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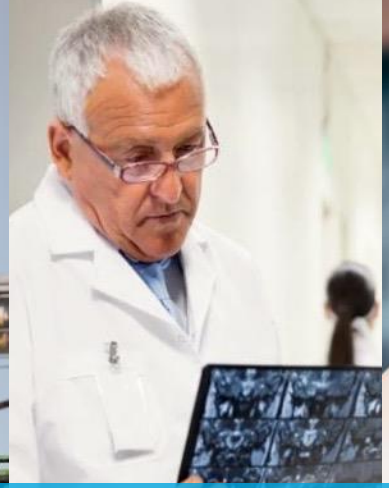
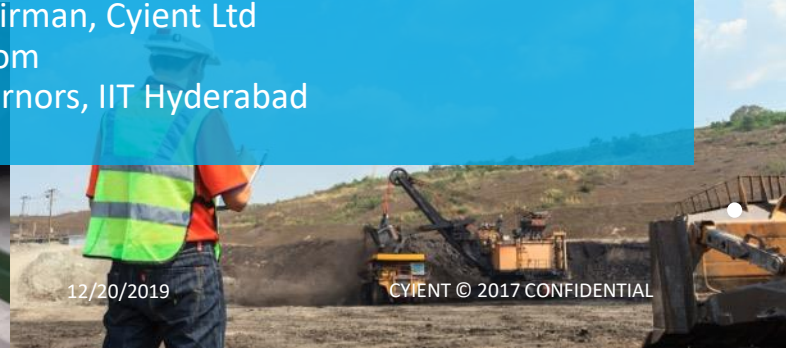


Augmenting skills, Accelerating growth

B.V.R. Mohan Reddy
Founder & Executive Chairman, Cyient Ltd
Former Chairman, Nasscom
Chairman, Board of Governors, IIT Hyderabad



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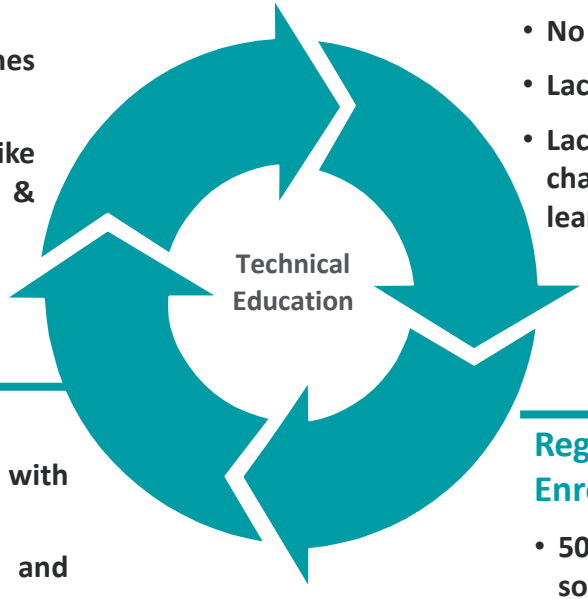
Technical Education in India : Key Issues & Challenges

Low Capacity Utilization

- 49.8% capacity utilization at UG & PG levels
- Capacity utilization of 40% in disciplines like Civil, Mechanical, Electrical etc.
- 60% capacity utilization for disciplines like Mechatronics, Aerospace, Agriculture & Computer Science

Faculty & Pedagogy Standard

- Faculty not in sync with industry trends
- No training to upgrade faculty skills
- Lack of requisite certifications & expertise
- Lack of innovative pedagogy techniques and channels to facilitate MOOCs to enhance learning experience



Low graduate employability

- Curricula not updated to be in sync with latest industry trends
- Little cohesion between academia and industry.
- 18% of engineers employable for software services sector; 4% for software products
- About 42% of all engineering graduates across the country received placement offers in 2017-18

Regional concentration & dipping Enrolment numbers

- 50.2% of all engineering colleges located in 5 southern states
- Dipping attractiveness of engineering as a discipline
- Lack of stimulus for innovation and start up incubation eco-system in technical colleges

Source: Engineering Education in India- short & medium term perspectives by BVR Mohan Reddy, Chairman & Member of AICTE committee

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Skills Demand, 2018 Vs 2022

Today, 2018	Trending, 2022	Declining, 2022
Analytical thinking and innovation	Analytical thinking and innovation	Manual dexterity, endurance and precision
Complex problem-solving	Active learning and learning strategies	Memory, verbal, auditory and spatial abilities
Critical thinking and analysis	Creativity, originality and initiative	Management of financial, material resources
Active learning and learning strategies	Technology design and programming	Technology installation and maintenance
Creativity, originality and initiative	Critical thinking and analysis	Reading, writing, math and active listening
Attention to detail, trustworthiness	Complex problem-solving	Management of personnel
Emotional intelligence	Leadership and social influence	Quality control and safety awareness
Reasoning, problem-solving and ideation	Emotional intelligence	Coordination and time management
Leadership and social influence	Reasoning, problem-solving and ideation	Visual, auditory and speech abilities
Coordination and time management	Systems analysis and evaluation	Technology use, monitoring and control

Source: The Future of Jobs Report, World Economic Forum, 2018

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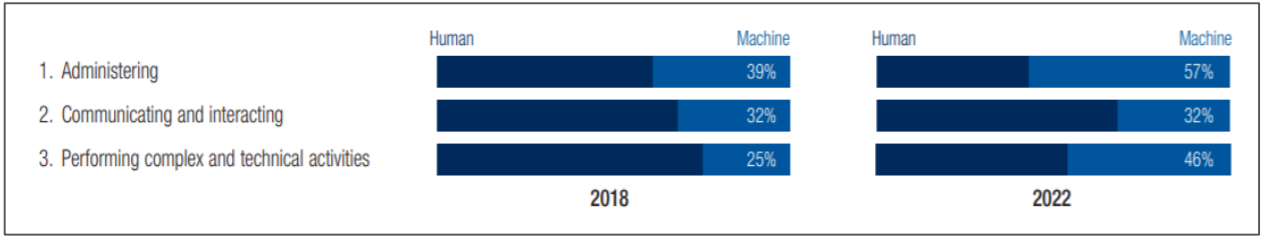
ICT Industry: Workforce in 2018 & 2022

Average reskilling needs
(share of workforce)

- Less than 1 month 12%
- 1 to 3 months 8%
- 3 to 6 months 10%
- 6 to 12 months 10%
- Over 1 year 10%
- No reskilling needed 50%

EMERGING		DECLINING	
17% in 2018	33% in 2022	34% in 2018	24% in 2022
Roles such as:		*Roles such as:*	
Data Analysts and Scientists		Data Entry Clerks	
AI and Machine Learning Specialists		Administrative and Executive Secretaries	
Big Data Specialists		ICT Operations and User Support Technicians	
Software and Applications Developers and Analysts		Accounting, Bookkeeping and Payroll Clerks	
Innovation Professionals		Client Information and Customer Service Workers	
Information Security Analysts		Business Services and Administration Managers	
New Technology Specialists		Assembly and Factory Workers	
Blockchain Specialists		Material-Recording and Stock-Keeping Clerks	
User Experience and Human-Machine Interaction Designers		Human Resources Specialists	
Sales and Marketing Professionals		Electronics and Telecommunications Installers and Repairers	



Augmentation of key job tasks in 2018 and 2022 (*share of task hours*)

Source: The Future of Jobs Report, World Economic Forum, 2018

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Recommendation-1: Revive Technical Education

Institutions & Programs

- Rationalize capacity; introduce fungible courses
- Introduce AI & big data analytics across all disciplines
- Introduce multi/interdisciplinary programs

Increased Industry Alignment

- Workforce for Industry 4.0 - improve employability
- Focus on innovation; entrepreneurship as a minor
- Industry reps on Institute boards
- Project management capabilities around research

Deepen Industry - Institute Connect

- Structured approach for fruitful partnerships
- Industry oriented apprenticeships, internships, live projects
- Incubation, mentoring clubs, acceleration programs, linkages with start up ecosystem
- Research transfer from universities to industry

Student-centric learning

- Encourage practical approaches to learning
- Emphasize student choice coupled with student experience outside classroom & outside traditional engineering disciplines
- Use technology for individual learning paths (Education 4.0).
- Blend off-campus personalized online learning with experiential learning

Faculty Motivation & Pedagogy

- Incentivizing merit based excellence
- Compensation & Career management for faculty
- Faculty development programs; mandatory certification in education
- Introduce tech-based, experiential pedagogy techniques

Align with Future Education Trends

- Shift in centre of gravity to emerging nations
- Integrate above features across the curricula at scale; deliver to large student cohorts under constrained budgets

Source: Short Term Perspective Plan for Technical Education by BVR Mohan Reddy, Chairman & Member of AICTE committee

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Recommendation-2: Focus on Digital Skills

- ✓ Industry 4.0 - New technologies disrupting the world – AI, IoT, Robotics, 3D Printing, Machine Learning, Blockchain, Big Data Analytics, AR/VR
- ✓ Reshaped by the convergence of social, mobile, cloud, communications and other forces, these technologies are creating a VUCA world & disrupting every industry..

Healthcare

Agriculture

Education

BFSI

Manufacturing

Retail

Aerospace & Defense

Mobility

High quality, accredited digital education & quality assurance mechanisms are the real imperatives to become a knowledge-based economy

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Recommendation-3: Make Professional Skills Part of Education

- ✓ **To increase practicality & enhance employability**
- ✓ **To reduce skill gap between corporate expectations & employee capabilities**

Campus

Technical Skills

(Role-specific + Digital)

Professional Skills

Corporate

Design Thinking II Collecting, Analyzing & Presenting Data II Awareness of Business, Customer & Competition II Display of Professional Attitude II Good Communication II Collaboration II Managing Stakeholders II Values

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Skill Development Imperative to Accelerate Growth

- To create globally competent workforce; Sustainable competitive advantage to an enterprise
- To drive up service sector contribution to GDP in innovation-driven economy
- High talent scalability potential due to increased government spending to strengthen infrastructure
- To attract large investments & scale-up; to respond to local challenges & global opportunities
- To ramp productivity and consequently economic growth, increased efficiencies, safety & convenience
- To spur innovation, entrepreneurship, create conducive start-up ecosystem

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Thank you!

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