The Significance of Educational Technology in Teaching Learning process

Dr. S Rehan Ahmad[1]*, Mohammad Un Nisa[2]

ABSTRACT

Technology is an integral element in the world today. Technology in today's world touches, influences and shapes every aspect of human life. Technology plays significant roles in work places, education, entertainments and the way of life surviving. Technology acts as catalysts for changes, change in wok environments, handily and exchanging information, teaching process and methods, learning approaches, research arena and in using knowledge, information. Therefore, the present paper discusses the role of technology, the promise, benefits, limitation, challenges and key hurdles of integration to education system.

Keywords: *Technology, Teachers, Education, Institutions*

Educational Technology sometimes shortens to Edutech or Edtech is a wise field. Educational technology is a design science, a club of various kinds of research area dealing with basic, fundamental and key issues of learning, teaching and social organization. It is a process in which modern technology is used in an organized and systematic way for improvement, betterments and enhancements of the quality of the education. Technology means systematic, organized application of scientific or others organized knowledge to practical work. Therefore, educational technology is depends on theatrical knowledge from different disciplines (Communication, psychology, sociology, philosophy, artificial intelligence, computer science etc.) Plus experiential knowledge from educational practice. (Natalie Deseryver) . Educational technology aims at increasing efficiency, effectiveness of current practices and simultaneously aims at bringing pedagogical changes for betterment of education. It is considered as design science addressing fundamental, basic, important issues of learning, teaching and social organization and thus makes use of full rage of modern social science and life Science methodology.

"Technology provides us with powerful tools to try out different designs, so that instead of theories of education, we may begin to develop a science of education. But it cannot be an

---

[1] Indira Gandhi National Open University, New Delhi, India
[2] Seacom Skills University, Bolpur, West Bengal, India
*Responding Author

analytic science like physics or psychology; rather it must be a design science more like aeronautics or artificial intelligence. For example, in aeronautics the goal is to elucidate how different designs contribute to lift, drag maneuverability, etc. Similarly, a design science of education must determine how different designs of learning environments contribute to learning, cooperation, motivation, etc." (Collins, 1992:24).

Educational Technology is defines differently by different authors depending on their needs because of diversity and different perceptions.

1. Educational technology is the use of technology to improve education. It is a systematic, iterative process for designing instruction or training used to improve performance. Educational technology is sometimes also known as instructional technology or learning technology. (Wikipedia: Educational technology)

2. The study and ethical practice of facilitating learning and improving performance by creating, using and managing appropriate technological processes and resources.

3. A definition centered on its process: "A complex, integrated process involving people, procedures, ideas, devices, and organization, for analyzing problems, and devising, implementing, evaluating and managing solutions to those problems, involved in all aspects of human learning"

4. Lachance et al. (1980:183) also focus on the the process idea: la technologie éducative en tant que processus systématique intégrant les diverses fonctions du processus éducatif. Elle vise, d'une part, à analyser des problèmes reliés à l'enseignement et/ou à l'apprentissage et, d'autre part, à élaborer, implanter et évaluer des solutions à ces problèmes par le développement et l'exploitation des ressources éducatives (cited by Lapointe, 1991)

5. Educational Technology (Information Technology) according to International Technology Education Association

a) Teaches with technology (uses technology as a tool)

b) Primarily concerned with the narrow spectrum of information and communication …..technologies

c) Primary goal: To enhance the teaching and learning process

Irrespective of the fact that educational technology has immense benefits, utility and implication in the field of education , still not be fully applied in schools , because there is lack of equipments , resources , infrastructure necessary for its application .

Significances of Educational Technology

Educational technology analysis forever had degree formidable agenda. Typically it solely aims at hyperbolic efficiency or effectiveness of current practice, but usually it aims at education modification. Whereas it's going to be thought-about as a method science it together addresses basic problems with learning, teaching and social system so makes use of the entire vary of recent science and life sciences methodology. We sleep in a very dynamic world capsulated by just about endless amounts of knowledge. Riding the coattails of data is all of the technology we

have at our fingertips. For as prevailing as technology is presently, is it commutation real lasting education? Can technology have a neighborhood in our classrooms? I think any level-headed skilled would agree that kids ought to be able to use technology to be competitive inside the geographical point once graduation. With all the trends and advancements in technology no one can argue that we'll go backwards from here. I don't foresee technology commutation impassioned lecturers educating their students. I just see it as a significant tool to help the education methodology and prepare students for the long-term. From the studies I've scan, lecturers got to use plenty of technology inside the space. the kids seem to basically get pleasure from it and area unit excited concerning exploitation it. Those interested by grip technology ought to be compelled to coach themselves on what's out there. Here could also be a small sliver of the advantages we tend to tend to achieve from exploitation technology to show people.

Equality: School districts across the country are not created equal. There is so much disparity in educational resources depending on the wealth, or lack thereof, depending on certain areas. Students using technology in low income districts gain significant skills and advantages in the learning process. Using the same technology is an equalizer for disadvantaged students.

Future: The world is moving towards technology at a breakneck pace. Educators have a responsibility to introduce, encourage, and help students master technology, as well as subjects, as it applies to school and the future. Technology will be used in every aspect of the professional lives of current students. So upon graduation, whether the next step is college or career, technology will be used daily. Why not use it daily in school?

Mobile: Using technology the classroom can be taken anywhere. With all the knowledge and resources contained and deliverable on demand in a mobile device, students can learn at home or in the "field". Mobile technology allows for greater collaboration between students promoting strong foundations in group work.

Motivation: Technology tracks and reports student's progress instantly. What fun is running a marathon if you don't know how long it takes. Runners can get instant feedback for hundreds of data points as to their condition. This feedback provides instant motivation to improve performance.

Similarly students who use technology are motivated to improve performance. Just like they do at home on their gaming consoles. Trying to beat high scores at home and trying to beat high scores in math use the same psychology.

Social: This runs along the same lines as motivation. Creating a social element to educational technology can allow for healthy competition amongst peers both in the same classroom and across the country. Performing well and earning badges to gain virtual social status is of the heart of many social applications today. Personal identities do not have to be used, instead students could use avatars to hide possible confidentiality breaches. Using technology to make education have social elements can make learning very addictive.

Savings: The savings which result from using technology can come in many facets. On a basic level technology can replace infrastructure. Desks, books, lab equipment and other items are a heavy cost burden on schools everywhere. Technology and devices can help save on these costs. In addition geographically isolated or economically disadvantaged children can benefit from access to online software or resources which would be cost prohibitive without technology.

Updates: I recently read an article that reported students using 10 year old textbook in school. Updating textbooks can cost lots of money and do significant damage to budgets. On the other hand, updating software and educational content is not as expensive or cumbersome. With the help of technology course curriculum can reflect real world data. In some applications students can be exposed to real-time information.

Assessments: Assessing students performance can be done instantly with technology. It's more than just test scores, simply understanding students grasp of the subject in real time can be done on tablets in classrooms. A classroom could be questioned with a multiple-choice problem. Students could then input their answer and the feedback score is instantly given to the student and teacher. Corrections can be made long before examinations.

Global: Students and classrooms or even schools can be connected to anyone in the world instantly. Devices coupled with the Internet can allow for a free way to communicate globally. The chance to understand international or different cultural perspectives on the same topic is incredible.

Convenience: Having children carry heavy backpacks, text books, and binders isn't very efficient. A new lightweight laptop weighs less than 5 pounds and can have an internal storage capability of more than 2 million illustrated pages. In addition to an internal hard drive, access to the Internet can provide an almost unlimited source of information. Ergonomic issues and back pain are a real problem in children. These conditions can lead to chronic problems throughout adulthood.

Education coupled with technology is overall a very positive thing. It's still in relative infancy and progress will continue to move forward making better systems. Teachers will still retain control over learning.

The school of 10 years ago looks very different from schools today. Also, students are being inundated with technology at a very young age. The transition has already begun. Education of the future will be delivered with current information delivered through traditional teaching methods and fantastic technological tools.

Earlier, technology in education was a debatable topic amongst the society. Everyone had their own views on modernizing education and making it technology aided. There were a huge number of positives and negatives to education technology. But, gradually as technology was embraced by the educational institutes, they realized the importance of technology in education. Its positives outnumbered the negatives and now, with technology, education has taken a whole

new meaning that it leaves us with no doubt that our educational system has been transformed owing to the ever-advancing technology. Technology and education are a great combination if used together with a right reason and vision.

To elucidate on the topic of this article, I am more than definite that **technology improves education** to a great extent and it has now become a need for revolutionizing education for the better.

With technology, educators, students and parents have a variety of learning tools at their fingertips. Here are some of the **ways in which technology improves education** over time:

- **Teachers can collaborate to share their ideas and resources online:** They can communicate with others across the world in an instant, meet the shortcomings of their work, refine it and provide their students with the best. This approach definitely enhances the practice of teaching.
- **Students can develop valuable research skills at a young age:** Technology gives students immediate access to an abundance of quality information which leads to learning at much quicker rates than before.
- **Students and teachers have access to an expanse of material:** There are plenty of resourceful, credible websites available on the Internet that both teachers and students can utilize. The Internet also provides a variety of knowledge and doesn't limit students to one person's opinion.
- **Online learning is now an equally credible option**: Face-to-face interaction is huge, especially in the younger years, but some students work better when they can go at their own pace. Online education is now accredited and has changed the way we view education.

There are innumerous **instances** till date where we can see the improvement in education, once it embraced technology. I will state a few remarkable ones of them to provide you with a more realistic picture of the whole scenario. Here's the list along with the references to the originals:

- **The Flipped Classroom**: This popular technological approach has gotten to everybody's ears by now. It is a practice in which, students watch lecture videos as homework and discussion is carried on them in the class-time by the teachers. It has resulted in a remarkably better student performance, with noticeable grade boost-up. Students can now learn at their own pace and save class-time for interaction. To go into more details about this approach refer to this article on The Flipped Classroom .
- **Effectiveness of EdTech on Mathematics for K-12**: Technology has proved to be effective for making students efficiently adept with Math. Out of several, there are three remarkable technologies, which in my opinion should be brought to the light. Computer-managed learning is a program that uses computers to assess student learning on Math and assign them with appropriate Math material, which they can work on to score and receive a chart of their progress for self-assessment; Comprehensive models such as Cognitive Tutor and I Can Learn use computer-aided instruction as well as non-computer activities for students to

approach Math; Supplemental CAI technology consists of individualized computer-assisted instruction (CAI), to provide additional instruction at students' assessed levels. Findings indicate that educational technology applications produce a positive effect on Mathematics achievement.

- **Long-term research indicative of the positives of technology on learning**: Researches have been performed to address to the question, does the use of computer technology affect student achievement in traditional classrooms as compared to classrooms that do not use technology? An extensive literature search and a systematic review process were employed and insights about the state of the field, implications for technology use, and prospects for future were discussed. Refer to the original review, Review of Educational Research .

- **Educational Technology improves student learning outcomes:** Evidence suggests that educational technologies can improve student achievement, so long as such tools are integrated thoughtfully into teaching and learning. When digital capabilities like, online environments are incorporated meaningfully into instruction, students have new opportunities to learn and achieve. Refer to this research brief for details.

- **The effect of technology on education depends on the design of instruction:** The design of the instruction accounts for more variance in how and why people learn than the technology used to deliver the instruction. Educators and educational researchers should be encouraged to focus on determining how to better integrate the use of a given technology to facilitate learning, rather than asking if it works or if one is more effective than another. Refer to this report for a detailed study.

Over the past years, a number of studies have shown benefits from the use of technology in education. The role is vital, and the question is no longer if technology enhances learning, but rather how do we improve our use of technology to enhance learning?

Scope of Educational Technology
Educational generation is a process- oriented method. Educational era is not confined to teaching and studying manner and theories nonetheless teaching-getting to know method is inspired a whole lot more by using educational technology. Theories were shifted from getting to know to teaching simplest because of educational generation.

If the academic technology is limited to audio-visible aids, mechanical and electronic devices the scope of educational era becomes constrained, but educational technology isn't always restricted to all this stuff alternatively, it pervades all over. Instructional era need to move into:

a. At home with family and relative
b. Help by External sources
c. Continuous and rigorous analysis
d. Obstacles in solving problems
e. Specification of direct behavior
f. Clear Specification of the problems
g. Management and organization of man, material, resources

h.   Determination of pre-requisites and the gradual direct behaviour.

i.   Availability of a few media as for example films, television, radio etc.

Acknowledgments

The author appreciates all those who participated in the study and helped to facilitate the research process.

Conflict of Interests

The author declared no conflict of interests.

REFERENCES

Becker, H. J. (2000). Access to classroom computers. *Communications of the ACM*, 43(6), 24–25.

Clark, R. E. (1983). Reconsidering the research on learning from media. *Review of Educational Research*, 53(4), 445-459.

Clements, D.H., & J. Sarama. (2003). "Strip Mining for Gold: Research and Policy in Educational Technology: A Response to 'Fool's Gold.'" *AACE Journal*, 11 (1): 7–69.

Dynarski, M., Agodini, R., Heaviside, S., Novak, T., Carey, N., Campuzano, L., Means, B., Murphy, R., Penuel, W., Javitz, H., Emery, D., & Sussex, W. (2007). *Effectiveness of reading and mathematics software products: Findings from the first student cohort.* Washington, DC: Institute of Education Sciences.

Glaubke, C. R. (2007). *The Effects of Interactive Media on Preschoolers' Learning: A Review of the Research and Recommendations for the Future.* Oakland, CA: Children Now.

Greenhow, C., Robelia, B., & Hughes, J. E. (2009). Web 2.0 and classroom research: What path should we take now? *Educational Researcher,* 38(4), 246-259.

Gutnick, A.L., M. Robb, L. Takeuchi, & J. Kotler. (2011). Always Connected: The New Digital Media Habits of Young Children. New York: The Joan Ganz Cooney Center at Sesame Workshop. Retrieved from www.ictliteracy.info/rf.pdf/jgcc_alwaysconnected.pdf

Hermans, R., Tondeur, J., van Braak, J., & Valcke, M. (2008). The impact of primary school teachers' educational beliefs on the classroom use of computers. *Computers and Education*, 51(4), 1499–1509.

Kauffman, D. F. (2004). Self-regulated learning in web-based environments: Instructional tools designed to facilitate cognitive strategy use, metacognitive processing, and motivational beliefs. *Journal of Educational Computing Research*, 30, 139-161.

Kulik, J. A. (2003). *Effects of using instructional technology in elementary and secondary schools: What controlled evaluation studies say*. SRI Project Number P10446.001. Arlington, VA: SRI International.

Lee, H. W., Lim, K. Y., & Grabowski, B. L. (2008). *Generative learning: Principles and implications for making meaning*. In M. J. Spector, D. M. Merrill, J. van Merrienboer & M. P. Driscoll (Eds.), Handbook of research and educational communications and technology (3rd ed.). New York, NY: Taylor & Francis Group.

Leu, D. J., O'Byrne, W. I., Zawlinski, L., McVerry, G., & Everett-Cacopardo, H. (2009). Expanding the new literacies conversation. *Educational Researcher*, 38(4), 264-269.

Lowther, D. L., Inan, F. A., Ross, S. M., & Strahl, J. D. (2012). Do one-to-one initiatives bridge the way to 21st century knowledge and skills?. Journal of Educational *Computing Research*, 46(1), 1-30.

Morrison, G. R., Ross, S. M., Kemp, J. E., & Kalman, H. (2010). Designing effective instruction: Applications of instructional design (6th. Ed.), New York, NY: Wiley.

NAEYC & Fred Rogers Center for Early Learning and Children's Media (2012). *Technology and Interactive Media as Tools in Early Childhood Programs Serving Children from Birth through Age 8.* Joint position statement. Washington, DC: NAEYC; Latrobe, PA: Fred Rogers Center for Early Learning at Saint Vincent College. Retrieved from www.naeyc.org/files/naeyc/file/positions/PS_technology_WEB2.pdf

Pedagoški leksikon (1996). Beograd: Zavod za udžbenike i nastavna sredstva.

Rideout, V. (2011). *Zero to Eight: Children's Media Use in America*. San Francisco, CA: Common Sense Media. Retrieved from
www.commonsensemedia.org/sites/default/files/research/zerotoeightfinal2011.pdf

Stošić, L., & Stošić, I. (2013). Diffusion of innovation in modern school. *International Journal Of Cognitive Research In Science, Engineering And Education (IJCRSEE)*, 1(1), 5-13. Retrieved from http://ijcrsee.com/index.php/ijcrsee/article/view/7

Wang, L., Ertmer, A. P., & Newby, J. T. (2004). Increasing preservice teachers' self-efficacy beliefs for technology integration. *Journal of Research on Technology in Education*, 36(3), 231–250.

Заниловић, М. (2004). Recognition and development of "educational technology" as a scientific field and school subject, *Zbornik Instituta za pedagoska istrazivanja,* (36):106-121, DOI:10.2298/ZIPI0436106D