Building back beneficially: Role of education technology in education system beyond the pandemic

PRIYA RAJ, *M. Sc. B. Ed. (Mathematics), pursuing M. Ed. - Titus II Teachers College, Thiruvalla, Kerala, India*

Abstract

The dilemma caused by the coronavirus has negatively influenced the world's children to a larger extent. Locking out from schools has broken the bridge to their better future. The duty to rebuild their path is vested upon the teaching community. This study gives a glimpse into the role of education technology in building back better. The world was facing *Global Learning Crisis* well before this COVID- 19. That has become a great concern of many educationists in the present era. So as they say, it is a lifetime opportunity to ensure that all children access learning anytime, anywhere.

This study was conducted with the help of the internet to gather the information regarding technology-driven education system and the evolving role of teachers. The paper tries to figure out the necessity and importance of technology in the coming days. This work concerns the changes, which have to be taken care of while reopening the schools. Is there any point in reopening with the existing shortcoming system?

The need of this generation has to be satisfied. Technology is there. Proficient teachers are there. Can we use them together? We have seen a blended model of remote learning and traditional instructions, during this pandemic. Can this be welcomed? The world is at our fingertip.

This study focuses on the necessity of our teaching community, especially our student teachers to be equipped with the new trends in technology. They must identify their shift in role. In this digital epoch *education technology* can offer very much to learners as well as teachers. This paper briefly looks at the aid of technology that can be used to equip, our teaching force. The researcher tries to ascertain the need for collaborating technology and teaching force for better learning, which is unavoidable to overcome the crisis in front of us, which was there in advance to the epidemic.

Education is the most powerful tool to achieve all the demands of society. The teacher is the powerful entity in the education system and Technology has great influence in all aspects of these days. This study tries to figure out the evolving role of teachers' (teachers' high touch) in this high-tech world to meet the current demands of the learning community. How can we satisfy a society where demand is more and supply is less? In the coming days, is it enough to be technologically efficient for being a good teacher?

This study shall move the officials to place efficiency in technology and proficiency in the teaching under the same umbrella and to provide needful skills, arrangements, and practices for teachers' effective evolution.

As teachers, let us together help the Globe to get rid of the so-called learning crisis, by moulding ourselves and our teaching–learning environment.

Keywords: Global Learning Crisis, Educational technology, Teachers' role, Building back better, and High-tech & High touch learning

We are amid dreadful health and economic dilemma in a century. The influence of the virus on the world's children and teenage people is increasingly shocking. Loads and loads of children locked out of school. Education is the bridge that leads children to their better future. That bridge has been broken by this tiny novel coronavirus. As teachers and teacher educators we are the bridge builders. We have to rebuild the path so that our children reach the destination safely on time. We have to build back better. But, how?

Global Learning Crisis

The world was facing Global Learning Crisis well before the pandemic. Report by the Education Commission on September 2017**, the Learning Generation** alarmed that if nothing changes, by 2030, 825 million young people – approximately half of the young

generation – would reach adulthood without the skills they need to succeed. According to the report

"There is no time to waste. Without immediate action, half a generation will be left without the skills they need to fully participate in society and employment by 2030."

The World Bank's World Development Report (2018) uttered a close warning and described the global learning crisis as "a great injustice".

("Schooling without learning is not just a wasted opportunity, but a great injustice." - World Development Report 2018)

As per UNESCO[1] evaluates 60 percent of children throughout the world aren't meeting basic standards.

The difficulty in the education system is a worldwide issue. Gaps have to be identified and bridged. The global learning crisis can be overcome only by improving the necessary skills demanded by this century. It can be attained through intertwining our schools with the latest innovative technology. Technology has become a powerful tool to meet the need of this century and thus to make our lives successful.

Definition

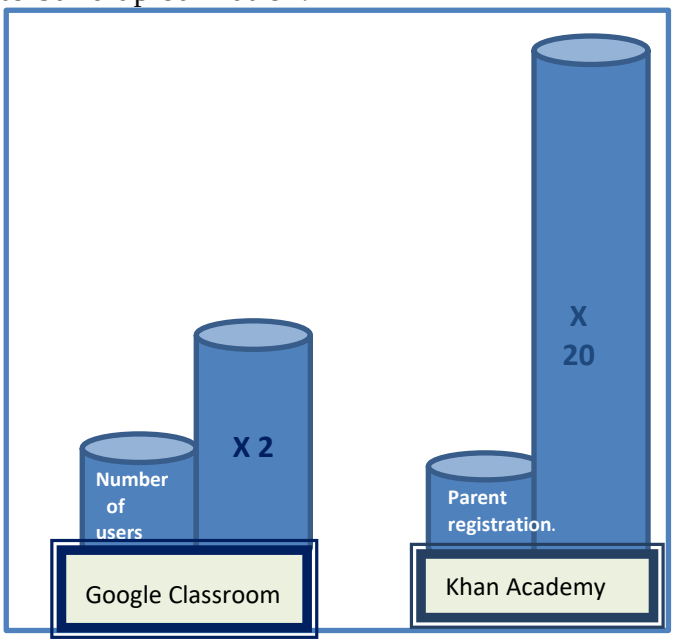
Educational technology (commonly abbreviated as **EduTech**, or **EdTech**) is the combined use of computer hardware, software, and educational theory and practice to facilitate learning. According to G.O.M. Leith, "Educational technology is the systematic application of scientific knowledge about teaching – learning and conditions of learning to improve the efficiency of teaching and training (Mangal and Mangal, 2013)".

1 "More than one-half of children and adolescents are not learning worldwide," UNESCO, September 2017, bangkok.unesco.org.

Impact of COVID-19 on Education System

The COVID-19 pandemic is steering educators to accelerate the latest models of learning and innovate beyond the classroom. Students all around the world demanded to learn from home due to lockdowns. This sharply increased the use of online tools, such as videoconferencing, learning-management platforms, etc. Over the last 10 months, Governments, educators, and teachers have worked together to make sure learning continues for children through a collection of remote learning resources and technologies. Still, we need to work more to build up our nation.

School closure has shown what is attainable for education technology. Within a month, Google Classroom doubled its number of users and Khan Academy saw a 20- fold increase in parent registration. In India many companies and start-ups have entered the edtech space and established their identity during this pandemic.



High -class parents may afford it. What about those, who strive hard to meet the two ends of their lives? How can those children be benefitted? Integration of technology with teaching-learning has to be done massively in each school. Indeed, many of our schools are already having smart classrooms and smart gadgets. Do we have enough “Smart Teachers” to build up a “smarter” generation?

Technology to build back better

In this digital era, technology plays a crucial role in every aspect of life. Computer programming and digital literacy are becoming key skills. Teaching technology and teaching

with technology are requisite of this period. Technology has proven to be a vital tool to open doors for remote learning for millions of children. This dilemma provides an opportunity to reimagine education. As schools and systems re-emerge from the pandemic, the inquiry now is what the role of technology will be? Education systems can absorb these tools more permanently and on a broader scale. The modes of education can be a mix of physical and digital. Once schools have reopened, systems can pursue to use of remote learning and other technologies, blending them with traditional instruction. That means including both online and face-to-face education. Geoffrey Hubbard (1974) writes "Educational Technology is the complement of curriculum reform concerned with the method where curriculum reform is concerned with the content… (Mohanty, 2005)" .

Remember, technology is not substituting traditional learning but complementing it. Students' were passive listeners in the old system. But in the child-centered system, they have become an active participant. Students aren't consumers of facts. They are active creators of knowledge. Schools aren't just brick-and-mortar structures -- they're centers of lifelong learning. And, most important, teaching is recognized as one of the most challenging and respected career choices, absolutely vital to the social, cultural, and economic health of our nation (Lanier, 1997). The fundamental job of teaching is no longer to distribute facts but to help children learn how to use them by developing their abilities to think critically, solve problems, make informed judgments, and create knowledge that benefits both the students and society (Lanier, 1997). Technology indeed made it easy, for the students to remember and understand the content. But what we are worried about is how this can facilitate the teaching- learning process. Effective implementation of novel pedagogies requires understanding teachers' roles and responsibilities in the transformed classrooms. The student-centered classroom literature defines the teacher's roles and responsibilities in classes

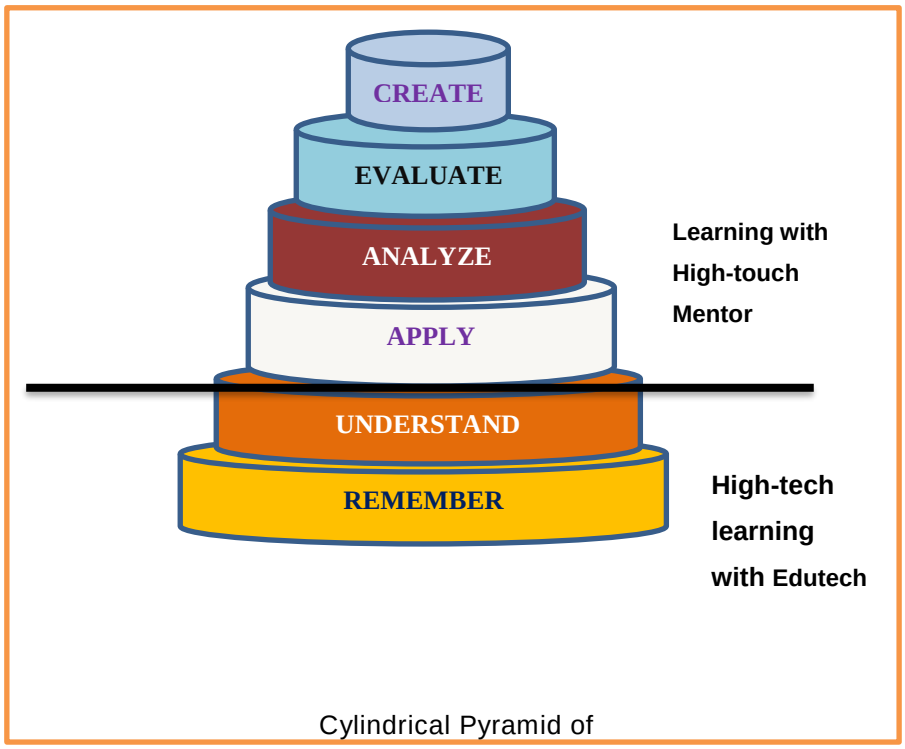
that employ student-centered pedagogies, including various iterations of constructivist and inquiry-based instruction (Keiler, 2018). Are our teachers in pace with technology?

A combination of "High-Touch" and "High-Tech" learning models may be the best way ahead to build back better. That is possible only if our teachers could keep pace with technology. Indeed our teachers need a higher touch to get along with high-tech. For both teachers and learners, educational technology has a massive capability to provide the best output in the process of teaching-learning. Educational technology helps in providing efficiency to the task of teaching and learning (Mangal and Mangal, 2013). Reinventing the role of teachers inside and outside the classroom can result in significantly better schools and better-educated students (Lanier, 1997). The teaching-learning experience can be managed using educational technology at the preparation and in-service stage. There is an opportunity to reimagine teacher training by strengthening advanced technology and development. Adding technological dimensions to the pedagogical Content Knowledge (PCK) model can help in restructuring the curriculum. Opportunities should be provided to the teachers and student teachers to excel in all the seven dimensions of the 'technological pedagogical content knowledge (TPACK) framework'. Thus the technology can evolve the teaching-learning smarter. Teacher colleges must be provided with innovative technologies so that they could help future teachers learn how to design and bring forth High-Touch High-Tech personalized learning for every student in the classroom. Interconnection between such teacher trainees and local schools helps teacher preparation and development, which necessitate present-day. More linkage between student teachers and the classrooms can help in analysing the situation and make required advancements with the help of their mentors and in-service teachers. The ambiguity formed can be made transparent only by equipping our young generation to face the crisis. Changes must start from the training level so that it can build a better more adaptive workforce to the technological era.

The role of a teacher in Edutech integrated educational system differs from that of the traditional system. Teacher changes from information provider to guide, problem solver, mentor, etc. The old model of instruction was predicated on information scarcity. Teachers and their books were information oracles, spreading knowledge to a population with few other ways to get it. But today's world is awash in information from a multitude of print and electronic sources (Lanier, 1997). They must identify the change in their role. To create powerful learning opportunities for diverse learners, teachers need to be supported to develop new competencies: skills, knowledge, and dispositions to leverage resources and tools to support them in their evolving role (Martin, 2017). Here everyone is a teacher and learner. They are partners in learning. The teacher has to let the child responsible for his education. One of the most powerful forces changing teachers' and students' roles in education is new technology (Lanier, 1997). The total structure of our education system has to be redefined so that all are equally availed of the innovative techniques. Recasting the relationship between students and teachers demands that the structure of school changes as well (Lanier, 1997).

In high-tech high touch learning, students first remember and understand content through edutech (high-tech with AI, mobile technology, etc.), and then learn to apply, analyse, evaluate what they understand, and finally learn to create, through engaging with teachers or mentors (high-touch). Technology provides information regarding a variety of subjects, ranging from good to bad, wanted to unwanted, and useful to useless. So they cannot be followed blindly, screening is necessary. A highly touched teacher can help the students to choose the best of all the available resources for their better learning environment. Thus by restructuring our education system with high-tech high touch learning, we can overcome the Global Learning Crisis to a large extend.

The figure below explains using Bloom's Taxonomy, how high-tech high touch learning helps students to create:



Cylindrical Pyramid of Bloom's Taxonomy
{Modified from Dale Johnson (2018)}

(Source: Johnson, Dale P., Adoptive + Active Model: A New Approach to General Education, Arizona State University, 2018.)

According to Paddick, using technology in the classroom "improves engagement, improves knowledge retention, encourages individual learning, encourages collaboration, teaches students' useful skills, and benefits teachers" (2016). Effective use of technology can enhance teaching-learning not only in the classroom but beyond that. If efficiently used innovative tools can create a collaborative learning environment, even if the learners and teachers are far apart. Thus it provides a new realm to remote learning.

Along with that Edutech offers different types of technologies that can be used for education in the future for the betterment of students. Some of them are

1) **Custom learning experiences**: Earlier the opportunities' for a learner was confined within the four walls of a school. Now it is not the case. The learner can access resources anywhere in the world, any time according to his convenience. With modern gadgets, one can

initiate learning based on their need, fondness, and availability. It helps to undo need-based learning. A technology-enabled learning environment helps the learner to attain high-quality learning materials and more experience in his desired field of study. Some learners may struggle between their thirst for learning and carrier. Those who cannot attend face-to-face classes can access high-quality mentoring and fulfil their needs online.

2) **Collaborative online tools like Wikis or Google Docs**:

Collaborative works improve the learning outcome. With the help of M-learning and eLearning, the learner is exposed to a variety of collaborative tools. Students can collaborate with their peers doing similar work, even if they are geographically apart. These tools help to enrich online learning. Using polls and quizzes offers a lively experience to the learner. Even students who lack the confidence to speak in public may express their views freely on these online platforms.

3**)** **Cloud Computing**: It has unclosed the door to high-tech education. The information stored in the cloud server of the apps made it possible to access anytime, anywhere. Cloud computing helps teachers, students, and administrators. It helps students to easily access their homework and missed class notes from where ever there is the internet. Teachers are benefited by easily and instantly uploading the study materials required for learning. Administrators can adapt collaboration cheaply and effectively.

4) **Response to voice commands**: These are smart assistance that helps to transform the voice commands into text features. It is helpful for students with learning disabilities and

physical disabilities. Learning languages can be enhanced with this smart assistance. Speech recognition software can read out the instructions too.

5) **Virtual reality:** Interaction with an artificial three-dimensional environment provides a better learning environment for the students. Suppose a school lacks a full-fledged science lab but has robust connectivity. It can offer the students with better resources than those of their peers, using virtual reality. It will take them out of the school settings.

There are so many other new trends in Edutech whose effective integration extends learning and teaching powerfully. All these can be incorporated into our education system. The power of the teacher is not the information she shares but the opportunities she creates for students to learn how to learn, solve problems, and apply what they are learning in meaningful ways (Martin, 2017). For that our teachers and at the minimum 'to be teachers' must be equipped, trained, and evolved accordingly.

Edutech: The vision of India's New Education System (NEP 2020)

The National Education Policy 2020 indicates the vision of India's new education system. It acknowledges the potential risks and dangers of technology but also recognizes the importance of strengthening its advantages and points out the significance of *Edutech* in post –COVID education system. It has already started focusing on it.

It recommends *National Education Technology Forum* ("NETF"), a new autonomous e-education entity, to promote technology in the process of education. **Dr. K. Kasturirangan**, head of the panel for **NEP 2020** said that research in educational technology could not only play a vital role in furthering the goals of NEP but also improve the resilience to disturbances

such as the one we are facing today because of the pandemic. He said that the policy recommends the use of technology to enhance learning, assessment, planning, and administration for school and higher education. This could play a vital role in the free exchange of ideas. The NEP 2020 has also set out to produce e-content in eight regional languages for education, in times of covid-19 induced lockdown.

"In online learning, most of the time our focus is on English or Hindi. However, the NEP envisages developing e-content in eight regional languages - Tamil, Telugu, Kannada, Malayalam, Gujarati, Marathi, Bengali, Oriya," the draft explains.

Edutech : According to Global Partnership for Education(GPE)

According to GPE, Educational Technology enhances not only learning outcomes but transparency and accountability. GPE emphasises that

"The pandemic providing a once in a lifetime opportunity to guarantee all children and young people access learning anywhere, any time. There is no point in reopening existing shortcomings systems. We should use this moment to rebuild those systems so they deliver more beneficially and helps inequity of education".

If we only focus on integrating technology rather than creating powerful learning experiences that align with the type of students we want to develop, we will continue to perpetuate the same norms in education with more expensive tools (Martine, 2017).

Conclusion

This study is only a superficial understanding of the topic. The role of technology in education and is a vast area of study. It's true that in this digital era, substantial use of technology in education is inescapable, but technology will never replace a great teacher.

Prof. Humayun Kabir once stated "Without good teachers, even the best of a system is bound to fail. With good teachers, even the defects of a system can be largely overcome." The most respected teachers have discovered how to make students passionate participants in the instructional process by providing project-based, participatory, educational adventures (Lanier, 1997). Don't forget children learn best from people, not from programs. So our teaching force has to be evolved with high touch, to provide high-tech experience to our children. Technology is a good servant but a bad master. If used wisely, technology can undoubtedly help to assure equity in education. Let us look forward to a never-ending learning environment, which satisfies the demand of the hour and learners who never, ever stop learning.

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