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*Building Employability Skills through the Use of Information
and Communication Technology*

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Abstract: *The National Policy on Skill Development, 2009 has set a target of skilling 500 million people by 2022. To achieve this target, they have identified certain challenges. One such challenge identified is expanding the reach of training across India. This paper suggests use of different Information & communication technology, which provides affordable measures and tools to cater to this need. Various higher educational institutions can use the suggestions given in the paper. This will not only increase their viability but also increase their student base thus giving them an edge over others.*

Keywords: *Information and communication Technology, Disruptive Innovation, e-learning technologies, Employability skills.*

I. INTRODUCTION

India has the world's youngest work force with a median age way below that of China and OECD countries. Half the population of India was younger than 25 in 2010. It will change to half the population being under 28 in 2030, making India a very young country for the next 20 years.

It is expected that the ageing economy phenomenon will globally create a skilled manpower shortage of about 56.7 million by 2024. With the rising trend of outsourcing work globally, India has the opportunity to become a global reservoir of skilled manpower, accounting for 28% of the graduate talent pool among 28 of the world's lowest-cost economies. The National Policy on Skill Development, 2009 recognizing this opportunity, had set a target of skilling 500 million people by 2022.

The 4 Big Challenges Confronting Skill Development as identified by NSDC:

1. Making Vocational Skill aspirational
2. Student Mobilization
3. Quality of training
4. Enabling environment

This paper is set to suggest measures to fulfill the student mobilization need of NSDC. To reach the target of 500 million people will involve huge investment in infrastructure. This will add on to the increasing burden of expenditure for a developing country like India.

On one hand, we have lack of resources and on the other hand, people in India have been found comfortable adapting to new technology. The Internet and mobile penetration in India is very high. This can provide a convenient and affordable way of reaching the people who are interested in increasing their skills. Use of ICT can provide the flexibility to the users to do things at their pace and still enhance their learning experience.

II. REVIEW OF LITERATURE

- Kirkwood and Price (2005) conducted a meta-analysis on the students' attitude to and experience of technology at the Open University spanning five years. Analysis revealed that there were differences in student access to, experience of and attitude towards technologies across subject disciplines. There was a dramatic increase in students' access to and use of ICT over the five-year period as per their study.
- De Laat (2006) studied emergent student roles and engagement with e-learning activities and found that students are actively involved in coordinating and regulating personal and shared learning activities. The findings showed that students at various stages of their course developed particular learning strategies and facilitation skills to support their online learning.
- Christensen (2008) describes how disruptive companies establish a foothold in the market, expand that market dramatically, and then inexorably migrate up the quality chain. The study emphasized on application of disruption model in higher education.
- Flynn, James T (2013) emphasis on importance of MOOC in higher education and its rapid accessibility worldwide. MOOC is considered as classic example of disruptive innovation.
- Christensen and Johnson (2009) emphasized on the meaning of business models and their functioning. The article also discussed the impact of disruptive innovation on a business model. Finally, they explained how a business model is developed.
- Archer, Garrison and Anderson (2013) talk of Distance education as disruptive technology in higher education. The article lists down the ways which traditional universities can adopt to suit the ever-changing demands of educational sector.

III. OBJECTIVE

1. Analyzing the present scenario and future prospects in employment sector for Indians.
2. Suggest various tools relating to Information & Communication Technology, which can be adapted to enhance the skills required for tapping the job market.

IV. METHODOLOGY

The present scenario of skill potential in India was studied and the requirement for the future pulled out from that. Also, how disruption affects the business and how it is applicable to skill development sector was carefully studied. Modification in present setup has been suggested based on the findings. The study is of descriptive nature and involved extensive review of literature. Writings of Christensen Clayton, who coined the word "Disruptive Innovation", was the bases of our study. Various articles written on Disruptive innovation, its application on business and education, etc. was thoroughly reviewed.

V. BACKGROUND OF THE STUDY

A. *Demographic Dividend for India:*

According to a latest United Nations report in 2014, "With 356 million 10-24 year-olds, India has the world's largest youth population despite having a smaller population than China."

Details of the United Nations Population Fund's (UNFPA) State of the World's Population report exhibit, "China is second with 269 million young people, followed by Indonesia (67 million), the US (65 million) and Pakistan (59 million), Nigeria with 57 million, Brazil with 51 million, and Bangladesh with 48 million."

As compared to western economies where there is a burden of an ageing population, India has a unique 20–25 years window of opportunity called the “demographic dividend.” This “demographic dividend” means that as compared to other large developing and developed countries, India has a higher proportion of working age population vis-à-vis its entire population. The result is low dependency ratio, which can provide a comparative cost advantage and competitiveness to the economy.

According to a report of Planning commission (Government of India), 2008, “ It is expected that the ageing economy phenomenon will globally create a skilled manpower shortage of about 56.7 million by 2020.” India can use this to its advantage but it is possible only when we investing in providing employability skill to the youth of the country.

B. Employability Skills:

International Labour Organization has released “core skills for employability”. They called them “Skills for the world of work”. These skills have been labeled differently by various agencies and organizations. The list is as follows:

1. Basic/Foundation:
 - a. Literacy and Numerical Skills
2. Vocational/ Technical skills:
3. Professional/ Personal Skills:
 - a. Honesty
 - b. Integrity
 - c. Work Ethics
4. Core Work Skills:
 - a. Ability to learn and adapt;
 - b. Read, write and compute competently;
 - c. Listen and communicate effectively;
 - d. Think creatively;
 - e. Solve problems independently;
 - f. Manage oneself at work;
 - g. Interact with co-workers;
 - h. Work in teams or groups;
 - i. Handle basic technology,
 - j. Lead effectively as well as follow supervision.

A study conducted by World Bank (2011) points out that 64% of the employers say they are only somewhat satisfied with the performance of the engineering graduates in India (Andreas Blom, 2011). Globally about 34% of the employers (Talent shortage survey, 2005) find it difficult to fill the talent gap and in India 67% of the employers find it difficult to find right talent in India (from both arts and science graduates). These results points out the need for proper awareness and training among the graduates to enhance their skills.

C. Challenges:

In India, about 12 million people join the workforce each year comprising highly skilled (constitute a minuscule part), skilled, semi-skilled and un-skilled work force. The last category constitutes the majority of the population entering the workforce. However, the current skill capacity of the country is about four million. It is therefore required to enhance skilling and technical education capacity to about 15 million (considering that even sections of the existing workforce would have to be trained). Required skills The World Economic Forum indicate that only 25% of the total Indian professionals are considered employable by the organized sector.

India is among the top countries in which employers are facing difficulty in filling up the jobs. For India, the difficulty to fill up the jobs is 48%, which is above the global standard of 34% in 2012. The lack of available applicants, shortage of hard skills and shortage of suitable employability, including soft skills, are some of the key reasons in finding a suitable candidate for available jobs in the country.

India lags far behind in imparting skill training as compared to other countries. Only 10% of the total workforce in the country receives some kind of skill training (2% with formal training and 8% with informal training). Further, 80% of the entrants into the workforce do not have the opportunity for skill training.

It is evident that a major challenge of skill development initiatives is to address the needs of huge population by providing skills in order to make them employable and help them secure meaningful livelihood opportunities. This necessitates planned development of skills, which is underpinned by a 'policy', that is both comprehensive as well as national in character.

D. Disruptive Innovation - Introduction

"Disruptive innovation is an innovation that makes a complicated and expensive product simpler and cheaper and thereby attracts a new set of customers." (Clayton Christensen, 2008).

Disruptive innovation can be responsible to bring in the revolutionary change in the way business is run. It brings in new ways of earning by establishing new markets, categories and change in consumer behavior. Disruptive innovations lead to the following:

- Can Create New Markets
- Disrupts an Existing Market and Value Network
- Displaces an Earlier Technology
- Outcomes cannot be anticipated
- Caters to the requirements of new and less profitable customers
- Facilitates cost effective strategies to be adopted

I) Role of disruptive innovation in skill development:

The National Policy on Skill Development, 2009 had set a target of skilling 500 million people by 2022. They have planned to use Public Private Partnership model to fulfill this requirement. While implementing their plans, they identified 4 big challenges (given in the beginning) which includes:

1. Making Vocational Skill aspirational: A national campaign to make skills aspirational among India's youth
2. Student Mobilization: Expanding the reach of vocational training across India.
3. Quality of training: Adding capacity in the near term through PPP and setting up of sector skill council to enable high quality vocational training to India's youth.

4. Enabling environment: Access to funding for India's youth to pursue vocational training.

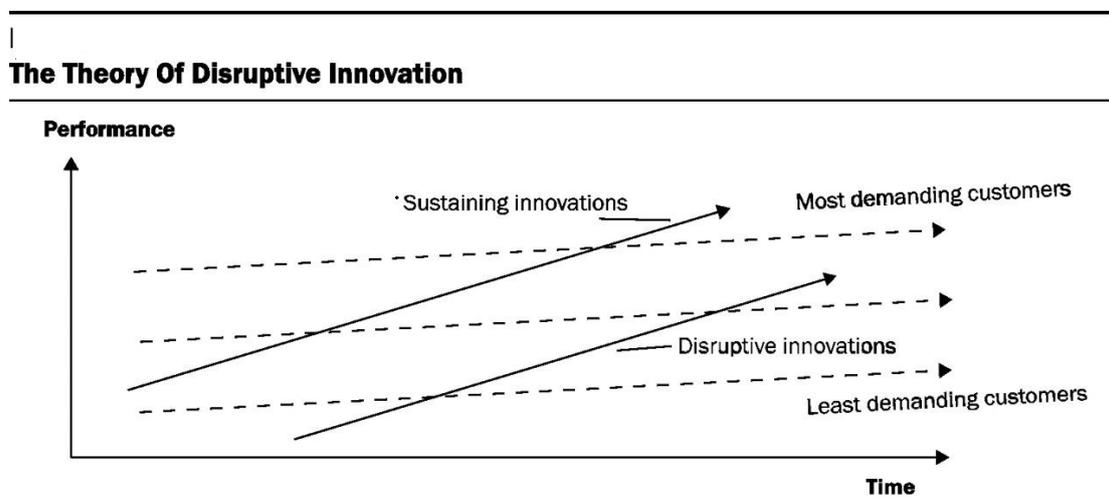
To focus on student mobilization and expanding the reach of vocational training across India requires huge investment in providing new and better quality courses, developing research culture, employing experienced and highly qualified staff, providing variety of courses, increasing the number of building and improvising the infrastructure. All this will result in increasing the cost of providing these services. Problem arises when skill development starts becoming unaffordable for the people. Those, willing to study are not able to get it because of restriction of money and time.

Thus, arises the necessity to invest in tools, which are more cost effective and have high reachability. Disruption from the regular practices is the need of the hour. There are people who want to enhance their skills but do not want to enroll themselves in regular classroom system. Then there are others who would be busy with their jobs, or are students for a regular course or a section of society, which is not allowed to enter a regular education set-up (example, girls or housewives who are not allowed to study further). These people need innovative practices to enhance their skills. They require flexibility, affordability, and convenience to learn anything. A regular course will not serve their purpose. Also, here it is important for us all to know that this is a huge untapped market and so deserves the attention of the people in the field of skill development.

This disruption is possible through extensive use of technology and investing in low cost and high impact e-learning technology. E learning is an easy and accessible way and comes very handy for them. Also, it is readily available and low costing as well. It provides the flexibility required. Thus, courses that were earlier taken by only those who could not afford traditional setup will become appealing for even mainstream students.

Here one needs to clarify the differences between disruptive innovations and sustaining innovation. Sustaining innovations are meant for the most profitable customers. Here, the system tries to attract and maintain those customers who can pay its heavy fees and want better and improved quality of skill development courses. The twinning programs, tie ups with international universities, providing industry exposure through internship, appointing reputed and well qualified faculties and developing state of the art infrastructure is the requirement of this segment.

Disruptive innovation on the other had is meant for least profitable segment of customers. It is cheap and accessible for those who are sidelined from the mainstream education. This is going on developing and progressing and is capturing the market due to its flexible features. It has the potential to make a complete change in the way people perceive about skill development.



SOURCE: C.M. Christensen, *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail* (Boston: Harvard University Press, 1997)
Figure 1: The theory of Disruptive Innovation

E. Why ICT can act as a tool for disruption?

The growth story of mobile Internet in India is on the upsurge. According to the IAMAI & KPMG Report “India On The Go – Mobile Internet Vision Report 2017”, India is projected to have 236 million mobile Internet users by 2016. The Report further projects that mobile Internet user in India will reach 314 million by 2017. The Report also points out that India will have over 500 million Internet users by 2017. As of June 2014, nearly 50% of the AIU in rural areas accessed Internet using mobile phones, Community Service Centers (CSC) and Cyber Cafes.

Bringing pedagogies to provide skill development courses through the use of Information and communication Technology will lead to e-inclusion of the people. All the mentioned tools involve small investments, provide easy accessibility, are flexible to use and has high reach for customers.

Ways through which ICT can bring a revolution:

- Responsive e-learning design
- Wearable technology
- Digital textbooks
- 3D Printing
- Massive open online courses (MOOCs)
- Online Experts
- Online Mentors
- Virtual Learning Communities
- Virtual Design Studios

i) RESPONSIVE E-LEARNING DESIGN:

Generation of today spend most of their time on computer, laptop, smart phone, tablet, etc. Thus, the challenge is to provide learning solutions to work on all these devices. Responsive e-Learning Design (RED) is the technology that helps us design and deliver learning solutions that work across a broad range of devices smoothly. It follows and adapts the standards laid out by Responsive Web Design (RWD).

ii) DIGITAL TEXTBOOKS:

Digital textbooks also can be seen as the future solution to today’s bulky libraries and heavy books. It is an amazing feeling that books talk to you and you don’t need to read through the words in the books but simply listen, watch and understand as and when you want. Many universities have started using these because it keeps the students engaged and they are also cost effective. The practice has increased recently, that the authors publish their books and also bring the e-version of it along.

iii) WEARABLE TECHNOLOGY:

Wearable digital devices like Google Glass are and will be responsible for bringing a breakthrough in education. They are a source of continuous learning. The opportunities they provide are immense. It allows the faculty to be not in the class but still provide the live demonstration of things to the students. Benefits can be seen in medical field as live operations can be shown with the doctors giving the details of the intricacies involved. In case of engineering, the latest technologies or giant machines and their functioning can be shown by any one demonstrator being physically present in the factory premises, thus saving the money involved in taking the entire class for the tour.

iv) 3D PRINTING:

3D Printing is a technology that helps turn a digital design (a 3-dimensional file) into an actual three-dimensional physical product just with the click of a button. This technology, although at its initial phases, has a lot of potential to be used in the future. They provide learners opportunities to gain practical experience. It will make classroom teaching more effective.

v) Massive open online courses (MOOCs):

One of the biggest products of cloud computing technology is MOOCs (Massive Open Online Course). The providers of MOOCs (Coursera, edX, etc.) can offer huge number and variety of courses and to popularise it, the courses are presently being offered free of cost.

vi) Online Experts:

Many organizations offer "ask an expert" services. Students may send inquiries and the experts in respective field will respond to their questions. Thus, ICT can bridge distance to enable students to access remote expertise.

vii) Online Mentors:

ICT can also enable mentoring programs to provide one-on-one guidance to individuals by well-established members of a particular community. Such virtual collaborations between individuals are an effective ways for senior members of a community to teach, inspire, and support newcomers.

viii) Virtual Learning Communities:

ICT makes it possible to engage people in widely dispersed locations in "virtual learning communities." Virtual learning communities are learning groups based on shared purpose, not artificial distinctions of location or age. Through ICT, learners can be drawn together from almost anywhere, and they can construct their own formal or informal learning groups. Such communities may transverse barriers of time, geography, age, ability, culture, and social status.

ix) Virtual Design Studios:

Teachers and students, on different continents and in different time zones, work on a common design project using computer-aided design systems, email, a central database, and video-conferencing. Participants use the World Wide Web to display their designs and a virtual international jury of architects and teachers judges the relative merit of the work. Past student projects included re-designing housing in Shanghai and designing a Center for Cultural and Religious Studies in Japan.

x) Mobile Applications:

Such apps can be prepared to cater to different skill requirements of different people and help in resume building, enhancing other employability skills and also provide portfolio-building facilities for employability enhancement.

xi) Simulations:

It is an artificial or synthetic environment created to manage an individual's experiences with reality. Simulation based training focuses on providing trainees with the opportunities to develop and practice the required competencies and receive feedback. Example: flight simulation, PC Based simulations, and games projecting the problems of real life seeking solutions by the user.

VI. CONCLUSION

"Need is the mother of inventions." Today, the biggest problem of education sector in India is to cater to the needs of ever increasing population and changing needs of the job sector. The constraints of time rigidity, and fees etc., take away the opportunity from those deserving. All good changes occur because certain people thought of things differently. Incubating

disruptive communication and learning technologies can provide a feasible solution for today's condition. Disruptive innovation is a way to expand our capacities. Disruptive innovation will make skill enhancement accessible and affordable for the masses and remove the bottlenecks in the field of providing training and skill development.

References

1. Kirkwood, A., & Price, L. (2005). Learners and learning in the twenty-first century: What do we know about students' attitudes towards and experiences of information and communication technologies that will help us design courses? *Studies in Higher Education*, 30(3),257–274
2. De Laat, M. F. (2006). *Networked learning*. Apeldoorn: Politieacademie.
3. Christensen, C. (2008). *Disruptive innovation and catalytic change in Higher education*. In *Futures Forum*, Harvard Business School.
4. Jain, P., & Purswani, G. (2016). Disruptive innovation in higher education: challenges in application of e-learning in conventional university system. *International Journal of Research in IT and Management*, 6(2), 34-41.
5. Flynn, J. T. (2013). MOOCs: Disruptive innovation and the future of higher education. *Christian Education Journal*, 10(1), 149.
6. Conole, G., De Laat, M., Dillon, T., & Darby, J. (2008). 'Disruptive technologies', 'pedagogical innovation': What's new? Findings from an in-depth study of students' use and perception of technology. *Computers & Education*,50(2), 511-524.
7. Christensen, C. M., & Johnson, M. W. (2009). *What are Business Models, and how are They Built?*. Harvard Business School.
8. Christensen, C. M., Horn, M. B., Caldera, L., & Soares, L. (2011). *Disrupting College: How Disruptive Innovation Can Deliver Quality and Affordability to Postsecondary Education*. Innosight Institute.
9. Christensen, C. M., & Eyring, H. J. (2011). *The innovative university: Changing the DNA of higher education from the inside out*. John Wiley & Sons.
10. Archer, W., Garrison, R., & Anderson, T. (2013). Adopting disruptive technologies in traditional universities: Continuing education as an incubator for innovation. *Canadian Journal of University Continuing Education*, 25(1).
11. India has world's largest youth population: UN report (2014, November 19), the hindu, available at <http://www.thehindu.com/todays-paper/tp-in-school/india-has-worlds-largest-youth-population-un-report/article6612615.ece>
12. National Policy on skill development, 2009, Government of India, available at <http://www.bopter.gov.in/assets/nationalskilldevelopmentpolicymar092.pdf>
13. <http://www.ey.com/in/en/industries/india-sectors/education/knowledge-paper-on-skill-development-in-india---where-are-we-on-skills>
14. Knowledge paper on skill development in India: Learner first, 2012, available at
15. <http://www.dreducation.com/2013/08/data-statistics-india-student-college.html>
16. <http://www.tflguide.com/2012/10/cost-of-higher-education-in-india-calculator-infographics.html>
17. Higher education costs Rs. 95k cr on forex outflows, says ASSOCHAM, available at <http://www.thehindubusinessline.com/news/education/higher-education-costs-rs-95k-cr-on-forex-outflows-says-assochem/article3854578.ece>
18. <http://education-2020.wikispaces.com/Disruptive+Innovation>
19. Brian Reale, The disruptive business model for higher education is open source, 2013 October15 available at <http://opensource.com/education/13/10/open-business-model-free-education>
20. http://en.wikipedia.org/wiki/Learning_management_system
21. <http://en.wikipedia.org/wiki/E-learning>
22. http://www.iamai.in/PRRelease_detail.aspx?nid=3604&NMonth=7&NYear=2015
23. <https://wheebox.com/logo/India%20Skills%20Report2015.pdf>
24. [http://www.ey.com/Publication/vwLUAssets/FICCI_skill_report_2012_finalversion/\\$FILE/FICCI_skill_report_2012_finalversion_low_resolution.pdf](http://www.ey.com/Publication/vwLUAssets/FICCI_skill_report_2012_finalversion/$FILE/FICCI_skill_report_2012_finalversion_low_resolution.pdf)
25. <http://wadhwani-foundation.org/initiatives/sdn-india/>
26. <http://www.livemint.com/Industry/bid93Hg8ISZYAav0RSnNN/A-mobile-phone-app-to-improve-your-employability-skills.html>
27. <http://www.nsdcindia.org/sites/default/files/files/NSDC-invites-participation-Instrumentation-Automation-Communication-Surveillance-SSC.pdf>

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