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Information and Communication Technology in Education: An Overview

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ABSTRACT: Educational systems around the world are under increasing pressure to use the new information and communication technologies (ICTs) to educate students the information and skill they require in the 21st century. Information Communication Technologies (ICT) is the influence that has transformed many aspects of the lives. The impact of the ICT on each area of the life crosswise the past two-three decades has been enormous. The way these fields act today is different as contrast to their pasts. The ICT has made many innovations in field of teaching and also made a drastic from the old paradigm of teaching and learning. They have produced important revolution in industry, agriculture, medicine, business, engineering and previous fields. They too have the possible to transform the natural world of education-where and how knowledge takes place and the roles of students and teachers in the learning process. ICTs in education encouraged to more student centred learning. The world is moving quickly towards digital information, the role of ICTs in education is more and more significant and this importance will continue to raise and develop in 21st century. The student-centred environment involves learners' interaction with other students, the teacher, information resources, and technology. The learner engages in authentic tasks in authentic contexts using authentic tools and is assessed through authentic performance. The present paper focuses on the uses of Information Communication Technology (ICTs) in teaching-learning process that will greatly contribute to meet student needs for anywhere, anytime learning, furthermore organizes a variety of approaches found in ICTs and its role in education.
KEYWORDS: Information and communication technologies (ICTs), Influence, Transformed, Innovations, Encouraged, and Student centred

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I. Introduction

As technology has produced change in all aspects of society, it is also changing our outlook of what students must learn in order to function in the new world economy. Now a day's individuals are noticeable by an increasing need for information skill at all levels, including school, university, workplace and ordinary life. Information Communication Technologies (ICT) is the influence that has changed many aspects of the lives. The ICT is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer, and network hardware and software, satellite systems and so on, as well as the a variety of services and application related with them, such because videoconferencing and distance learning. In the modern information society, people have to access knowledge via ICT to keep pace with the latest developments. In such a situation, education, which forever plays a significant position in any economic and social growth of a country, becomes even more important. Education not only increases the creative skill of the person but as well his/her earn power. It gives them a sense of well being as well as capacity to absorb new information, increase their social communication, gives admission to better health and provide some more intangible benefits. It is hard to describe ICT since it is difficult to stay up the change they come about so fast. The definition taken from the direction in the QCA schemes of work for ICT is "ICTs are the computing and communication services and character that variously support teaching, knowledge and a variety of performance in education." According to UNESCO: ICT is a scientific technological and engineering discipline and management technique used in handling information in application and association with social, economic and cultural aspects. It would use ICT enabled learning which would bring several innovations in education. ICTs in education are being used for developing course material; delivering content and sharing content; communication between learners, teachers and the outside world; creation and delivery of presentation and lectures; academic research; administrative support, student enrolment etc. The impact of the ICT on each area of the life crosswise the past two-three decades has been enormous. The way these fields act today is different as contrast to their pasts. Using ICTs in education it encouraged to more student centred learning. Acc. To, ICT in Schools website, Department for Children, Schools and Families, 2010, ICT can improve the quality of teaching, learning and management in schools and so help raise standards. That's why ICT is at the heart of the DCSF's commitment to

improving learning for all children. British Educational Communications and Technology Agency, 2010 It's our ambition to create a more exciting, rewarding and successful experience for learners of all ages and abilities enabling them to achieve their potential. As world is moving quickly towards digital information, the role of ICTs in education appropriate more and more significant and this importance will continue to raise and develop in 21st century.

Significance of the study:-

The situation of the classroom is changing very rapidly. In India, there is a technological gap between the development of the society and instructional activities of the teacher in the classroom. If we see in our society on the one hand technology has revolutionized our society and on the other hand the teaching learning activities at school level have remained far away from technology. In our classroom the knowledge is imparted by the teacher in traditional way, a teacher centric mode which is most of the time boring and not to gain interest to the student. But present 21st Century's education is learner centred education. Students learn from multi sources and for this reason use of ICT & Multimedia are very much essential in educational field and simultaneously teacher's knowledge of ICT and Multimedia also required. So, present study has great significance because this study shows roles of ICT in education.

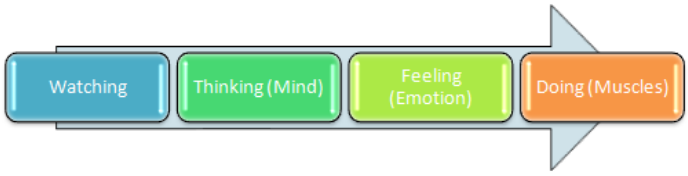
II. Objective Of The Study:

- To find out the uses of Information and Communication Technology in Education
- To discuss the various approaches and role of Information and Communication Technology in Education

Methodology: -The method used is Descriptive Analytic method. This present study is based on secondary sources like books, Articles, Journals, Thesis, University News, Expert opinion and websites etc.

The ICTs in Education

For developing countries like India, ICT have the potential for increasing access to and improving the significance and quality of education. It therefore represents a potentially equalize plan for just beginning countries. ICT greatly facilitate the acquisition and absorption of knowledge, offering developing countries unprecedented opportunities to improve educational system, progress policy formulation and implementation, and broaden the variety of opportunity for business and the poor. One of the most hardships endure by the poor, and with a lot of others, who live in the poorest countries, is their sense of isolation. The new communications technologies promise to reduce that sense of isolation, and to open access to knowledge in ways unimaginable not long ago. However, the reality of the Digital Divide, the gap between those who have access to and control of technology and those who do not—means that the introduction and integration of ICTs at different level and in a variety of type of education will be a mainly challenging undertaking. The use of information and communication technology can engage learners in the four-step process as described by **Kolb in the book Experiential Learning (1997),** where he identifies the steps in the following manner:



Uses of Information & communication Technology (ICT) in Education

❖ **To expand access to education:** ICTs are a potentially powerful tool for extending educational opportunities, both formal and non-formal, to before underserved constituencies—scattered and rural populations, groups usually excluded from education owing to cultural or social reasons such as ethnic minorities, girls and women, persons with disabilities, and the elderly, as well as all others who for reasons of cost or because of time constraints are unable to enroll in campus.

Anytime, anywhere: One defining feature of ICTs is their ability to transcend time and space. ICTs make possible asynchronous learning, or learning characterized by a time lag between the delivery of instruction and its reception by learners. Online course materials, for example, may be accessed 24 hours a day, 7 days a week. ICT-based educational delivery (e.g., educational programming broadcast over radio or television) also dispenses with the need for all learners and the instructor to be in one physical location. Additionally, certain types of ICTs, such as teleconferencing technologies, enable instruction to be received simultaneously by multiple, geographically dispersed learners (i.e., synchronous learning).

Access to remote learning resources: Teachers and learners no longer have to rely solely on printed books and other materials in physical media housed in libraries (and available in limited quantities) for their educational needs. With the Internet and the World Wide Web, a wealth of learning materials in almost every subject and in a variety of media can now be accessed from anywhere at any time of the day and by an unlimited number of

people. This is particularly significant for many schools in developing countries, and even some in developed countries, that have limited and outdated library resources. All over the world, ICTs also facilitate access to resource person's, mentors, experts, researchers, professionals, business leaders, and peers.

❖ **In supporting formal education:** ICT can enable access to information sources, facilitate interactions, create interacting learning environment and encourage change in method of teaching, class and access to up-to-date and applicable resources can be better while offsetting some costs of textbooks. However, the improvement in excellence resulting from the new ICTs is yet to be justified with the cost in developing countries. Radio is still the most cost- effective ICT for enhancing quality in school education. However, with the falling cost of hardware, maintenance and Internet access and increasing e extension of telecommunications and power infrastructure, it is expected that the benefits of using new technology in the schools of developing countries will exceed the costs.

❖ I**n supporting non-formal education**: Radio and television still remain popular means because of low costs. Experiential proof demonstrates that radio and television, the traditional ICTs are cost effective means to reach out-of-school children and adults where the costs are spread over a large number of learners, in the regions of conflict and for refugees. If the reason of ICT is to reach children and adults who cannot go to school for remoteness and/or for chance costs, radio and television are more likely to broaden access than the new ICTs which may not be obtainable to them. However, basic education is more successful when deliver in the mother tongue and traditional ICTs may be less economic because of the small number of learners. The option of two-way communications with new ICTs makes them more attractive where the target group has easy access to them, for example in semi urban areas supporting pre and in- service teacher education. Distance education of teachers is an essential medium to achieve education for all. However, teacher education using new ICTs are increasingly becoming popular because of the possibilities of the 'multiplier effect', greater interactivity between students and teacher, opportunities for learners to proceed at their own pace , at any place and at any time, the possibilities of combining video, audio and texts to improve delivery and quality of teaching and finally the possibilities of establishing teacher resource centres with access to power and telecommunications equipped with computers and Internet facilities.

❖ **To prepare students for the workplace**: One of the most commonly cited reasons for using ICTs in the classroom has been to better prepare the current generation of students for a workplace where ICTs, particularly computers, the Internet and associated technologies, are becoming more and more omnipresent. Technological literacy, or the ability to use ICTs effectively and efficiently, is thus seen as representing a competitive edge in an increasingly globalizing job market. Technological literacy, however, is the only skill for well-paying jobs in the new global economy will require. The potential of ICTs to promote the acquisition of these skills is attached to its use as a tool for raising educational quality, including promoting the shift to a learner-centred environment.

❖ **An innovative Approach of Education**: ICTs have the potential to drive innovative and effective ways of teaching-learning and research. The inclusion of learning tools, easier use of multimedia or simulation tools, easy and almost instant access to data and information in a digital form which allows for computations and data processing generates possibilities which were otherwise not feasible. The possibility to diffuse these innovations and complement the learning content to improve quality in higher education through innovative pedagogic methods is high. The focus on ICTs to back quality research through utilization of rigorous research methodology and in-depth analysis is the call of the hour.

❖ **To enhance the quality of education**: Improving the quality of education and training is a critical issue, particularly at a time of educational expansion. Another most important dimension of education sector influenced by ICT integration is improving quality of teaching-learning. Also, the changes taking place due to globalization and internationalization attach premium to knowledge and information. Therefore, the integration of ICTs would not only help in promoting personal growth but also in developing "knowledge societies". Focus of instruction is now on education programs or practices that promote capability and performance. Such curricula tends to require access to variety of information sources, information forms and types; student centred learning settings based on information access and inquiry; learning environments centred or problem-centred and inquiry-based activities, authentic settings and examples; and teachers as coaches and mentors rather than content experts ICTs can enhance the quality of education in several ways: by increasing learner motivation and engagement, by facilitating the acquisition of basic skills, and by enhancing teacher training.14

Motivating to learn: ICT such because videos, television and multimedia, computer software that unite text, sound, and colourful, moving images can be used for teaching learning process. It provides challenging and authentic content that will engage the student in the learning process.

Digital Age Literacy: Functional literacy is ability to interpret meaning and express ideas in a variety of media; this includes the make use of of images, graphics, video, chart and graph or visual literacy, scientific literacy understands of both the theoretical and applied aspects of science and mathematics. Technological literacy is competence in the use of information and communication technologies, Information literacy is ability to find,

evaluate and make appropriate use of information, including by means of the use of ICTs Cultural literacy Appreciation of the diversity of cultures Global awareness Understanding of how nations, corporations, and communities all over the world are interrelated. Inventive thinking, adaptability ability to adapt and manage in a complex, interdependent world Curiosity wish to know Creativity aptitude to use thoughts to make recent belongings Risk-taking skill to take risks. More so than any other type of ICT, networked computers with Internet connectivity can raise beginner motivation as it combines the media prosperity and interactivity of other ICTs with the opportunity to connect with real people and to participate in real world events.

❖ **In facilitating the acquisition of basic skills:** The transmission of basic skills and concepts that are the foundation of higher order thinking skills and creativity can be facilitated by ICTs through drill and practice. Educational television programs such as Sesame Street use repetition and reinforcement to teach the alphabet, numbers, colours, shapes and other basic concepts. Most of the early uses of computers were for computer-based learning (also called computer-assisted instruction) that focused on mastery of skills and content through repetition and reinforcement.

❖ **In enhancing teacher training Programmes:** ICTs have also been used to improve access to and the quality of teacher training. In India, at Indira Gandhi National Open University(IGNOU), satellite-based one-way video- and two-way audio-conferencing was held in 1996,supplemented by print-materials and recorded video, to train 910 primary school teachers and facilitators from 20 district training institutes in Karnataka State. The teachers interacted with remote lecturers by telephone and fax.17

Approaches of Information and Communication Technology in Education

ICT-supported education can promote the acquisition of the knowledge and skills that will empower students for lifelong learning, if designed and implemented properly. ICTs, especially computers and Internet technologies enable new ways of teaching and learning rather than simply allow teachers and students to do what they have done before in a better way. These new ways of teaching and learning are underpinned by constructivist theories of learning and constitute a shift from a teacher-centred pedagogy, in its worst form characterized by memorization and rote learning to one that is learner centred.

❖ **Active learning approach-** ICT-enhanced learning mobilizes tools for examination, calculation and analysis of information, thus providing a platform for student inquiry, analysis and construction of new information. Learners therefore learn as they do and, whenever appropriate, work on real-life problems in-depth, making learning less abstract and more relevant to the learner's life situation. In this way, and in contrast to memorization-based or rote learning, ICT-enhanced learning promotes increased learner engagement. ICT-enhanced learning is also "just-in-time" learning in which learners can choose what to learn when they need to learn it.

❖ **Collaborative learning approach**- ICT-supported learning encourages interaction and cooperation among students, teachers, and experts regardless of where they are. Apart from modelling real-world interactions, ICT-supported learning provides learners the opportunity to work with people from different cultures, thereby helping to enhance learners 'teaming and communicative skills as well as their global awareness. It models learning done throughout the learner's lifetime by expanding the learning space to include not just peers but also mentors and experts from different fields.

❖ **Creative learning approach -** ICT-supported learning promotes the manipulation of existing information and the creation of real-world products rather than the regurgitation of received information.

❖ **Integrative learning approach –** ICT enhanced learning promotes a thematic, integrative approach to teaching and learning. This approach eliminates the artificial separation between the different disciplines and between theory and practice that characterizes the traditional classroom approach.

❖ **Evaluative learning approach –** ICT enhanced learning is student-directed and diagnostic. Unlike static, text or print based educational technologies, ICT enhanced learning recognizes that there are many different learning pathways and many different articulations of knowledge. ICTs allow learners to explore and discover rather than merely listen and remember.

Role of Information and Communication Technology in Education

❖ The ICT enables self-paced learning for students through various tools such as computer, Internet, assignment etc. as a result of this the teaching learning activity has become more innovative and meaningful.

❖ ICT helps facilitate the transaction between producers and users by keeping the students updated and enhancing teacher's capacity and ability fostering a live contact between the teacher and the student through e-mail, chat session etc.

❖ ICT promotes active learning, sharing of ideas, discussion and also provides immediate feedback. This activates paced learning and allows effective mapping of learning path ways. This requires high quality meaningful digital content to be made available to teacher and student.

❖ As teaching and learning shifts from the teacher-centred model to a learner-centred model, the teacher becomes less the one and only voice authority but more the facilitator, mentor and coach; from stage on stage to guide on the side.

❖ ICTs emphasises the importance of building engaging learning environments which enable students to have personally meaningful learning experiences from various forms of learning relationships which generate interaction between the learners and content, learners and learners, and learners and teacher.

❖ ICTs can provide powerful tools to help learners access vast knowledge resources, collaborate with others, consult with experts, share knowledge, and solve complex problems using cognitive tools. It also provides learners with powerful new tools to represent their knowledge with text, images, graphics, and videos.

❖ The use of ICTs to foster new forms of learning through enabling new learning relationships is indeed a challenge for many teachers who are comfortable using conventional e-learning and teaching approaches within the learning management system platform.

❖ Teachers particularly should possess updated knowledge and skills to use the new digital tools and resources to help students achieve high academic standards. We definitely need a vision to equip our students to meet the emerging trends. The present high tech and competitive society will sustain only through the knowledge of ICT.

❖ It creates constructivism learning environment, students construct their own knowledge by testing ideas and approaches based on their prior knowledge and experience, applying these to new tasks, contexts and situations, and integrating the new knowledge gained with pre-existing intellectual constructs.

❖ ICT has the capacity to store, retrieve and process e-content both fast as well as accurate. ICT represents one of the current applications of technology towards teaching- learning processes.

III. Conclusion

Many researches shows that the use of new pedagogy enabled by ICTs in teaching and learning is indispensable for providing opportunities for students to learn; to work in today's e-society. As Yelland (2001) argue, the conventional educational environments do not come into outlook to be appropriate for preparing learners to function or be productive in the workplaces of today's society. Utilize of ICT can change the entire teaching-learning process leading to concept shift in together content and educational methodology. ICT has the potential to go beyond the barrier and space. ICT integration in the field of education has impacted enormously in improving the quality of education. It is broadly believed that ICT addition will assist us in creation teaching additional accessible and affordable. Increasing position of ICT will make education additional democratic that is getting better the excellence educational services available to even students sitting in far- flung remotest corners of the country. The new environment of interactive student-centred approach of ICT has completely transform the process of education i.e. delivery and dissemination. The technological creative learner will help generate sharing of knowledge to perform tasks in a better way and to develop their capacity and skills to keep pace with the rapid changes but the pace of change is so fast that what was avant-garde few years ago is just a thing of past. We should not let the ICT related opportunities to slip out of our hands. We must empower our upcoming generation with the latest technology to knock the latest skills and hidden potential of our young population. There is considerable hope that technology can expand and improve education at all levels with special reference to design and content of instructional materials, delivery, and assessment and feedback.

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