्प्यूटर में, दुनिया के किसी भी कोने में हमारी हिंदी की फाइल खुल जाए।

आज विंडोज प्लेटफॉर्म में काम करने वाले अनेक हिंदी सॉफ्टवेयर मार्केट में उपलब्ध हैं, जैसे, सी दृ डैक का इज्म आफिस, अक्षर फॉर विंडोज, सुविंडोज और आकृति माइक्रोसॉफ्ट ऑफिस, हिन्दी में स्क्रीन का समस्त परिवेश जैसे कमान, संदेश, फाइल नाम आदि भी हिंदी में उपलब्ध हैं।बीसवीं शताब्दी में जैसे—जैसे भारत ने विज्ञान और तकनीकी, अन्तरिक्ष विज्ञान, अणु विज्ञान एवं उद्योग आदि के क्षेत्र में नई मंजिलें तय कीं, वैसे—वैसे देश में इन विषयों के हिंदी शब्दावली को विकसित करने की कोशिश की गयी है। सूचना प्रौद्योगिकी के तहत मशीनी अनुवाद एवं लिप्यंतरण सहज एवं सरल हो गया है। सी— डैक, पुणे ने सरकारी कार्यालयों के लिए अँग्रेजी—हिंदी में पारस्परिक कार्यालयीन सामग्री का अनुवाद करने हेतु मशीन असिस्टेड ट्रांसलेशन मंत्र पैकेज विकसित किया है। हिंदी वेबसाईट के

माध्यम से हिंदी एवं देवनागरी लिपि को कंप्यूटर भाषा के रूप में विकसित करने में मदद मिल सकती है। अब वर्तमान स्थिति में वेबसाइट पर हिंदी में इलेक्ट्रोनिक शब्दकोश उपलब्ध है। इसी तरह अँग्रेजी तथा भारतीय— भाषाओं में पारस्परिक अनुवाद प्राप्त करने की सुविधा भी उपलब्ध है। कंप्यूटर एवं इंटरनेट के सहारे शिक्षा का प्रसार तीव्र गति से होने की संभावना बढ़ गयी है। सूचना प्रौद्योगिकी में हिंदी भाषा का प्रचलन धीरे—धीरे बढ़ रहा है। माइक्रोसॉफ्ट, याहू, रेडिफ, गूगल आदि विदेशी कंपनियों ने अपनी वेबसाइट पर हिंदी भाषा को स्थान दिया है।

भारत सरकार के नेशनल सेंटर फॉर सॉफ्टवेयर टेक्नालजी इंस्टीट्यूट ने सभी भारतीय भाषाओं की लिपि को कम्प्यूटर पर स्थापित करने के लिए विशेष अभियान चलाया है। अमेरिकन माइक्रोसॉफ्ट कंपनी ने एन.सी.एस.टी.(NCST) के साथ एक संयुक्त योजना के तहत विश्व प्रसिद्ध विंडोज प्रणाली पर भारतीय भाषाओं को विकसित करने का कार्य शुरू किया है। इंटरनेट सेवा के अंतर्गत ईदृमेल, चौटिंग, ई—ग्रीटिंग आदि बहुपयोगी क्षेत्र में हिंदी भाषा का विकास एवं सम्प्रेषण की संभावनाएँ अधिक हैं। कंप्यूटर पर हिंदी भाषा ध्वनि, चित्र, एनिमेशन के सहारे विकसित की जा रही है। कई इंटरनेट साईट में प्रमुख भारतीय—भाषाओं के लिए उपयुक्त संपर्क सूत्र, ई—मेल, सॉफ्टवेयर आदि जानकारी उपलब्ध है, जैसे www-rajbhasha-com] www-indianlanguages-com, www-hindinet-com आदि। भारतीय—भाषाओं को विकसित करने हेतु सी दृ डैक मुंबई में इंडियन लेंग्वेज रिसोर्सेस सेंटर के तहत कम्प्यूटर के क्षेत्र में अनुसंधान जारी है। अब तक हिंदी शब्दों का विशाल भंडार हिंदी वर्ड नेट पर विकसित किया गया है। इससे हिंदी भाषा को विश्व की प्रमुख भाषाओं के साथ जोड़ा जाएगा।

निष्कर्ष

इक्कीसवीं सदी में विज्ञान व तकनीकी क्षेत्रों में राजभाषा हिन्दी की संभावनाएँ अच्छी हैं। अमेरिका जैसे विकसित राष्ट्र ने भी अपने यहाँ M-B-। के छात्रों के लिए एक वर्षीय हिंदी पाठ्यक्रम

अनिवार्य कर दिया है। यह तथ्य सबके सामने उजागर हो चुका है कि आज रेडियो, हिंदी सिनेमा, दूरदर्शन पर आनेवाली देशी—विदेशी कार्यक्रम हिंदी की साइटें मोबाइल के संदेश बड़ी मात्रा में हिंदी को फैला रहे हैं। एक बड़ा वर्ग है जो अंतर्राष्ट्रीय स्तर पर इस क्षेत्र में हिंदी को अपना रहा है। इस वर्ग को ध्यान में रखकर डबिंग कला हिंदी पेज— मेकिंग कला मनोरंजनीय हिंदी (सिनेमा, दूरदर्शन आदि) का लुत्फ उठाने के लिए हिंदी को सीखने हेतु पाठ्यक्रम चलाने की आवश्यकता हैं। हालाँकि हिंदी में कंप्यूटर शब्दावली के निर्माण में प्रयास किए जा रहें हैं फिर भी अभी भी हिंदी तकनीकी दृष्टि से पूरी तरह विकसित नहीं है। विश्व स्तर के कई सॉफ्टवेयर में अभी तक हिंदी का समावेश नहीं किया गया है। आज भी इंटरनेट की ८३ प्रतिशत सामाग्री अँग्रेजी में उपलब्ध है। भारत के लिए आवश्यक है कि इंटरनेट की प्रौद्योगिकी से अपने को जोड़े रखे और तकनीकी को हिंदी सहित भारतीय भाषाओं में विकसित करें।

संदर्भ ग्रंथ

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ग्रंथालयामध्ये आय. सी. टी. चा वापर

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गोषवारा:

सदरील संशोधन हे माहिती संप्रेषण आणि तंत्रज्ञान कशाप्रकारे ग्रंथालयामध्ये आपली भूमिका बजावते आहे या संदर्भात आहे. आयसीटीमुळे शैक्षणिक ग्रंथालयांचे स्वरूप बदलले आहे. शैक्षणिक ग्रंथालयाचा संकरित संदर्भ देण्यासाठी, डिजिटल आणि आभासी ग्रंथालय यासारख्या विविध संज्ञा वापरल्या जातात. आयटी आधारित सेवा वापरकर्त्यांच्या सर्व गरजा योग्य मार्गाने, योग्य वेळी आणि योग्य वापरकर्त्याने पूर्ण करतात. आयसीटीने संपूर्ण जग ग्लोबल व्हिलेजमध्ये बदलले आहे. आज आयसीटी हा जगभरातील माहितीचा प्रवेश, माहितीचा प्रसार आणि माहिती संप्रेषणाचा महत्त्वाचा घटक आहे. लायब्ररींसाठी, आयसीटी संसाधनांचे व्यवस्थापन, गृहनिर्माण ऑपरेशन्स तसेच सेवा वितरीत करण्याच्या पद्धतीमध्ये अत्यंत बदल करत आहे. वापरकर्त्यांना कोणत्याही मानवी सहभागाशिवाय अनेक सेवांचा लाभ घेण्याचे अधिकार दिले आहेत. आज ग्रंथपालांना बदलाचे

आव्हान स्वीकारावे लागेल आणि वेगाने बदलत असलेल्या हाय—टेक समाजाचे माहिती व्यावसायिक म्हणून काम करावे लागेल.

परिचय:

आयसीटीच्या विकासामुळे आणि अनुप्रयोगामुळे, ग्रंथालयांची संपूर्ण परिस्थिती बदलली आहे. पारंपारिक ग्रंथालयांकडून संकरित ग्रंथालयांकडे वळत आहे. ज्ञानाच्या विश्वात विविध नावांनी कार्यरत असलेल्या ग्रंथालयांचा उदय आपण पाहतो. ही लायब्ररी स्वयंचलित लायब्ररी, इलेक्ट्रॉनिक लायब्ररी, डिजिटल लायब्ररी किंवा सर्वव्यापी आभासी लायब्ररी आहेत. वेब वातावरणात लायब्ररी २.० ची संकल्पना उदयास आली आहे. ही सर्व ग्रंथालये साहित्य संपादन करण्यापासून माहितीचा प्रसार करण्यापर्यंतच्या क्रियाकलापांसाठी विविध माहिती तंत्रज्ञान अनुप्रयोग वापरत आहेत. डिजिटल लायब्ररीची व्याख्या ''संबंधित सेवांसह माहितीचे व्यवस्थापित संग्रह जेथे माहिती डिजिटल स्वरूपात संग्रहित केली जाते आणि नेटवर्कवर प्रवेश करता येते'' अशी केली जाऊ शकते. माहिती आणि संप्रेषण तंत्रज्ञानाने जागतिक स्तरावर ग्रंथालय सेवांचा कायापालट केला आहे. र्बयाच वर्तमान माहितीची नोंद इलेक्ट्रॉनिक स्वरूपात केली जाते, आयसीटीने ग्रंथपालांच्या त्यांच्या कर्तव्ये पार पाडण्यात जसे की कॅटलॉगिंग, संदर्भ सेवा, परिसंचरण व्यवस्थापन, मालिका नियंत्रण इत्यादींमध्ये खूप मोठे योगदान दिले आहे. आयसीटीने खालील विशिष्ट गोष्टींमध्ये ग्रंथालयासाठी योगदान दिले आहे.

माहिती तंत्रज्ञानाचे फायदे:

लायब्ररी ऑपरेशन्समध्ये प्रयत्न आणि कामाचे डुप्लिकेशन टाळण्यास मदत करतात. लायब्ररी नेटवर्कद्वारे सहकार्य आणि संसाधने सामायिकरण सुलभ करते. नवीन सेवा सादर करण्यास आणि विद्यमान सेवा सुधारण्यास मदत करते. विविध लायब्ररी ऑपरेशन्सच्या एकत्रीकरणास अनुमती देते.

जलद माहिती संप्रेषण सुलभ करते. सेवांची गुणवत्ता आणि श्रेणी वाढवण्यास मदत करते. ग्रंथालय कर्मचाऱ्यांचे मनोबल आणि

प्रेरणा वाढते. सर्व प्रकारच्या माहिती स्रोतांमध्ये सुलभ आणि व्यापक प्रवेशाची सुविधा देते. लायब्ररीच्या कामकाजात कार्यक्षमता आणि परिणामकारकता वाढवण्यास मदत होते. लायब्ररीची उत्पादकता आणि प्रतिमा सुधारण्यास मदत करते.

लायब्ररी व्यवस्थापन सॉफ्टवेअर्स:

लायब्ररी विविध लायब्ररी दिनचर्या आणि प्रक्रिया व्यवस्थापित करण्यासाठी डिझाइन केलेले सॉफ्टवेअर वापरतात. यापैकी बहुतेक सॉफ्टवेअर्स एकात्मिक आहेत आणि लायब्ररीमध्ये विविध क्रियाकलाप किंवा कार्ये जसे की कॅटलॉगिंग, सांख्यिकी, संपादन प्रक्रिया, मालिका नियंत्रण इत्यादींसाठी मॉड्यूल आहेत. अशा सॉफ्टवेअरची काही उदाहरणे म्हणजे C-D-S-/I-S-I-S- ,G-L-A-S-, A-L-I-C-E- X & Lib and SLAM चा वापर युनिव्हर्सिटी लायब्ररी मध्ये केला जातो आणि याचा अर्थ (स्ट्रॅटेजिक लायब्ररी ऑटोमेशन मॅनेजमेंट) आहे.

ओ. पी. ए. सी.:

याचा अर्थ ऑनलाइन सार्वजनिक प्रवेश कॅटलॉग आहे आणि लायब्ररी कॅटलॉगची संगणकीकृत आवश्ती किंवा लायब्ररी होल्डिंग्सचा डेटाबेस आहे. मॅन्युअल पद्धतींपेक्षा ओ. पी. ए. सी चा फायदा म्हणजे वापर सोपा आहे आणि जागा वाचवते. हे स्थानिक इंट्रानेट, एक्स्ट्रानेट किंवा अगदी इंटरनेटवर लायब्ररीच्या कॅटलॉगमध्ये प्रवेश प्रदान करते.

ऑफिस ऑपरेशन्स:

आयसीटी द्वारे वर्ड प्रोसेसिंग, अकाउंटिंग, डेटाबेस मॅनेजमेंट आणि ई—मेलद्वारे संप्रेषण हे सर्व ऑफिस ऑपरेशन्स लायब्ररीमध्ये सक्षम आहेत.

नेटवर्किंग:

ग्रंथालयाचे वापरकर्ते विविध प्रकारच्या माहिती जसे की ऑनलाइन डेटाबेस, ई—जर्नल्स, ई—पुस्तके, सरकारी प्रकाशने नेटवर्क सिस्टमद्वारे डिजिटल पद्धतीने ॲक्सेस करू शकतात. इंटरनेट किंवा इंट्रानेटद्वारे दूरस्थपणे ऑनलाइन प्रवेशास अनुमती दिली जाऊ शकते. इलेक्ट्रॉनिक दस्तऐवज वितरण:

ग्रंथालय वापरकर्त्यांना दस्तऐवज पाठवण्यासाठी किंवा आंतरलायब्ररी कर्ज देण्यासाठी पोस्टल सेवांवर अवलंबून राहू शकत नाहीत. लायब्ररी इलेक्ट्रॉनिक नेटवर्कद्वारे दस्तऐवज पाठवतात जे विविध स्वरूपात दस्तऐवज वितरीत करू शकतात उदा. पी. डी. एफ. थेट वापरकर्त्यांच्या डेस्कटॉपवर.

वितरण प्रणाली:

पारंपारिक प्रणालीमध्ये वितरण प्रक्रिया खूप लांब असते आणि पुनरावृत्ती केलेल्या कामांमध्ये कर्मचारी तसेच ग्रंथपाल यांचा बराच वेळ खर्च होतो. संगणक, बारकोड स्कॅनर यांसारख्या तांत्रिक उपकरणांचा वापर आणि त्यातील सॉफ्टवेअर्सचा वापर या नियमित ऑपरेशन्स सहज आणि त्वरीत पार पाडण्यास मदत करतो. वितरण नियंत्रण प्रणालीच्या संगणकीकरणासाठी शैक्षणिक लायब्ररी हाताळण्यासाठी योग्य उमेदवार आहेत कारण त्यांच्या वारंवारतेमध्ये दररोज परिचालित व्यवहारांचे प्रमाण जास्त असते. रिकॉल नोटिस छापणे, कर्जाचे नूतनीकरण, दंड प्रसारित करणे, दंडाच्या नोटिसांची छपाई सारांश, आकडेवारीचे विश्लेषण , देय तारीख स्लिप छापणे, हरवलेल्या पुस्तकांसाठी आपोआप ऑर्डर तयार करणे आणि आंतर—ग्रंथालय देय व्यवहारांसाठी तरतूद.

आर्टिकल इंडेक्सिंग सिस्टीम:

आर्टिकल इंडेक्सिंग सिस्टम सुविधा विविध जर्नल्स, तांत्रिक अहवाल, कॉन्फरन्स प्रोसिडिंग्स, मोनोग्राफ इत्यादींमधून एखाद्या लेखाचे अनुक्रमणिका आणि ॲबस्ट्रॅक्टिंग करते. यात लेखाचे स्कॅनिंग, उद्धरण प्रविष्ट करणे आणि लेखक, कीवर्ड, ठेवीदार आणि अगदी ऑनलाइन शोध यांचा समावेश होतो त्याचप्रमणे शब्द—आधारित विनामूल्य शोध. ही प्रणाली नियतकालिक दस्तऐवजीकरण सूची, विशिष्ट विषयांवरील संदर्भग्रंथ इत्यादी देखील प्रदान करते.

मालिका नियंत्रण प्रणाली:

मालिकांमध्ये नियतकालिके, वर्तमानपत्रे, हस्तपुस्तिका, जर्नल्स, प्रक्रिया, व्यवहार इ. आणि मोनोग्राफिक मालिका यांचा समावेश होतो.

मालिका त्यांच्या चालू स्वभावामुळे मोनोग्राफ पेक्षा वेगळे आहेत. मालिका वर्गणीचे सतत स्वरूप समस्या निर्माण करते आणि ती एक जटिल प्रक्रिया बनवते ज्यासाठी स्वतंत्र नियंत्रण प्रणाली आवश्यक असते. स्वयंचलित मालिका नियंत्रण प्रणाली खालील फायदे प्रदान करते:

➢ नवीन जर्नल्स ऑर्डर करणे, नूतनीकरण, बंद करणे, स्मरणपत्रे पाठवणे जर्नल्स प्राप्त करणे. प्राप्त नियतकालिकांची यादी तयार करणे, रद्द नियतकालिक यादी तयार करणे, होल्डिंगची यादी तयार करणे, त्यांच्या स्थितीसह सूची धारण करणे (म्हणजे शेल्फवर, बंधनात, अभिसरणात इ.)

➢ बाइंडरी व्यवस्थापन रेकॉर्डिंग आणि बंधनकारक खंड जोडणे.

➢ बंधनकारक सबस्क्रिप्शन, इत्यादींवर खर्च केलेल्या रकमेचा मागोवा ठेवणे पुढील वर्षाच्या अर्थसंकल्पाचा अंदाज रेकॉर्डिंगसाठी हरवलेल्या मालिकांची घोषणा.

ऑनलाइन वापरकर्ता शिक्षण किंवा ट्यूटोरियल:

ग्रंथालय त्यांच्या वापरकर्त्यांना शिक्षित करण्यासाठी किंवा माहिती साक्षरता कार्यक्रम पार पाडण्यासाठी इंटरनेट वापरू शकतात. सर्वांसाठी वापरकर्ता शिक्षण अधिक सोयीस्कर बनवण्यासाठी व्हर्च्युअल टूर ऑनलाइन ऑफर केल्या जाऊ शकतात.

ई—संदर्भ सेवा:

काही सेवा जसे की एस. डी. आय. (माहितीचा निवडक प्रसार) किंवा वर्तमान जागरूकता सेवा (सी. एस. आय.) आणि आभासी संदर्भ डेस्क, नवीन अधिग्रहणांच्या घोषणा आणि इतर वाचक सल्लागार सेवा इंटरनेटद्वारे सुलभ केल्या जाऊ शकतात. वापरकर्ते संदर्भ स्टाफशी ऑनलाइन संवाद साधू शकतात.

लायब्ररी सहकार्य आणि संसाधनांची देवाणघेवाण:

केंद्रीय युनियन कॅटलॉग आयसीटी द्वारे अधिक चांगल्या प्रकारे व्यवस्थापित केले जाऊ शकते, अशा प्रकारे ग्रंथालये डिजिटल स्वरूपात ग्रंथसूची रेकॉर्ड आणि इतर माहिती संसाधने तयार आणि सामायिक करू शकतात.

संस्थात्मक भांडारः

संस्थात्मक भांडार ही अशी प्रकाशने आहेत जी विद्यापीठ समुदायातून स्थानिक पातळीवर उगम पावतात जसे की प्रबंध, प्रबंध अहवाल, कॉन्फरन्स पेपर्स आणि सेमिनार पेपर्स. आयसीटीने केवळ या संसाधनांमध्ये उत्तम प्रवेश प्रदान करणे शक्य केले नाही तर संसाधनांचे संरक्षण सुनिश्चित करणे देखील शक्य केले आहे.

ई—लायब्ररीः

डिजिटल लायब्ररी सी. डी. रोम सारख्या डिजिटल फॉरमॅटवर रेकॉर्ड केलेल्या माहितीवर अवलंबून असतात. व्हर्च्युअल लायब्ररी ही लायब्ररी आहे जी भौतिक जागेत किंवा संरचनेत अस्तित्वात नसतात परंतु नेटवर्कद्वारे प्रवेश करता येतात. उदा. नायजेरियन व्हर्च्युअल लायब्ररी.

सोशल मीडिया नेटवर्क्सः

ट्विटर, फेसबॉक आणि लिंक्डइन सारखी सोशल मीडिया नेटवर्क, काही परस्परसंवादी इंटरनेट सेवा आहेत ज्या सध्या ग्रंथपालांसाठी आणि त्यांच्या वापरांसाठी संवाद मंच म्हणून काम करत आहेत. हे नेटवर्क शैक्षणिक वापरासाठी तैनात केले जाऊ शकतात. चर्चा गट, लिस्टर्सवर आणि समुदाय देखील ग्रंथालय सेवांना मदत करतात.

तंत्रज्ञान महत्वाची भूमिका बजावतेः

माहितीच्या बदलत्या वातावरणात तंत्रज्ञान महत्त्वाची भूमिका बजावते आणि जीवनाची मूलभूत गरज बनते. माहितीची बहु—विषय वाढ प्रत्येक दस्तऐवज त्याच्या वापरकर्त्यासाठी आवश्यक बनवते. वाचनालयाला सर्व माहिती मिळणे अशक्य झाल्याने जगभरातून विविध स्वरूपात माहिती तयार केली जात आहे. ग्रंथालय ही सर्व माहिती आपल्या वापरकर्त्यांना प्रभावी ग्रंथालय सेवा आणि तंत्रज्ञानाच्या योग्य अंमलबजावणीद्वारे प्रदान करू शकते. लायब्ररी वापरकर्त्यांना त्यांच्या गरजेनुसार जर्नल्स, पाठ्यपुस्तके, ज्ञानकोश, वर्तमानपत्रे, वार्षिक पुस्तके इत्यादींद्वारे माहिती पुरवते, तसेच सीडी—रॉम, फ्लॉपी, डीव्हीडी, ऑनलाइन डेटाबेस इत्यादी सामग्री विविध स्वरूपांमध्ये उपलब्ध आहे.

निष्कर्ष :

आगामी काळात, जग एखाद्या कर्मचाऱ्याच्या वैयक्तिक कौशल्यापेक्षा तंत्रज्ञानावर अधिक अवलंबून असेल अशा प्रकारे माहिती संप्रेषण आणि तंत्रज्ञान टूल्सचा सर्वांना खूप फायदा होतो जेव्हा ते अधिक तपशीलवार आणि निर्दिष्ट माहिती प्रदान करतात, लोक जेंव्हा माहिती मिळविण्यासाठी संगणकावर संशोधन करू शकतात. तथापि, ही आयसीटी साधने चुकीच्या पद्धतीने वापरली जातात तेव्हा वापरकर्त्याचे मन व्यत्यय आणू शकते. आयसीटीमुळे लायब्ररीचे काम सोपे, जलद, स्वस्त आणि अधिक प्रभावी बनवते. हे माहिती व्यवस्थापित करण्यास मदत करते कारण संगणकीकृत प्रणालींमध्ये माहिती पुनर्प्राप्त करणे सोपे होते. संगणकीकरणामुळे जागा वाचते आणि कागदपत्रे कमी होतात. याने ग्रंथालय आणि माहिती विज्ञान व्यावसायिकांना मूल्यवर्धित सेवा प्रदान करण्यासाठी आणि उपलब्ध माहिती संसाधनांमध्ये अधिक दूरस्थ प्रवेश देण्यासाठी सहाय्य केले आहे. जनसहाय्यित ग्रंथालय आणि माहिती विज्ञान व्यावसायिकांना मूल्यवर्धित सेवा प्रदान करतात आणि उपलब्ध माहिती संसाधनांमध्ये अधिक दूरस्थ प्रवेश देतात. माहिती आणि संप्रेषण तंत्रज्ञान संचयित माहितीचे जलद पुनर्प्राप्ती प्रदान करते आणि आमच्या पारंपारिक लायब्ररीला आधुनिक लायब्ररीमध्ये सुधारित करते.

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4) Sampath Kumar, B. T., & Biradar, B. S. (2010). Use of ICT in College Libraries in Karnataka, India: a Survey. Program: Electronic Library and Information Systems , 44 (3), 271 - 282.

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Google form: एक प्रभावी मूल्यमापन साधन

श्री. गोपाळ सगर
ग्रंथपाल

डॉ. गोपाळ काकडे
सहयोगी प्राध्यापक

श्री. गहिनीनाथ गोयेकर
कनिष्ठ महाविद्यालयीन शिक्षक
कला, वाणिज्य व विज्ञान महाविद्यालय, किल्लेधारूर जि. बीड

प्रस्तावना :

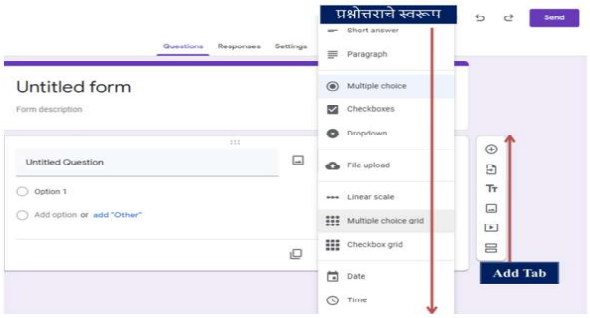
सध्याच्या माहिती—तंत्रज्ञानाच्या युगात गुगल फॉर्म हे शैक्षणिक क्षेत्रात माहिती मिळवणे व माहितीची मूल्यमापन करण्यासाठी अतिशय महत्त्वाचे साधन म्हणून वापरले जात आहे. गुगल फॉर्म हे गुगल चे प्रॉडक्ट असून सुरुवातीला याचा उपयोग हा मोठ्या प्रमाणात सर्वेक्षण अहवालात केला जात असे, परंतु अलीकडील काळात व विशेषत: कोरोना महा मारीत शैक्षणिक क्षेत्रात गुगल फॉर्म हे एक शिक्षकासाठी प्रभावी मूल्यमापन साधन ठरत आहे. गुगल फॉर्म चा उपयोग व प्रसार हा कोरूना पंडेमिक काळात मोठ्या प्रमाणात झालेला दिसून येतो. कोरोना पंडेमिक मुळे शिक्षण क्षेत्रात ऑनलाईन धोरणाचा अवलंब करण्यात आला अशा परिस्थितीत विद्यार्थ्यांना अध्यापनासाठी झूम

गुगल मीट वेबेक्स यासारखी ॲप उपलब्ध होते. परंतु परीक्षा व मूल्यमापनाच्या दृष्टिकोनातून मूल्यमापनावर आधारित विशिष्ट असे ॲप विकसित झालेले नव्हते. अशा परिस्थितीत गुगल फॉर्म हे सर्व परीक्षा व मूल्यमापनासाठी अत्यंत प्रभावी साधन म्हणून अमलात आले. विशेषत: वस्तुनिष्ठ प्रश्नावली साठी व कोरोना मारीत गुगल फॉर्म हे एकमेव प्रभावी साधन म्हणून वापरले जाऊ लागले.

वैशिष्ट्ये :

शैक्षणिक क्षेत्रात शिक्षक गुगल फॉर्म च्या माध्यमातून प्रश्नावली तयार करतात व त्याची लिंक ऑनलाइन स्वरूपात विद्यार्थ्यांना दिली जाते. सदरील प्रश्नावली योग्य ती वेळ देता येत असल्यामुळे विशिष्ट वेळात परीक्षार्थी गुगल फार्मवर परीक्षा देऊ शकतात. गुगल फॉर्म चे आणखी एक वैशिष्ट्य म्हणजे परीक्षा मूल्यमापनाचा निकाल परीक्षार्थींना लगेच पाहता येतो व तसेच आपले किती प्रश्न बरोबर आहेत व कोणते प्रश्न चुकले आहेत याचा अहवाल ही पाहता येतो. यामुळे आपण दिलेली चुकीची उत्तरे कोणती व बरोबर उत्तर कोणते हे परीक्षार्थींना माहिती होते. गुगल फॉर्म च्या या सर्वांगी वैशिष्ट्यामुळे याचा वापर दिवसेंदिवस वाढत आहे.

स्वरूप:



वरील चित्रात दर्शविल्याप्रमाणे गुगल फॉर्म चे स्वरूप पाहावयास मिळते. शीर्षक भागात प्रश्नावली किंवा प्रश्नपत्रिकेचे चे शीर्षक असते.

भाग १ : Questions

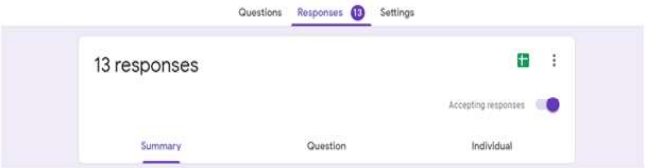
प्रश्नोत्तराचे स्वरूप :

Google form मध्ये प्रश्नोत्तरांचे स्वरूप हे अतिशय सोप्या पद्धतीने दिले आहे . आपणास जे प्रश्न Google फॉर्म मध्ये अंतर्भूत करावयाचे आहेत त्या प्रश्नाचे उत्तराचे स्वरूप आपणास तेथेच option मध्ये दिसून येते. या option मध्ये Short answer, paragraph द्वारे आपण लघु व दीर्घोत्तरी प्रश्नांचा समावेश करू शकतो. Multiple Choice o Check Box द्वारे एका प्रश्नासाठी अनुक्रमे एक पर्याय व बहुपर्यायी उत्तरे देता येतात. Dropdown हा पर्याय आपण ठराविक उत्तरासाठी वापरता येतोय जसे देशांची नावे, शहरांची नावे इथेच लिहून प्रतिसादकांचा वेळ वाचविला जातो. File Upload option हा प्रतिसादकांना चित्राच्या माध्यमातून संवाद साधण्यासाठी देण्यात आला आहे. Linear Scale द्वारे आपणास उत्तराची परिणामकारीकता, समाधानाचे स्तर समजून येते. Multiple Choice Grid व Check Box Grid याद्वारे आपण अनेक प्रश्न एकत्र विचारू शकतो आणि त्यावरील उत्तराचे स्वरूप एकपर्यायी व बहुपर्यायी निवडता येते. Date व Time या पर्यायाचा वापर आपण उत्तराच्या स्वरूपावरून ठरवू शकतो. याप्रकारचे प्रश्नोत्तरांचे स्वरूप आपणास google form मध्ये पहावयास मिळते.

Add Tab

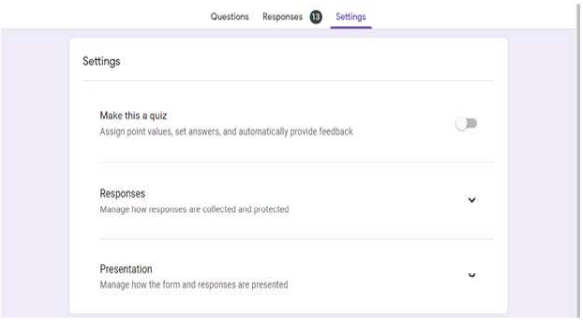
Add Tab चा वापर करून आपणास question, import question, title and description, image , video, तसेच section सुद्धा add करता येतात. Google form चे बहुआयामी व्यक्तिमत्व दर्शवण्यासाठी सदरील add tab चा वापर आपणास आवश्यकतेनुसार करण्याची मुभा दिसून येते.

भाग २ : Responses



वरील चित्रात दर्शिवल्याप्रमाणे आपणास प्रतिसादकांचे responses हे सारांश, वैयक्तिक व प्रश्नाच्या स्वरूपानुसार पाहता येतात. सदरील responses gs MS -Excel मध्ये डाउनलोड करून घेता येतात. Google form चे आणखीन एक वैशिष्ट्य म्हणजे आपणास responses हे automatic graphical स्वरूपात निर्मित होत असल्यामुळे संशोधकांसाठी हे एक अतिशय प्रभावी साधन ठरू शकते. तसेच मूल्यमापनाच्या दृष्टिकोनातून आपणास graphical स्वरूपात मूल्यमापन होत असल्यामुळे परत त्या आकडेवारी वर प्रक्रिया करण्याची गरज नसते यामुळे Google form चा मूल्यमापन प्रक्रियेवर मूल्यमापन हा समाधानी दिसून येतो.

भाग ३ : Settings



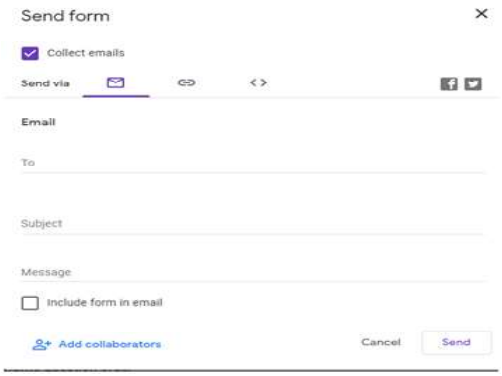
Settings या भागात आपणास प्रामुख्याने Make this quiz responses o Presentation हे प्रमुख तीन विभाग दिसून येतात. Make this quiz मध्ये आपणास Google form ला प्रश्नावलीचे स्वरूप देता येते व प्रत्येक प्रश्नासाठी गुणांकन हि विभागून देता येते. यामुळे प्रतिसादकांकडून प्रश्नावली सादर झाल्याबरोबर ऑटोमॅटिकल्य त्याचे गुण आपणास समजू शकतात त्याप्रमाणेच सदरील गुणांकन हे प्रतिसादकांना सुद्धा पाहण्याची सुविधा यामध्ये उपलब्ध आहे. म्हणजेच Google form द्वारे Google form चा निर्माता किंवा मूल्यमापक व प्रतिसादक या दोघांनाही प्रश्नपत्रिकेत किती गुणांकन झाले आहे हे समजते त्याबरोबरच आपले कोणते प्रश्न चुकले आहेत व त्या प्रश्नांची योग्य उत्तरे कोणती हे देखील समजते या सर्वांगीण वैशिष्ट्यामुळे

मूल्यमापनाच्या दृष्टिकेनातून Google form ची परिणाम कारिता हि अधिक व विश्वसनीय दिसून येते. तसेच आपल्या सोयीनुसार आपण responses o Presentation यामध्ये बदल करून माहितीचे संग्रहण, व्यापकता ठरवू शकतो.

Google form चे बाह्य स्वरूप

वरील चित्रात दर्शिवल्याप्रमाणे Google form चे बाह्य स्वरूप हे customize theme द्वारे बदलता येते व Preview द्वारे बदललेले स्वरूप पाहता येते. आपल्या आवडीचा रंग, शीर्षक भागात लोगो, चित्र याप्रकारचे बदल करू आपणास Google form हा आकर्षक बनविता येतो.

Google form चा send Format



Google form चा send Format हा वरील चित्रात दर्शिवल्या प्रमाणे आहे. Google form हा आपणास प्रतिसादकांपर्यंत ई—मेल, लिंक च्या माध्यमातून पाठविता येतो त्याप्रमाणचे त्याची लिंक हि महाविद्यालयाच्या वेबसाईट वर ठेवता येते. यामुळे Google form हा निरनिराळया स्वरूपात प्रतिसादकांपर्यंत पोहचविता येतो . हे आजच्या डिजिटल युगात अतिशय महत्वाचे वैशिष्ट्य सांगता येईल.

निष्कर्ष :

आजच्या माहिती तंत्रज्ञांच्या युगात व कोरोना महामारीच्या काळात शैक्षणिक दृष्ट्या Google form हे मूल्यमापनाच्या दृष्टिकोनातून अतिशय प्रभावी व विश्वनीय साधन आहे. प्रस्तुत लेखात Google form च्या बहुतांश वैशिष्ट्य व स्वरूपाचे विवेचन केलेले आहे. त्यावरून सर्व शैक्षणिक भागधारकांनी Google form चा स्वीकार करून त्याचा मोठ्या प्रमाणात वापर वाढवून मूल्यमापनास एक पारदर्शी स्वरूप आणावे व या महामारीच्या काळात हि Google form द्वारे मूल्यमापनाचे कार्य अविरतपणे चालावे हाच या लेखाचा उद्देश आहे.

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