E- ISSN No: 2395-0269
International Journal of Applied and Universal Research
Volume 2, Issue VI, December 2015 Available online at: www.ijaur.com

INTEGRATION OF INFORMATION COMMUNICATION TECHNOLOGIES IN EDUCATION: POTENTIAL AND CHALLENGES

Dr. Mishu Singh
Chemistry Department
Maharana Pratap Govt. P.G. College, Hardoi, (U.P.)

Abstract- Information and communication technologies (ICT) have become commonplace entities and are influencing every aspect of life playing salient roles in workplaces, business, education etc. Though Web-based technologies are widely used for educational purposes, the process of integrating ICT in education is hardly a simple and straightforward one. Across the past ten years, the use of ICT has fundamentally changed the practices and procedures of nearly all forms of endeavor. It is recognized as a catalyst in greatly in facilitating the acquisition and absorption of knowledge, teaching and learning approaches, scientific research, and accessing information and offering unprecedented opportunities to enhance educational systems. In this paper, the potential and challenges in teaching with the use of ICT has been discussed. With a population of 1.28 billion, the demand for education in India has skyrocketed, to fill the socio- economic, linguistic and physical barriers. An attempt is made to answer the questions like what are the existing promises of ICT in Indian education system and what are the benefits, limitations and challenges in integrating ICT tools, etc. The paper also discusses strengths, weaknesses, and success factors when using ICTs in teaching & learning with respect to policy, planning, infrastructure and learning content. The paper concludes that regardless of all the limitations characterizing it, ICT benefits education systems to provide quality education in alignment with constructivism, which is a contemporary paradigm of learning.

KEYWORD: - ICT, Indian education system, education.

INTRODUCTION-

The twenty-first century is witnessing a rapid growth in Information Communication and Technologies (ICT) that has remarkably affected the demands of modern Indian societies and is becoming increasingly important in our educational system. In a very short time, it has become the basic building blocks of modern society. There is a growing demand of the 21st-century educational institutions to use ICT to develop the skills and increase knowledge of the students. Realizing the necessity and effect of ICT, today's educational institutions are trying to restructure their educational curriculum and classroom facilities, in order to bridge the existing technology gap between teaching and learning. This process of restructuring requires the effective adoption of technologies into existing environment in order to provide learners with knowledge of specific subject areas, to promote meaningful learning and to enhance professional productivity (Tomiei, 2005).

Despite all this, ICT infrastructure, equipment, and professional development to improve education in many countries, not much evidence of ICT adoption and use in teaching and learning especially in Indian education system are witnessed. The surveys conducted to investigate the use and integration of computer technology in teaching and learning processes in higher education suggests that the Indian government and the concern agencies of the education sector are investing heavily on ICT, but ICT adoption in the education sector is still lagging behind somewhere.

Factors Influencing Teachers' Adoption and Integration of ICT

There are several factors influencing the adoption and integration of ICT into teaching. Rogers (2003) identified five technological attributes that influence the decision to adopt an innovation. Stockdill and Moreshouse (1992) identified user characteristics, content characteristics, technological considerations, and organizational capacity as factors influencing

ICT adoption and incorporation into teaching. Balanskat, Blamire & Kefalla (2007) acknowledged the factors as teacher-level, school-level, and system-level. Teachers' integration of ICT into teaching is also influenced by organizational factors, attitudes towards technology and other factors (Chen, 2008, Tondeur; van Braak & Valcke, 2008; Lim & Chai, 2008; Clausen, 2007). Sherry & Gibson (2002) claimed that technological, individual, organizational, and institutional factors should be considered when examining ICT adoption and integration. On this basis, it can be said that ICT integration is linked with the concept of wholeness when the two very important elements of the system i.e. teacher and student are connected together to become a whole when technology is used in teaching and learning.

Potential of ICT in enhancing the teaching-learning environment:

ICTs can enhance the quality of education in several ways. The use of information and communication technologies in the educative process is divided into two broad categories: ICTs for Education and ICTs in Education. ICTs for education refers to the development of information and communications technology specifically for teaching/learning purposes while the ICTs in education involves the adoption of general components of information and communication technologies in the teaching-learning process. The impact of ICTs is increasing and it will emerge as a strong agent in years to come in many educational practices and that ICT will become a strong agent for change among many educational practices. However, ICTs have a strong impact on teaching learning process, enhancing quality and accessibility of education, learning motivation, teaching and learning the environment and increasing academic performance.

ICT has undoubtedly affected teaching and learning process by accelerating, enriching and deepening the skills by motivating and engaging the in different work practices. Earlier teachers used conventional methods of teaching through lectures, presentations interspersed with tutorials, and learning activities were designed to consolidate and rehearse the content. Now the main emphasis is on how the information will be used than with what the information is. Integrating ICTs provide strong support in competing with the world's changing scenario and help revitalize teachers and students. Making the right use of the potential of ICT not only improves the quality of learning environment environments but also prepares next generation for future lives and careers (Wheeler, 2001). ICT acts as a catalyst in the educational domain by encouraging and supporting independent learning among students. Thus, it can be said that any use of ICT in learning settings can act as a support in various aspects of knowledge construction and as more and more students employ ICTs in their learning processes, the more distinct the impact of this will become.

ICT plays a big role in enhancing the quality and accessibility by increasing the flexibility of delivery of education so that learners can access information anytime and from anywhere. It can influence the way students are taught and how they learn as now the processes are learner driven and not by teachers. This in turn would better prepare the learners for lifelong learning as well as to improve the quality of learning. (Moore & Kearsley, 1996). Another vital contribution of ICT in the field of education is- Easy Access to Learning. Learners can now browse through e-books, sample examination papers, previous year papers etc. and can also have an easy access to resource persons, mentors, experts, researchers, professionals, and peers all over the world. This flexibility has heightened the availability of just-in-time learning and provided learning opportunities for many more learners who previously were constrained by other commitments (Young, 2002). Accessibility to the course material shared by means of ICT fosters better teaching. Teachers are also finding the capabilities of teaching at any time to be opportunistic as mobile technologies and seamless communications technologies support 24x7 teaching and learning. (Young, 2002). Especially in developing countries like India, effective use of ICT for the purpose of education has the potential to bridge the digital gap.

India has a large education system with a billion-plus population and a high percentage of the youth. However, the Indian education system has to face certain substantial barriers such as infrastructure, teacher and quality in education from lower to the higher education system. There exist drawbacks, in general, education in India as well as all over the world like lack of learning materials, teachers, inaccessibility of education facilities, high dropout rate etc (UNESCO,2002). Innovative use of ICT can potentially solve this problem. It has the potential to remove the barriers that are causing the problems of the low rate of education in any country when used as a tool to overcome the issues of cost, less number of teachers, and poor quality of education as well as to overcome time and distance barriers (McGorry,

2002). Digital libraries and other ICT tools allow the students and teachers and professionals speedy access to research material and course material within the national and international dimensions from any place at any time by removing communication barriers of space and time (Bhattacharya and Sharma, 2007; Cholin, 2005; Lim and Chai, 2004).

ICT is a facilitator of an active and potentially powerful tool for the students in developing critical thinking, research and evaluation skills by adding elements of vitality to learning environments and offering educational opportunities. It provides opportunities to access an abundance of information using multiple information resources and understand through simulations that contribute to dependable learning environments.

ICT enhances the scholastic performance, expands access to education, strengthen the relevance of education to the increasingly digital workplace, and raise educational quality. However, the experience of introducing different ICTs in the classroom and other educational settings all over the world over the past several decades suggests that the full realization of the potential educational.

Challenges in integrating ICT in education:

Integrating ICT in teaching-learning is a complex task and faces many difficulties. One of the most important is the teachers' fear for limited ICT knowledge and skills, which causes lack of confidence and makes them feel anxious about using ICT in classroom teaching. This way there were not very enthusiastic about the change and integration of learning associated with computers. On the other hand, the teachers who confidently use it understand the usefulness and incorporate them in their daily teaching and personal work. However, this barrier differs from country to country. In many of the developing countries, the lack of technological competence among teachers is the main concern. Another challenge is the resistance and negative attitude among the teachers in integrating new technologies in education, as it requires change and a lot of homework by the teachers. They still have a belief that use of ICT has no or unclear benefit and if they reject the need for the change instead of resisting as they lack the necessary education or because of the absence of technical support and infrastructure.

Studies have indicated that even with competent and confident teachers, institutions make a little use of technologies due to difficulty in scheduling time for ICT integrated lectures. Teachers face issues of the time in exploring different internet sites and accessing educational software.

The most significant problem in integrating ICT is the lack of adequate and appropriate training which leads to them being neither prepared not confident sufficiently to carry out full ITC integrated lecture. To avoid this should me more in-service training programs for the teachers to overcome the limited use of ICT tools in teaching. There should be courses to develop a pedagogical aspect of ICT for teachers also. Lack of accessibility to resources also discourages teachers from integrating new technologies into education. Inaccessibility of ICT tools is not merely due to non-availability of hardware and software but is due to poor organizational resources, poor quality hardware, inappropriate software and lack of access for teachers and students as well. However, this also varies from country to country.

CONCLUSION-

The adoption and use of ICTs in education have a positive impact on teaching, learning, and research. ICT can affect the delivery of education and enable wider access to the same. In addition, it will increase flexibility so that learners can access the education regardless of time and geographical barriers. It improves the quality of education by facilitating learning by doing, real-time conversation, delayed time conversation, directed instruction, self-learning, problem-solving, information seeking and analysis, and critical thinking, as well as the ability to communicate, collaborate and learn. It can influence the way students are taught and how they learn. It would provide the rich environment and motivation for teaching learning process which seems to have a profound impact on the process of learning in education by offering new possibilities for learners and teachers. These possibilities can have an impact on student performance and achievement. Similarly wider availability of best practices and best course material in education, which can be shared by means of ICT, can foster better teaching and improved the academic achievement of students. The overall literature suggests that ICTs 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. It has an impact not only on what students should learn, but it also plays a major role on how the students should learn. Along with a shift of curricula from "content-centered" to "competence-based", the mode of curricula delivery

has now shifted from "teacher centered" forms of delivery to "student-centered" forms of delivery.

To fully utilize the advantages brought in by the integration of ICT in education and specifically for enhancement of conceptual understanding in organic chemistry there is a need to improve the accessibility of ICT resources. Computer-based technologies should be part of the classroom activities. For students to appreciate the benefits of ICT in their learning, teachers should design, develop, publish and present curriculum products using technology resources that demonstrate and communicate curriculum concepts to students inside and outside the classroom.

REFERENCES

1. Bhattacharya, I. & Sharma, K. (2007), 'India in the knowledge economy – an electronic paradigm', International Journal of Educational Management Vol. 21 No. 6, Pp. 543- 568.
2. Cholin, V. S. (2005), 'Study of the application of information technology for effective access to resources in Indian university libraries', The International Information & Library Review Vol.37, No.(3), 189-197.
3. Chen, R.-J. (2010). Investigating models for preservice teachers' use of technology to support student-centered learning. Computers & Education in Press.
4. Chen, C. -H. (2008). Why do teachers not practice what they believe regarding technology
5. integration? The Journal of Educational Research, vol. 102, no.1, pp. 65-75.
6. Clausen, J. M. (2007). Beginning teachers' technology use: First-year teacher development and the institutional context's effect on new teachers' instructional technology use with students. Journal of Research on Technology in Education, vol. 39, no. 3, pp. 245–261.
7. Lai, K.W., Pratt, K. (2004). Information Communication Technology (ICT) in secondary schools: The role of the computer coordinator. British Journal of Educational Technology, vol. 35, no. 4, pp. 461-475
8. Lim, C. P. & Chai, C.S. (2004), An activity-theoretical approach to research of ICT integration in Singapore schools: Orienting activities and learner autonomy', Computers & Education Vol. 43, No. (3), Pp; 215--236.
9. McGorry, S. Y. (2002), 'Online, but on target? Internet-based MBA courses: A case study', The Internet and Higher Education Vol.5, No. (2), Pp; 167-175.
10. Moore, M. & Kearsley, G. (1996). Distance Education: A Systems View. Belmont, CA: Wadsworth.
11. Rogers, E.M. (2003). Diffusion of innovations. New York: Free Press
12. Sherry, L., & Gibson, D. (2002). The path to teacher leadership in educational technology.
13. Contemporary issues in technology and teacher education, vol. 2, no. 2, pp. 178-203.
14. Tomei, L. A. (2005). Taxonomy for the technology domain. USA: Information Science Publishing.
15. Tondeur, J., Valcke, M., & van Braak, J. (2008). A multidimensional approach to determinants of computer use in primary education: Teacher and school characteristics. Journal of Computer Assisted Learning, vol. 24, pp. 494–506.
16. UNESCO (2002) Information and Communication Technology in Education–A Curriculum for Schools and Programme for Teacher Development. Paris: UNESCO.
17. UNESCO,(2002),'Open And Distance Learning Trends, Policy And Strategy Considerations',14 UNESCO
18. Valasidou A, Sidiropoulos D, Hatzis T, Bousiou-Makridou D (2005)."Guidelines for the Design and Implementation of E-Learning Programmes, Proceedings of the IADIS". International Conference IADIS E-Society 2005, 27 June- 30 June, Qawra, Malta.
19. Young, J. (2002). The 24-hour professor. The Chronicle of Higher Education, Vol. 48, No. (38), Pp; 31-33.
20. Wheeler, S. (2001). Information and communication technologies and the changing role of the teacher. Journal of Educational Media, Vol No.(1), Pp;7-17.