Information and Communication Technology (ICT) In Learning Science at Secondary Schools

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Introdution :

Technology has become an important part in most of organizations.these days.Computer began to be placed in schools in early go's and several researchers suggest that technology will be an important part of education for next generation. Modern technology offers improvised teaching & learning in classroom.

Overall development of a child is the main objective of the education.The person who teaches to the child, is called informer and the education is known as informal education. The school is the center of formal education.Where the school subjects are languages, science, mathematics, social, sciences, physical, training, technical subject to the secondary schools.In these subjects science as well as technical subjects are useful for practical purpose in child's life which are important to the child for their future works such as jobs, production. The child of today is adult of tomorrow. He is to be prepared for the responsibilities & privileges of life. This preparation for the future is necessary to make the child fully equipped to take position in their life. Teachers always try to get good practices from their pupil. The natural qualities which are hidden must be recognized and developed in the school. Hence ICT acts as a tool of education in present days .

Information And Communication Technology (ICT) :

The ICT refers to forms of technology that are used to transmit ,to exchange and to share the information by electronic means. Which includes the Television, Radio, DVD, Telephone, Satellite systems, Computer network, E-mail ,Software Hardware, and Interactive smart boards, Virtual classroom etc..

The following table will give you the idea about the use of ICT in Education,

Information	Technologies
Hardware	Personal Computers, Digital camera, scanner, Smartphone
Processing	Calculator, PC, Smartphone
Software//Storage	CD, DVD, Pen drive, Microchip, Cloud
Display	PC, TV, Projector, Smart board, Smartphone.
Transmission	Internet, teleconference, video conferencing, Mobile technology, Radio
Transaction	e-mail, Cell phone, Media's

Role of ICT In Secondary Schools

Information and communication technology does not leads only to the development of websites, government, corporate sector etc..Also helps in schools and colleges. The internet has become an integral part of every individual's life .Even in school ,the use of internet has increased at

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an alarming rate.ICT has given wings to empower the use of technology related activities in the world of education .Now a days ,when schools are transforming themselves into smart schools ,where the role of ICT has been skyrocketing & monitoring

The ICT acts an important role in some areas like:
- ➢ Teaching
- ➢ Diagnostic Testing
- ➢ Remedial Testing
- ➢ Evaluation
- ➢ Virtual lab
- ➢ Development of instructional materials

1.Teaching: In teaching, by using the ICT the teachers can carry out planning for establishing learning objectives .He can organize relative learning resources & implement by motivating, encouraging & inspiring his study to realize learning objectives. Many websites are available on internet, which may utilized by the teachers & students for understanding different concepts, improving vocabulary, developing reasoning ability among the students.

2.Diagnostic Tests: By the use of computer systems and software, we can easily diagnose the students disabilities in the particular subjects .In this testing, there is no need of special assistance by the teacher unlike the paper pencil test, does not require paper setting and paper correction on the part of the teacher .It saves time and also teacher gets immediate feedback after the test. Economically it requires only one time investment.

3.Role of ICT in Remedial Teaching: Here in the remedial teaching, ICT can used for giving individual remedial program. It may be online or offline. Here the instructional material if designed specifically for student   , which will be uploaded in the school website and then it may used for providing remedial teaching program.

4.Role of ICT in Evaluation: At present the tests are conducted by the pen and paper . But these tests are conducted in the group setting and content coverage is poor and students cannot use them at their own. The ICT can be used in the evaluation. One such attempt has been made by Sansanwalo and Dahiya (2006) who developed computer based test. Here the students can instantaneously get the feedback about the status of his understanding. If the answer is wrong, He even can get the correct answer.

5.Virtual lab : There are many schools which do not have a laboratory .Sometime if laboratory is available, the instruments are not available. The students are not given freedom to do experiments at their own .But virtual laboratory can provide lots of freedom to the students .Here students can take different types of objectives, specimens, models, equipements by this virtual laboratory and will do practicals freely in any time .

6.Development of instructional material : Now a days there is a shortage of qualified and competent teachers in almost all subjects. Not only this ,even the instructional material available in the print form is not of a quality. This is why because many authors have written on those topics without doing the research .Sometimes the instructions given in the books are also wrong .The book reading is not really enjoyable and does not helps students in understanding the concepts and retaining the information. Here the instructional materials can be used by the teachers in the classroom or can organized discussion which results in the addition of new points by both teacher and students. It will make teaching effective, participatory, and enjoyable.

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Effectiveness of ICT in Teaching and learning :

There are many applications of ICT in teaching and learning depending upon the knowledge of the user .Here the teaching and learning takes place in the classroom by the use of educational software- Computers, smart boards, Email systems, Internet, Television, Radio etc.. Generally ICT will be applicable in CAI (Computer assisted instruction) ,CAD (Computer aided design),LCS(Library comp system),there are many other general applications of ICT in education apart from those mention above.
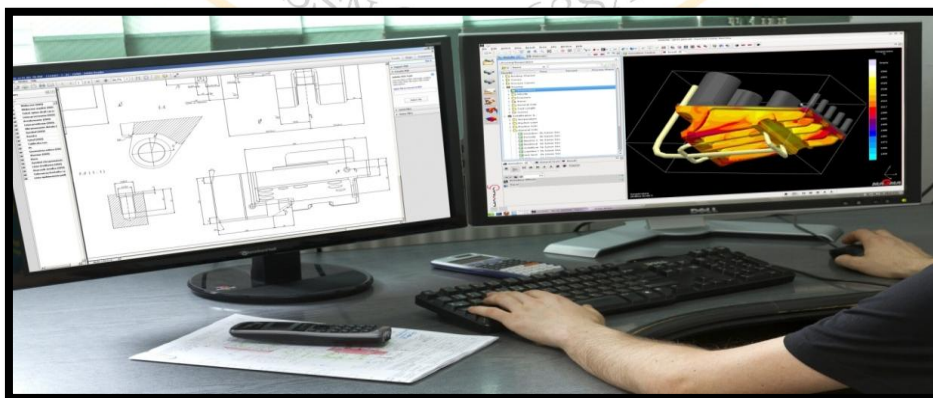
CAI :(Computer assisted instruction)

In secondary schools ,the teacher gives instructions to the students in the form of text or in the form of multimedia .This could include photograph, videos, animations, speech &music .This programme could involved questions posed to the students, returned feedback &additional questions could follow based on the students responses.

CAD : (Computer aided design)

It is a system which is used to help to design ideas, build models, and prototypes.Advantages of using CAD:

- Easier data storage and retrieval
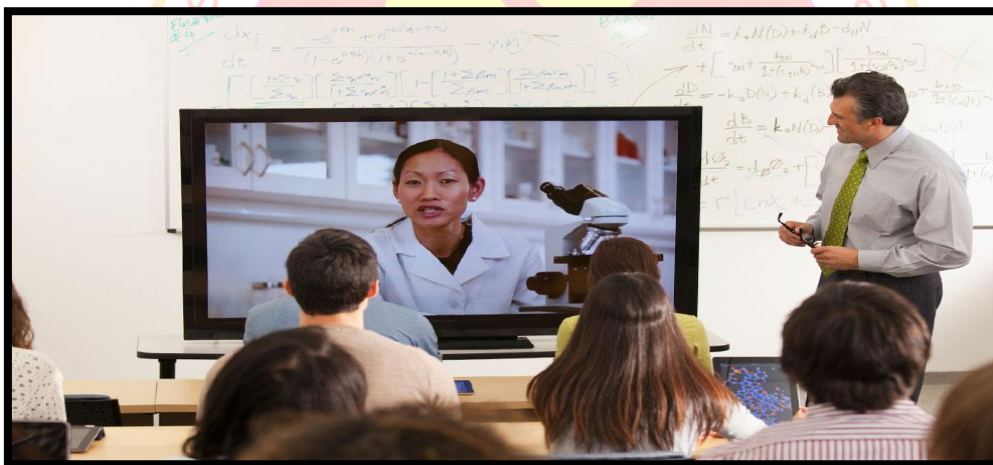- Repeatability
- Flexibility
- Quick changes /setups

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LCS (Library comp system)

Now a day many libraries are computerized from the LCS .We can make digital library from the INFLIBNET – We can get thousands of science books and sources which can help the students to get particular and prefer knowledge about the topics.

Teleconferences:

Here the students can view, take part in conferences and also take part in debate in their comfort through satellites .Transmission of conferences proceeding from far distance could be made available rapidly instead of travelling at reduced expenses.

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Effectiveness in learning BIOLOGY :

Learning of biology can be made easier and more comfortable by integrating ICT tools in instructional strategies for teaching biology. For this ,the teacher education programme should give more emphasis on ICT training for the teachers to apply ICT in their instruction .ICT is the best way to convey the information to the students in biology, because of easy understanding and attractive experiences to the students .

Effectiveness in learning CHEMISTRY :

Conceptual understanding in chemistry is related to the ability to explain chemical phenomenon through the use of macroscopic, molecular and symbolic levels of representation .Individuals construct models to interpret phenomena and make sense of them. Through ICT, students rearrange their thoughts about chemical phenomena and it provides students the opportunity of improving their conceptual understanding.

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Effectiveness in learning PHYSICS :

Teacher demonstrates and student practical works have long been accepted as an integral part of teaching and learning physics. By using ICT physics teacher can explain subjects like LASERS, Satellite communication, Microwave transmission, Optical fiber ,Transistors etc .Computer open physics to novel concepts ,bringing education and research closer. Theory concepts will exemplify by the use of computers in physics teaching and helps to illustrate that "e-science" is becoming a powerful and indispensable new tool for scientific education.

Conclusion:

Information communication technology (ICT) in education refers to teaching and learning the subject matter that enables students to understand the function and effective use of technology.

Effectiveness of Information Communication And Technology (ICT) in learning science At Secondary school in curriculum improves productivity and student results provides superior teaching and learning experience. Teachers may get benefit of their teaching style by this ICT.

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Internet resources:

1. http://ww.nwrel.org/scpd/sirs/5/cu.html
2. http://www.ietf.org/html
3. http://www.the free dictionary.com/science
4. http;//www.techweb.com/encyclopedia