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BRIDGING SKILL GAP IN HIGHER EDUCATION : CAN TECHNOLOGY HELP ?

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Abstract

Skill Gap is the difference in the skills required on the job and the actual skills possessed by the employees. The skills gap is a complex issue, with lots of disagreement about causes and solutions. As the world of work is rapidly growing in terms of the advancement of science and technology, unprecedented demand for better graduates has been created. However, the world of work often criticizes that existing university curricula fall short to tackle the practical issues in the work field. With 15 million youngsters entering the workforce each year, more than 75 per cent are not job-ready. India will need 700 million skilled workers by 2022 to meet the demands of a growing economy. This glaring imbalance, due to lack of technical and soft skills, points towards the urgent and growing need to make young Indians job-ready, focusing on young graduates to augment their employability.

Technical education plays a vital role in the development of the country's human resource by creating skilled manpower, enhancing industrial productivity and improving the quality of life. This will help increase the availability of better talent in the job market to be absorbed, as, in the current scenario, of the seven lakh engineering students that graduate annually, merely seven per cent are fit for core engineering jobs. What would also help is providing training in not just technical skills but also soft skills or communication skills, preparing them to transform into workers from students.

Revamping the education system can help bridge the talent gap staring at us, especially at the college level, as it forms the first step into the professional world.

Colleges need to collaborate with industries to chalk out a curriculum that entails and integrates technological education and advancements.

Introduction

In recent years, there has been a significant increase in the number of educational institutes and thousands of graduates pass out every year. Also, recent times have seen the emergence and growth of sectors such as IT, life sciences and financial services. These sectors have become new avenues of white-collar employment among Indian youth. Although there seems no problem with demand and supply of graduates as far as the quantity aspect is concerned, in reality, all graduates are unable to get suitable employment. Simultaneously, the industry struggles to get suitable candidates. This situation can be attributed to employability or skill gap. The young nation that we are with 62 per cent of our population in the working age group and more than 54 per cent of the total population below 25 years , there is a need to make drastic amends to solve the great Indian talent conundrum. To make the most of this demographic dividend that we, as a country possess, the maiden step towards this is to celebrate skills and accept their need and importance with an open mind.

Without adequate education and training, such population growth poses an increased risk of the emergence of a growing class of the under or unemployed who are unable to achieve the Indian middle class dream. In an effort to align India's educational activities with industry imperatives and demands, transformation of higher education system is imperative.

Skill Gap

The 'skills gap' is the phrase used to describe the difference between the skills that employers want, as shown by their job advertisements, and those that are available from workers looking for a job.A skill gap is defined as a lack of fundamental skills employers require for a work environment that's efficient and operates smoothly. This gap makes it difficult for employers to fill positions. A skills gap isn't always attributed by a lack of education, mainly because there are situations where an employee or job candidate can be overeducated. Besides education, a skills gap

might also be attributed by persistent unemployment. Some of the skills needed to work contemporary technologies can be just as hard to measure as they are to manage, which can make the definition of a skill gap to be even more convoluted.

Skill Gap is the difference in the skills required on the job and the actual skills possessed by the employees. If a job role requires an employee in technology company to know a programming language and a database and the employee knows only one language. This means there is a gap in skills. In terms of banking, an example of a skill gap could be if an employee lacked the ability to cash government bonds. Identifying skill gaps is essential for the companies to ensure that the workforce is well trained, knowledgeable & better equipped to perform The skills gap is a complex issue, with lots of disagreement about causes and solutions. Here are some factors experts have identified:

- **Not enough of the right graduates.** For in-demand jobs in health care, engineering, computer science, and advanced manufacturing, there aren't enough people being trained.
- **Poor yields from automated job match programs.** Some employers fill job ads with a list of ideal requirements most applicants won't meet, resulting in low match rates and few potential candidates.
- **Reluctance to provide training.** Many employers would prefer that job seekers and employees provide all their own training, but this is increasingly unrealistic.
- **Inadequate compensation.** Some organizations can't find candidates because the pay they offer, especially for in-demand jobs, is not competitive with other employers in their area.
- **The growing need for soft skills.** Many new graduates, while tech-savvy, lack basic communication skills and other critical soft skills.

Skill Gap in Higher Education

"Skill is emerging as the new currency across businesses globally and in India. Today's rapidly evolving economic environment makes up-skilling an imperative across job profiles and sectors. India is caught by both a skill gap and a higher

education sector struggling to keep up. That is why it is critical to take proactive measures to transform the higher education system to create a new model that better aligns with industry imperatives," said DP Singh, Vice President and Head - HR, IBM India/ South Asia

India is the only country in the world which will see an absolute increase in its youth population till 2025. Between 2010 and 2030, India's working population is expected to expand from 750 million to almost one billion.

As India grows into a knowledge economy increasing use of technology in manufacturing and service industry, the emerging gaps at the level of higher education are seen as a major constraint. New technologies, ever- changing skills requirements and outdated curricula are challenging India's higher education system in its efforts to equip graduates with job-ready skills. With 15 million youngsters entering the workforce each year, more than 75 per cent are not job-ready. The overwhelming consensus among employers is that too many graduates lack critical-thinking skills and the ability to communicate effectively, solve problems creatively, work collaboratively and adapt to changing priorities. In addition to these "soft skill" deficits, employers are also finding that young people lack the technical, or "hard", skills associated with specific jobs. A recent document by the Federation of Indian Chambers of Commerce and Industry (FICCI) summarises the state of HE as follows:

'Although India's higher education system contributes about 350,000 engineers and 2.5 million university graduates annually to our workforce, yet at any given time about 5 million graduates remain unemployed. A survey done by McKinsey Global Institute shows multinationals find only 25 percent of Indian engineers employable and a NASSCOM report foresees shortage of 500,000 knowledge workers by 2010. The U R Rao Committee has projected that India needs well over 10,000 PhDs and twice as many M Tech degree holders for meeting its huge research and development needs, but India produce barely 400 engineering PhDs a year.'

(FICCI & NMIMS)

Most institutions do not prepare candidates for the new working world, making them struggle while facing the competencies of the professional realm. There is a pertinent need to equip graduates with interpersonal communication, basic computer knowledge, the ability to speak English and work as a team. India will need 700 million skilled workers by 2022 to meet the demands of a growing economy. This glaring imbalance, due to lack of technical and soft skills, points towards the urgent and growing need to make young Indians job-ready, focusing on young graduates to augment their employability.

A reinvention will need a vast paradigm shift to develop the tools of change needed to survive in the algorithm age. The demographic dividend if not given the treatment of skills may simply turn into a demographic disaster. The imbalance between the too few skilled workers and fewer jobs for the medium and low-skilled workforce is pointing towards impending disaster.

The potential of technology to close the skills gap

Clearly, the skills gap is real – and growing but, the solution to the technology skills gap is technology itself? Numerous innovations in the education technology space are beginning to show potential in improving education and helping address skills gaps. Using e-learning platforms to complement traditional classroom training is an effective way to build not just technical skills, but also train workers on "soft" skills such as communication and collaboration needed to succeed in the corporate world.

"The 'flip the classroom' model offloads lectures to videos, with classroom time focused on skill building, practice, and coaching. Virtual classroom technologies allow learners to share, collaborate and problem solve in ways that make learning more effective and engaging."

Following technologies can help in bridging skills gap:

- Personalized and adaptive content and curricula
- Open educational resources
- Communication and collaboration tools
- Interactive simulations and games.
- Digital professional development resources for teachers and

- Student information and learning management systems.

Personalized and adaptive content and curricula

Personalized and adaptive education technologies deliver differentiated learning with one-on-one computer-based learning tailored to individual student needs, often used effectively with blended-learning approaches mixing in-person and online instruction. These programs can be used in conjunction with in-classroom instruction, freeing up teachers' time to deepen students' understanding of the material and to develop skills like problem-solving, creativity and collaboration. They can also harness the power of data to dynamically assess learning, address gaps and track outcomes.

Some longstanding programs, such as *Read 180*, first assess students' abilities, before later providing differentiated content based on a student's level. Others are more real-time and adaptive. The *Dreambox* mathematics application continuously analyses student actions to deliver millions of personalized learning paths tailored to each student's unique needs. Within one minute of work, the program can collect, analyse and respond to more than 800 pieces of data about a student and how he or she learns, according to the organization.

In addition to direct-to-student content, developers are also creating adaptive platforms. These can provide the back-end analytics necessary to offer an adaptive experience to students. For adaptive learning platforms to work well, subject matter is often broken down into discrete topics that enable a logical progression from one concept to another. They can use the data to better understand not just what students know, but also how they interact with content and learn best.

Open educational resources

Open educational resources (OER) increase the variety, accessibility and availability of content and curricula. Digital platforms such as *Sakshat, e-Pathshala* and *BetterLesson* are free repositories of vast amounts of open-source content.. These platforms allow teachers and schools to upload, share, edit and rate content online, creating a bank of both content (subject-knowledge materials) and

curricula (such as lesson plans and pedagogical materials) created and vetted by teachers.

Communication and collaboration tools

A number of tools are helping students develop competencies such as collaboration and communication by facilitating group work, peer-to-peer learning and peer feedback. These tools can be further enhanced by project-based and experiential-learning pedagogical approaches that help students work together to solve problems in real time.

Students can collaborate in real time on assignments using digital tools such as *Google Apps for Education* to collectively develop documents, spreadsheets and presentations. Online communication tools also allow students to help each other. Students can now create and share digital notebooks through tools such as *OneNote*; discuss readings and assignments, share related information and keep up with classroom announcements through social networking sites such as *Facebook*; and comment on and discuss assigned readings through such sites as *Ponder*.

Interactive simulations and games

Games and simulations allow students to go beyond the traditional lecture and to interact with instructional content in an engaging way that has been called "gameful learning". Most of the activity in this corner of the education technology space is happening within numeracy and scientific literacy. Even so, games allow a focus on multiple skills at once: while students work to improve their understanding of core concepts, they can also develop skills such as creativity, curiosity and persistence in the process. These tools, along with new pedagogical approaches such as project-based learning, are therefore at the forefront of addressing skills gaps in competencies and character qualities.

Game-based programmes such as *STMath* use non-numerical visualizations to develop students' intuitive understanding of mathematical concepts before attaching the symbols of traditional mathematics instruction. Instructional simulations, such as those from *Explore Learning* and *Molecular Workbench*, allow students to interact

with abstract scientific concepts in ways that would be costly or impossible to replicate in the classroom.

Digital professional development resources for teachers

For countries to succeed at generating 21st-century skills, they also need to help teachers more efficiently and productively develop their own skills. Emerging online resources in professional development for teachers can have a positive impact, adding more instructional strategies to a teacher's repertoire, as well as improving their ability to execute on these strategies in the classroom. Instead of attending a district-mandated workshop with a group of other teachers at a specific date and time, now teachers can also access materials that are targeted to their particular needs anytime and anywhere.

Platforms such as MOOCs, *TeachScape* and *KDS* are personalizing development by providing relevant digital courses to teachers. TeachScape features more than 160 digital courses and more than 2,500 high-quality videos of teaching practice, for example. Thanks to digital resources such as these, it is easier than ever before for teachers to get the help they need to improve their instructional skills.

Technology is also fostering collaboration and coaching among teachers through tools such as video feedback and remote coaching. *Edthena*, for example, allows teachers to upload their video-recorded lectures so that other teachers and mentors on the platform can give direct feedback about the strengths and weaknesses of their teaching. Across the teacher professional development space, another nascent trend involves developing digital courses specifically targeting competencies and character qualities. For example, *KDS* has a course, "21st-Century Skills", in which teachers learn about new educational methods to teach higher-order skills. Traditional hardware-oriented technology players have also moved into the professional development space. In addition to providing face-to-face learning, they have developed blended-education approaches featuring online courses, materials and teacher communities such as *IntelTeach* and *Microsoft Partners in Learning* that governments, school leaders and teachers are using to develop 21st-century skills.

Student information and learning management systems

Technology is allowing student data to be generated from an increasing number of sources, ranging from more traditional student information systems (SISs), which collect enrollment, course history and achievement data, to classroom lessons, activities and digital instructional content platforms, which are frequently channeled through learning management systems (LMSs). In addition to collecting data, LMSs have tremendous potential to indirectly facilitate the development of 21st-century skills such as collaboration and communication as students interact with digital content and with each other.

Conclusion

Once due regard to skills is given; there is a need to support the tech growth with investment in skills and knowledge to prepare for the future. Rethink higher education curricula by identifying opportunities to infuse experience-based and real-world learning experiences and embracing new teaching technologies and techniques. Higher education institutions should build alliances with industry partners, share learning and refine strategies. Assess current capabilities and requirements, experiment with using new technologies and extend capabilities through ecosystem partners.

Recognising the need, efforts are being made with positive steps such as National Vocational Qualifications Framework (NVEQF) and National Skills Qualification Framework (NSQF). This will also lead to a paradigm shift in employment from being 'qualification-based' to 'skill-based', making educational institutions focus on imparting skills that lead to employability, rather than merely doling out certificates and degrees.

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