AWARENESS IN ACTION

Educate & Lead

An Initiative to Bridge the Gap Between Industry & Institute

A Report
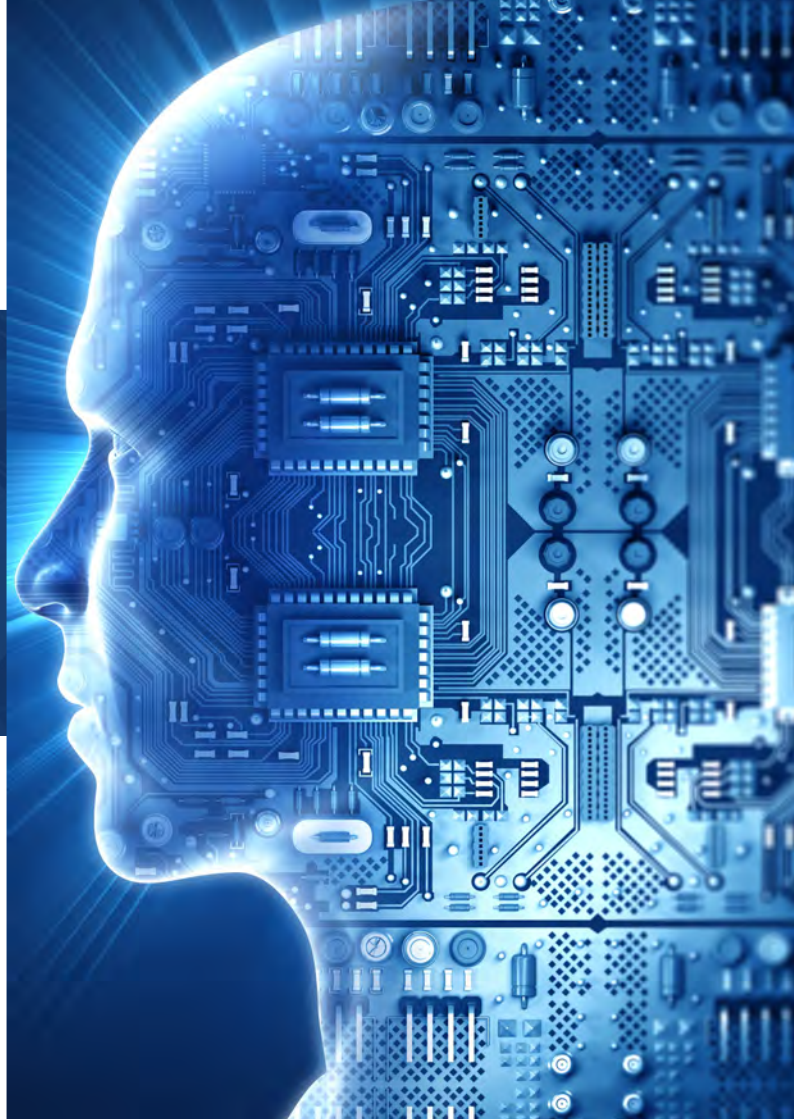
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One of the fast-growing economies in the world, India has to face the challenge of keeping its growth story alive for the next few decades while meeting the domestic social needs. One of the key areas that determine the future of such growth story would be the quality of the technologically skilled manpower that it can generate through its vast network of educational institutions. Undoubtedly, the ever-expanding higher education institution infrastructure in India has two major serious problems. On the one side, engineering education in India is unable to keep up its pace with the rapid developments in technologies in the world. In other words, these engineering colleges are unable to upgrade their curriculum and training to the rapidly changing technological world and they appear to lack the futuristic vision. Consequently, the industry is raising serious questions on the employability of this technologically qualified manpower. On the other hand, there is a valid concern pertaining to the quality of the engineering education. In this background, on the one hand, we have a vast infrastructural space for technology manpower production in the country but on the other hand, due to its low adaptability and quality, the utility of such manpower is at stake.

This situation warrants urgent attention to the issue of building a climate of the cutting-edge technology ecosystem. It is necessary that our education infrastructure must be geared up to match the requirement of such a change that is foreseen. For this, we have to take stock of the situation of the existing state of Infrastructure and its future for the next three to four decades. Though the industry experts are keen on pushing the immediate overhauling of the Engineering Education in next three to four years, given the rapidly changing nature of these technologies, a comprehensive few decades plan appears inevitable. Unfortunately, it appears that such a status review is not fully available at hand today.

In order to respond to this unfolding crisis, Awareness in Action **(AiA)** has initiated a dialogue between various stakeholders in the technical education sector, Industry and the Research and development sectors. Awareness in Action **(AiA)** is a non-profit registered organisation keen on achieving social transformation by bringing awareness and knowledge about our social world into action. From the past 17 years, **AiA** has been actively involved in

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bringing common people, experts, policymakers together to ensure that brilliant ideas are put to use for the betterment of the world.

As a part of our ongoing initiative of bringing various stakeholders in different domains of society to see tangible outcomes for social change, **AiA** attempted to build this dialogue through series of symposia titled "*Emerging Technologies*".   In the first symposium, we debated the future of "*Information Technology and the Allied Service Sector*" then we continued the same dialogue with series of stakeholder by focussing our attention towards "*Manufacturing Industry*" and then we debated the potential in the "*Infrastructure*" which includes a range of things from urban infrastructure to connectivity. Through these symposia, we have a status review of the emerging technologies in most of the domains of technological science today. Finally, we had a concluding symposium which emphasised on "*Curriculum, Industry and Policy*". In this concluding event, an attempt was made to review how much of what our previous symposiums have debated as emerging technology is reflected in the existing curriculum of the higher education institutions in India. Then the experts who led the discussion in the earlier symposia and the industry representatives placed their expectations in terms what kind of technologically trained manpower the industry expects and how the various state agencies like AICTE to University and colleges can think of reorienting their curriculum in order to match the Industry expectations. The next step was on how a policy change for technological sciences can accommodate the emerging technology, as this is an everchanging phenomenon. Such a policy change is expected to reduce the regulatory function of the state agencies on the institution with respect to curriculum, move towards a higher autonomy to an academic institution and build a climate wherein there is the enriching and nurturing of Industry to Institution and vice versa relationship in order to provide the best outcome. The outputs of the **AiA** symposium would certainly focus on bridging a gap between academia and industry. Our further focus is to support/encourage, research and development along with connecting students and industrialists, as we believe that their combination would boost the research sector and in turn would facilitate Nation's Development.

The outcome of various symposia conducted by **AiA** demonstrated certain key points. It is assumed that Indian performance in technology/technological sciences is far behind, thus affecting the nation's economic growth. This gap is visible specifically after new emerging domains like AI, Robotics, Cloud Computing, Medical Electronics, Health Industry, IoT, climate Change, disturbing eco-systems etc. **AiA recommends the following policy changes to bridge the gap**

❑ *It is a known fact that India has not been a major competitor in a range of technologies. The question would be, would it be possible for the various agencies to sit together and set out a projection for 2050 and start working backwards. It demands AICTE to work with NITI Aayog and other agencies to develop blueprints for Indian Market by 2050 in domains like AI, Robotics, Cloud Computing, Medical Electronics, Health Industry, IoT and such sectors and then chalk out both the curriculum and the research priority through various institutions. This kind of coordinated, holistic prioritisation would be the first step towards reducing the gap between Industry and academia. Therefore, it is necessary to prepare a vision for 2050 for emerging technology and the skilled manpower and lay down a plan.*

❑ *It is emphasised that there is a need for continuous upgrading of the skill and knowledge (Pre-service and In-service training) along with research linked professional development of engineering faculty*

❑ *A mechanism to constantly upgrade curriculum, and freedom and autonomy for innovation in the classrooms need to be evolved urgently*

❑ *One of the most important aspects of skill development is the emphasis on an industry-linked internship for students. This internship would compel the faculty and the colleges to build collaborative relationships with various Industries*

❑ *Various Science and technology agencies like DST, CSIR, STPI and many such institutions must build multiple joint centres for excellence and incubation centres in every state in partnership with and mentorship from Industry*

which must serve as the major centre for apprenticeship, project development, Industry investment and the faculty professional development

- *Govt should build 100+ new institutions of the same quality of IITs and NITs.*

- *There is a need to have private players to offer finishing schools and technology up-gradation at every tehsil level where students can compensate for the lack of training in the college. It should be affordable and thus Industries investment on training gets reduced. Such a climate helped the IT revolution in 1990s in India. A similar climate needs to be built for a range of technologies today.*

- *There is a need to modify CSR rules in such a way that Industries can invest in colleges through CSR to generate quality manpower.*

- *There is a need to strengthen the draft National Education Policy vision on Skilling and Reskilling teacher fraternity and raising awareness among the teaching staff.*

- *There is a need to bring research culture to Indian institutions. That means we must look for large scale collaboration and faculty exchange program between Indian institutions and European institution without which we will not be able to establish a robust culture of research*

- *Since engineering education is predominantly private, today there appears a crisis in terms of student's availability to these colleges. There must be a policy measure to encourage these institutions to see the multiple managements more complimentary than rival institutions and incentivise them to have joint laboratories. Lest, these colleges will slowly shut down creating educational infrastructure and manpower crisis.*

These are the major concerns that have emerged during the deliberation during the dialogue. The other domain-specific concerns will be deliberated further and **AiA** will continue to keep bringing to the public such issues that demand attention.

Distinguished Speakers at the Deliberations

Dr. Omkar Rai
Director General, STPI

Dr. Dinesh Srivastava
Chief Executive, Nuclear Fuel Complex

Shri Y.V.S.T. Sai, IRS
Commissioner of Income Tax, Hyderabad

Dr. G. Chandrashekar Reddy, IFS
Addl. Prl. Chief Conservator of Forests

Shri G.N. Rao
Outstanding Scientist, DRDO

Shri CVD Ramprasad
Director, STPI

Dr. BRK Reddy
Outstanding Scientist, DRDO

Dr. Subramaniam Karunanidhi
Outstanding Scientist, RCI

Dr. M. Balachary
Associate Director, DLRL

Shri MV Rattayya
General Manager, BEL

Shri T. Satyanarayana
Deputy Chief Engineer (R & B), Telangana

Dr. Mamdava Rajeswar Rao
Retd Scientist, ISRO

Ms P.R.Lakshmi Eswari
Associate Director, e-Security R&D, C-DAC

Dr. Satyanarayana Malladi
Director, Ananth Technologies, Retd Scientist, ISRO

Dr. Dinesh Kumar
Deputy Director, NIN

Shri Mohan Reddy M.M
AEE, Water Resources Dept., Govt of AP

Dr. S. Shamasundar
Managing Director, ProSIM R&D

Shri M. Ramkrishna
Managing Director, Kistler-Morse Automation Limited

Shri Vijaya Kumar Khaderbad
Secretary, Association of Enterprise Architects (India)

Shri Samartha Raghava Nagabhushanam
MD & CEO, 5Barz India Pvt Ltd.

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Dr. Ramabramham
Senior Data Scientist

Shri Krishnakumar Thiagarajan
VP, Delivery & Partnerships, eGovernance Foundation

Mr. Bhaskar Enaganti
Founder and CEO, GloMantra Inc.

Shri Surya Gadiraju
MD, Rimini Street India

Shri Arunachalam Karthikeyan
AVP, Manufacturing & PQ 5BARz India Pvt. Ltd.

Dr. Ravi Kumar
Vice President, IIC Technologies

Shri Manish Amin
Co-Founder and COO, Global 3D Labs

Prof. Vishnukanth Chatpalli
Former Advisor, NAAC & Professor, RCU, Belagavi

Dr. B.S. Madhukar
Advisor, NAAC

Prof. E. Saibaba Reddy
Principal, JNTUHCEH

Dr. K. Madhava Krishna
Head Robotics Lab & Asso. Prof. IIIT, Hyderabad

Dr. V. Kamakshi Prasad
Director of Evaluation, JNTUH

Dr. Ch. Venkata Ramana Reddy
Director, UIIC, JNTUH

Dr. B.N. Bhandari
Director, Academic & Planning, JNTUH

Prof. K.M. Lakshman Rao
Professor, Dept.of Civil Engineering, JNTUH

Shri M S Chaitra
Director, Aarohi Research Foundation

More than 150 industry professionals, 120 faculty members, 100 public & opinion makers and 1000 students participated in the series of 4 symposia. Speakers' presentations are available online at
http://www.awarenessinaction.in

TEAM

| **Raghunatha Rao Chakkilam** | **BG Rajeswar** | **M. Madhavi** | **Buchibabu Tungam** | **Swapna Balla** |
| Activist | Advocate | Senior IT Consultant | Senior IT Consultant | Activist |

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Glimpse of a Symposium on Emerging Technologies held on February 23, 2018

Emerging Technologies & Manufacturing Industries held on May 5, 2018

Emerging Technologies - Infrastructure held on July 28, 2018

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Emerging Technologies - Curriculum, Industry & Policy held on August 2, 2019