



## Dawn of Digital Education in India: Crux and Cure

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**Abstract:** In the era of Information and Communication Technology (ICT), almost each and every organization is trying to get equipped with advance technologies. With the help of different modern tools, organizations are enriching, expanding and evolving their businesses. This is spreading across the globe in a rapid speed. In this regard, India is no exception. Among several different sectors in India, the field of education in India has also started to get benefitted with the boon of modern technology. In this paper, we will go through the key challenges in the path of modern education and the initiatives taken to combat with it.

**Keywords:** information and communication technologies, gurukul, smart classroom, University Grants Commission.

### I. INTRODUCTION

Learning is a never ending process. In ancient times, the idea education system in India was “*Gurukul*”. Pupils used to reside at Guru’s place and continue learning for a period of time. With the changes in our society the process of teaching-learning has been evolved. The traditional way of teaching-learning lags behind the modern day demand. And more interestingly, the way of teaching-learning is still changing with the advent of new technologies. In the last decade or so, the introduction of *ICT* has dramatically changed the education system in India. In the rest of the portion of this literature, we highlight on the barriers in the path of Digital education in India. Later, we will emphasize on the different key steps taken by the Government of India (GOI) to remove those barriers.

### II. ISSUES AND CHALLENGES

In India, with the current scenario of digital education, a long way to go to fulfill the gap between reality and future vision. In this respect, several limitations are there, that inhibits to take full advantage of digital education. Some of the major shortcomings are as follows:

- 1) Lack of basic computer education in schools, especially in remote places.
- 2) Many regions in India do not have electricity connection.
- 3) Smooth internet connection is yet to reach to a large geographical area in India, especially in hill regions and remote villages. Those areas may have electricity connection, but lack of infrastructure to provide internet connection. Without a consistent internet connection, education through digital medium is not possible.
- 4) Although India has around 1.4 million schools, 35500 colleges and 600 universities [1], still our graduate’s employment rate is not good. The main reason behind this is, the quality of higher education is below average in many of these institutions. For instance, every year India produces approximately 1.5 million engineers, but very few percentage of them get good jobs. In recent times (2017), one shocking statement by *Srinivas Kandula* (Chief Executive, *Capgemini (India)*) about

the IT employees, was – “I am not very pessimistic, but it is a challenging task and I tend to believe that 60-65 per cent of them are just not trainable” [12].

- 5) Although the GOI is very much keen to implement smart classroom in schools and colleges, the equipments (hardware and software) needed for smart classroom are still very expensive. This may not be affordable by many schools and colleges. Besides, maintenance of these expensive equipments is extremely important.
- 6) All e-based learning is not interactive. For example, the online video courses provided via NPTEL, provides only simplex (one way) type of communication.
- 7) Poor knowledge in English language. Since, most of the e-learning materials over the internet are based on English language, it repels students who are not literate in English or have poor knowledge in English language.

### III. KEY STEPS TOWARDS DIGITAL EDUCATION

Over the years, the GOI has taken several initiatives to utilize ICT in the field of education. Since, India has been lagging behind in the education sector, especially in higher education in competition with other developed countries, the GOI aims to boost up the education sector with the help of ICT. Over the past few years, the GOI has been spending hundreds of crores of rupees to uplift the health of education system in India. In this direction, the Ministry of Human Resource Development (MHRD, GOI) has taken some key initiatives:-

- 1) **Smart Classroom:** With this new face of classroom an educator can use smart board along with other necessary equipments to make the teaching-learning method more interactive, interesting and attracting to learners.
- 2) **E-learning:** This type of learning is primarily based on computers. Having internet connection along side, one can access different e-learning materials easily from anywhere. The MHRD, GOI is emphasizing in this modern method of learning. The method of e-learning can be of two types: a) unidirectional and b) bidirectional. In the unidirectional method, only the educator gets to interact with the learner. But, in case of

bidirectional method, both the parties (educator and learner) can interact with each other over live streaming.

- 3) **NPTEL (National Program on Technology Based Learning):** An initiative taken by MHRD, GOI to provide e-learning through audio-video lectures in the field of Engineering, Science, Technology, Management and Humanities [6]. This is a joint initiative by IITs and IISc Bangalore with other selected premier institutions from India as associate partner.
- 4) **SWAYAM (Study Web of Active learning for Young Aspiring Minds):** An initiative by the department of MHRD, GOI, for providing online video courses. A learner can also pursue certificates on different courses via this mode of learning, which is not available in NPTEL. Content of these courses covers from 9<sup>th</sup> standard to post-graduation. The main difference between NPTEL and SWAYAM is that, the video courses available in SWAYAM are interactive. Apart from video lectures, SWAYAM provides specially prepared reading materials, self-assessment test through tests and quizzes and an online discussion forum for clearing the doubts [2].
- 5) **Virtual Labs:** Another good initiative taken by MHRD, GOI, that aims to provide remote-access of laboratories in various disciplines of science and engineering for students from undergraduate to research [5].
- 6) **E-yantra:** This is an initiative to spread education in Embedded Systems and Robotics by IITB, sponsored by MHRD, GOI. The objective is to provide hands-on learning experience to engineering students who have limited access to labs and mentors in their institutions [4].
- 7) **Talk To A Teacher:** This initiative taken by IIT Bombay (IITB), provides free access to a few selected graduate and post graduates courses taught at IITB. This portal also includes a series of talks given by Ph.D. students of IITB [7].
- 8) **Spoken Tutorial:** This is an initiative of the National Mission on Education through Information and Communication Technology. The aim is to provide software training workshops using spoken tutorials and certify that who pass an online test. The project is being developed by IITB for MHRD, GOI. [8].
- 9) **CEC (Consortium for Educational Communication):** This is set up by UGC, India. The goal is to disseminate the educational programs through the use of powerful medium of Television and ICT [9].

10) **FOSSEE (Free and Open Source Software in Education):** This project is a part of National Mission on Education through ICT, MHRD, GOI. This initiative mainly promotes the use of Free and Open Source Software (FOSS) and improves the quality of education. The reason to encourage use of FOSS, is to reduce the dependency on proprietary software in educational institutions [10].

11) **E-ShodhSindhu:** The main objective for this initiative is to provide access to qualitative electronic resources including full-text, bibliographic and factual databases to academic institutions at a lower rates of subscription [11].

#### IV. CONCLUSION

Apart from the different initiatives taken by GOI, there are some NGOs (Non-governmental Organization), charitable organizations and many noble individuals who have been in the mission to uplift the education scenario in our society. In the coming years, more and more advancements will take place in the field of science and technology, undoubtedly. Consequently, suitable tools will be developed and deployed to promote, extend and progress in school and higher education throughout the country. Besides, the GOI must also arrange training programs for educators to train in these new methodologies of teaching. If these technologies are utilized fully, then this will help our future generations in a great deal.

#### V. REFERENCES

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