

# AICTE Initiatives for Quality Enhancement in Technical Education

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## ABSTRACT

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The All India Council for Technical Education (AICTE) was given statutory powers by AICTE Act of Parliament in 1987, with a view to ensure the proper planning and coordinated development of the Technical Education System throughout the Country. The major objectives of the Council are : promotion of quality ; planning and coordinated development ; and providing regulations for maintenance of norms and standards in technical education. By ensuring high quality technical education to all sections of the society and by enhancing global competitiveness in technical manpower, the Council want's to be a world class organization. Keeping in view the NEP, 2020, the AICTE has initiated certain qualitative measures to be undertaken by technical institutions. A gist of the qualitative initiatives are presented and discussed under six broad categories / cells : Institutional Development Cell ; Faculty Development Cell ; Skill Development Cell ; Induction Programme Cell ; Mandatory Training and Placement Cell ; and Swayam Cell. In this article, the details of the activities of each cell have been discussed. The endeavor of AICTE is to bring the best input into the technical education system for the benefit of students.

**Keywords** : Quality Enhancement, Technical Education, AICTE Act, 1987, AICTE, Quality Initiatives

## I. INTRODUCTION

### Background of Technical Education

The initiation for formal Technical Education in India can be dated back to the mid 19th Century. The major Policy initiatives in the pre-independence period included the appointment of the Indian Universities Commission in 1902, issue of the Indian Education

Policy resolution in 1904 and the Governor General's Policy statement of 1913 stressing the importance of Technical Education, the establishment of IISc in Bangalore, Institute for Sugar, Textile and Leather Technology in Kanpur, National Council of Education in Bengal and Industrial Schools in several provinces. Significant developments include:

- i. Constitution of the Technical Education Committee of the Central Advisory Board of Education (CABE) of 1943 ;
- ii. Preparation of the Sergeant Report of 1944; and
- iii. Formation of the All India Council for Technical Education (AICTE) in 1945 by the Government of India.

AICTE was set up in November 1945 based on the recommendations of CABE to stimulate, coordinate and control the provisions of Educational facilities and industrial development of the post-war period. At that time, a mandate of AICTE covered only Programmes in Engineering and Technology.

The growth of industries, after the independence, also demanded the need for qualified professionals in other fields, such as Business Management, Architecture, Hotel Management, Pharmacy, etc. Although the diverse elements of Management, such as Commerce, Economics, Finance, Psychology and Industrial Sociology were being taught for a long time, the need for Management Education in a formal way was felt in India only in the 50s. The Government of India decided in 1954 to set up a Board of Management Studies under AICTE to formulate standards and promote Management Education. Other major initiatives taken in Management Education include setting up of the Administrative Staff College of India at Hyderabad in the late 50s, National Productivity Council and Indian Institute of Management in the early 60s. Architecture was covered under the Architects Act, 1972. Subsequently, for better coordination of the Professional Courses, Architecture Education was also placed under the purview of AICTE. The National Council of Hotel Management and Catering Technology was set up in 1982, to which all the Institutions of Hotel Management run by the Government are affiliated.

Education in other professional fields, such as, Pharmacy, Applied Arts, Crafts and Design have also

undergone similar developments during the post-independence period. Programmes for Technical Education, during the first three Five Year Plans, were devoted to the expansion of Technical Education to meet the growing demand for technical personnel at Diploma, Degree and Post-Graduate Levels. From the fourth Five Year Plan onwards, the emphasis was shifted to the improvement of quality and standards of Technical Education. This was done through implementation of the Quality Improvement Programme consisting of three major components that provided for M.E./M. Tech. and Ph.D. Programmes. Establishment of Curriculum Design and Development Cells, and Short Term Training Programmes.

Meanwhile, the expansion of Institutions and Intake remained at a low Level in the Government, Private-aided and University sectors. The Policy Shift during the 80s towards involvement of Private and Voluntary Organizations in the setting up of the Technical and Management Institutions on self-financing basis ushered in an era of unprecedented expansion of the Technical Education System, a trend which has continued during successive Five-year Plans.

It was in this context that AICTE was given statutory powers by AICTE Act of Parliament in 1987, with a view to ensure the proper planning and coordinated development of the Technical Education System throughout the Country. Technical Education in this context includes fields of Engineering and Technology, Pharmacy, Architecture, Planning, Applied Arts, Crafts and Design, Hotel Management and Catering Technology and Management.

#### **The AICTE Act, 1987**

The AICTE Act, 1987 was passed by the Parliament, to provide for the establishment of the All India Council for Technical Education (AICTE) with a view

to ensure proper planning and coordinated development of the Technical Education System throughout the Country, qualitative improvement of such Education in relation to the planned quantitative growth and the Regulation and proper maintenance of norms and standards in the Technical Education System and for matters connected therewith.

Important provisions of the Act are : to evolve suitable performance appraisal system incorporating norms and mechanisms of accountability ; lay down norms and standards for course curriculum, physical and instructional facilities, staff patterns, qualifications, quality instructions and examination ; grant approval for starting new Technical Institutions, new Courses or Programmes and to inspect any technical institutions. Further, for the purpose of ascertaining the financial needs to any technical institution it may conduct an inspection as per the laid down procedure.

By ensuring high quality technical education to all sections of the society and by enhancing the global competitiveness in technical manpower, the Council want's to be a world class organization in bringing technological changes across the country.

World Class Technical Education involves emphasis on developing high quality institutions, academic excellence, and innovative research and development programmes ; networking of institutions for optimum utilization of resources ; dissemination of knowledge ; technology forecasting and planning manpower ; promoting of industry – institutional interaction ; inculcating innovations and entrepreneurship ; encouraging indigenous technology ; focusing on Non-Formal Education and Skills ; and making Indian technical education globally competitive.

The major objectives of the Council are : promotion of quality in technical education ; planning and coordinated development of technical education

system ; and providing regulations for maintenance of norms and standards.

The promotion of quality ; policy directions ; review of norms and standards ; assessment of manpower requirements ; liaison with various universities organizations, and statutory bodies are some of the major responsibilities of the Council.

## II. AICTE – Quality Initiatives

In order to enhance the quality of technical education keeping in view the policy recommendations of NEP, 2020, the AICTE has initiated certain qualitative measures to be undertaken in the technical institutions. The gist of the quality initiatives are presented and discussed under six broad categories / cells : Institutional Development Cell ; Faculty Development Cell ; Skill Development Cell ; Induction Programme Cell ; Mandatory Training and Placement Cell ; and Swayam Cell. The details of the activities of the each cell is presented below :

### i. Institutional Development Cell

The Grant for Organizing Conference (GOC) Scheme provides financial support to institutes for organizing conference through offline/ online mode to create opportunities for the academicians and working professionals for sharing their knowledge, experiences, innovations and inventions. The AICTE approved institute with at least eight years of existence are eligible to seek grant. In order to share information and knowledge through e-Resources / e-Journals (ASCE, ASME, WoS, Scopus, Bentham pharma, etc..) facilitated by INFLIBNET, AICTE approved institutions offering at least one PG course are eligible to apply under this e-Shodh Sindhu Scheme (e-SS). The Scheme for promoting Interests, Creativity and Ethics among Students (SPICES) is to energize and position students' Club / Chapters / Societies as facilitating entity for pursuit of individual interests,

creative work, showcasing talent, networking and teamwork opportunities, social experience, organization and management skills, exposure to professional ethics, etc. AICTE approved institutes with minimum five years of existence are eligible to apply under this scheme. Modernization and Removal of Obsolescence (MODROB) Scheme aims to modernize and remove obsolescence in the laboratories, workshops, computing facilities to enhance the functional efficiency of technical institutions for teaching, training and research. The scheme has three variants: MODROB (Regular), MODROB (Aspiring institutes) and MODROB (Polytechnic). Technical institutions with ten years of existence (5 years for rural institute) are eligible to apply. In order to facilitate continuation of education and interaction of students after class hours, Campus Accommodation and Facilities Enhancing Scheme (CAFES) allows for expansion of existing hostels. The scheme has three variants : CAFES (SC/ST students), CAFES (North East Region Students), and CAFES (Differently abled students). AICTE approved technical institutes and polytechnics are entitled for the grant. Special Scheme for North Eastern Region (NER) is to enhance the functional efficiency of the technical institutions located in widespread areas of North-Eastern Region. Government engineering colleges including Polytechnics located in North-Eastern region are eligible to apply under this scheme. Financial assistance is for solving water problem, procurement of solar energy plant or generator and facilitating proper internet connection. Idea Development, Evaluation and Application (IDEA) Lab Scheme is for establishing IDEA Labs in institutions with a view to encourage students for applications with a view to encourage students for application of Science, Technology, Engineering and Mathematics (STEM) fundamentals in order to enhance hands-on experience and learning by doing. Also training on 21<sup>st</sup> century skills like critical thinking, problem solving and design thinking, collaboration and communication. AICTE approved institutions with at

least ten years of existence and live accreditation to one course / programme course are eligible to apply. Training with latest tools and technologies is vital to keep an institute, faculty and students competitive and more productive. Advanced training is required for increasing the knowledge and skills of students to make them more employable. Therefore, AICTE through newly announced AICTE Training And Learning (ATAL) Academy started unique Faculty Development Programs in various emerging areas.

In order to maintain the quality of technical education in the Country, it has been made mandatory that 60 per cent of the courses are to be accredited. In the absence of such accreditation, AICTE shall not grant further extension of approval. Accordingly, Margdarshan Initiative has been introduced by AICTE for facilitating the technical institutes to improve the quality. The initiative solicits support from senior academicians and well established institutes to mentor other institutes who aspire to get accreditation. The senior academicians from IITs / NITs / other AICTE approved institutes (serving or superannuated) shall be nominated as Margdarshak (individual mentors) for guiding beneficiary institutes. Their major role shall be to guide, support and encourage the beneficiary institutions in their development as they work to get accreditation.

## ii. Faculty Development Cell

First award ceremony of Visvesvaray Best Teachers Award was held on 5<sup>th</sup> September, 2020 in AICTE, 12 winners were selected. Each awardee was given a certificate, badge of honour and cash prize. A user-friendly app and a portal '360 Degree Feedback' has been designed in order to benefit the Faculties and Students of Engineering and Polytechnic Institutions recognized by AICTE. The number of Quality Improvement Programme (QIP) centres are increased from 466 in 2016 to 653 in 2018 with a growth of

beneficiaries 40 per cent on deputation. Research Promotion Scheme (RPS) is aimed to create a research ambience in the institutes by promoting research in engineering sciences and innovations. More than 550 projects have been sanctioned during 2013–2020. Short Term Training Programme STTP intends to conduct faculty trainings through financial assistance from AICTE to enable faculty members, especially from UTs like Jammu and Kashmir, Ladakh and NER, in the field of technical education. AICTE also sponsor Training Programme for Physical Education Trainers/Director of Sports to promote participants to develop physical fitness through mass participation in physical activities. The objective of AICTE–TU Joint Training Programme for Teachers/Librarians scheme is to conduct training for faculty members to be successful in their professional as well as in teaching–learning methodology. The scheme AICTE – INAE Distinguished Visiting Professorship Scheme promotes professors to deliver lectures on the state-of-art of Industry, Industrial Ambience and R&D needs of the industry to the students and faculty of only AICTE approved engineering colleges. Guide student projects/theses of interest to industries. Technical Book Writing and Translation scheme has been started by FDC to promote the use of ‘Scheduled Regional Language’ in technical education. The scheme ‘Emeritus Professor’ intends to utilize the expertise of highly qualified and experienced superannuated professors for the benefit of student/faculty. The ‘Professional Development Scheme’ intends to provide financial assistance to regular faculty of AICTE approved institutions and AICTE officers to present research papers at International Conferences in abroad or within India. The MoE has announced a National Educational Alliance for Technology (NEAT) scheme as a Public-Private Partnership model between the Government/AICTE and the Educational Technology companies of India. The aim of NEAT is to bring the best technological products in educational technology on a single platform for the convenience of learners.

Technology products using Artificial Intelligence (AI) for customized learning or e-content in niche areas having highly employable skills. Many institutions were facing difficulties in tracing the adequate number of internship opportunities. In order to eradicate this problem, AICTE Internship Enterprise Portal was developed. This portal brings together the internship opportunities in the Government sector like MoHUA, NHAI, Railways, MoSJE, MSMEs, Corporates Sector, NGOs, Start-Ups, and Research Organizations. The NEAT Cell, AICTE has developed a tool called AICTE Translation Automation AI Tool with a vision to translate English language online courses into eight different Indian languages, like Hindi, Bengali, Marathi, Telugu, Tamil, Gujarati, Kannada and Malayalam for access to a more number of students in rural areas.

The COVID pandemic outbreak in India has caused an extreme distress among students and is a serious setback in academic activities. Fortunately, many companies have now come forward and offered their e-learning contents ‘free of cost’ to learners. In order to foster digital learning and support the student community across the country, the Enhancement in Learning with Improvement in Skills (ELIS) portal has been designed by NEAT Cell, AICTE. Added to this AICTE has also launched a Student College Support Bridge internet portal has been launched for students stranded by lockdown. It is a much needed internet tool for supporting poor, needy, marginalized and weaker sections, isolated students during COVID pandemic was launched during April 2020. AICTE department-wise status portal has also been developed by NEAT Cell to update status on regular basis.

In order to preserve, and disseminate Indian Knowledge Systems for further research and societal applications, MoE intends to create a database of individuals and organizations, who have contributed by way of Research, Teaching, Publication and Preservation of Ancient and Contemporary Indian

Knowledge Systems (IKS) ranging from art, music, dance, drama, mathematics, astronomy, science, technology, life sciences, environment and natural sciences, health care, yoga, law, jurisprudence, economics, social sciences, psychology, philosophy, management, linguists, oral traditions of India, hidden knowledge in Sanskrit, Prakrit, Tamil, Poli, etc., and scrutinize the information, verify and put it to interdisciplinary scientific investigation. There is a need to create a portal for archival and dissemination of this rich knowledge. Hence, the NEAT Cell, AICTE, has developed an Indian Knowledge System (IKS) portal for the same.

AICTE is also actively involved in developing an exclusive portal in order to facilitate scholarship for SC, ST, BC, DNT, etc., students in a easy way. Full time GATE/ GPAT qualified students who are admitted to AICTE approved programmes to pursue their Master degree in Engineering, technology, Post-Graduation Scholarship for 24 months. Full time GATE/GPAT qualified research scholars pursuing Ph.D. in AICTE Technical Institutions are eligible for three years AICTE Doctoral Fellowship (ADF) under National Doctoral Fellowship Scheme.

### **iii. Skill Development Cell**

AICTE introduced the Vocational Degree/Diploma Programme under National Skill Qualification Framework (NSQF) for AICTE approved institutions. The Council offered sixteen specializations of different sectors under Bachelor of Vocation (B.Voc) and diploma of Vocation (D.Voc). The MoE has launched a programme called Unnat Bharat Abhiyan with an aim to connect HEIs including IITs, NITs and IISERs etc., with local communities to address the development challenges through appropriate technologies. Every institute has to adopt at least five villages. The Council is also running the National Employability Enhancement Mission (NEEM) with a view to offer on-the-job practical training to enhance

employability of a person either by pursuing PG/Degree/Diploma in technical or non-technical stream or has discontinued the studies after 10<sup>th</sup> Class. Further, the Council has signed an Implementation Agreement under UK-India Education Research Initiatives (UKIERI) Phase III to train aspiring leaders under Technical Education Leadership Development Programme. Several faculties are already trained under this programme. Successful participants have been certified by Chartered Management Institute (CMI), UK and will also get a chance for Study Tour to Dudley College, UK. AICTE has signed a MoU regarding Jammu and Kashmir Employability Enhancement Training (JEET) with ICT Academy for providing employability enhancement training to the final and pre-final year students in the UT of Jammu and Kashmir and Ladak. Through this MoU, the ICT Academy will enhance the technical skills of students to make them more employable. Recognizing institutions under Clean, Green, Smart, Campus Award that are doing a good job in terms of Cleanliness, Green Cover, Sustainability, Smart Campus, etc., and motivate others into action that lead to measurable outcomes, such as saving water, energy, recycling of waste, etc. The inputs from Indian Knowledge System (IKS) about traditional practices are incorporated. The AICTE has been holding a competition under 'AICTE-Vishwakarma Awards-2020' to identify, recognize and award innovative projects of the students.

### **iv. Induction Programme Cell**

A three-week mandatory Student Induction Programme (SIP) has been designed for the new entrants on Universal Human Values (UHV) to create ownership, develop confidence, sensitization about society, dignity of human being, spirit of collaboration, teacher-student relationship, making life on campus smooth and inspirational, etc. This induction programme is now a part of the AICTE UG Curriculum. Each institution shall have a Student

Activity Cell (SAC) for implementation of SIP on Universal Human Values (UHV) and related follow-up activities. For every twenty new entrants, there shall be a UHV trained faculty. A large number of Faculty Development Programmes (FDP) of one week duration are conducted through offline and online to train the faculty in handling SIP and a course in UHV. The induction manual is available on AICTE website and details of FDP-SIP is available on web portal. An award has been instituted from 2021 in honour of Prof. Rishi Raj Gaur for excellence in the conduct of SIP-UHV.

In order to provide internship opportunities for students of Jammu and Kashmir in institutes of higher learning like IITs and IISERs for inspiring, empowering, and enhancing their employability, AICTE has signed MoUs with IITs Guwahati, Kanpur, Bhubaneswar, Ropar, IISERs Kolkata and Pune. In this backdrop, the AICTE has also formulated a Student Internship Policy (SIP) which is mandatory for all UG/Diploma students of Technical Education. The details of the policy is available on the AICTE website. AICTE has also made it mandatory for students to earn 'AICTE Activity Points' over and above their academic grades for their contribution towards community and allied activities. UG/Diploma course students should earn 100/75 AICTE Activity Points respectively.

#### **v. Mandatory Training and Placement Cell**

All AICTE approved institutions shall have an exclusive Training and Placement Cell (T&P Cell) headed by a Training and Placement Officer (TPO). In order to support easy availability of Internships to its students, Industrial Visits, Industrial Projects, etc., every AICTE approved institution should sign at least five MoUs with Industries. Industries with which MoUs have been signed may be requested to register themselves on AICTE website and offer Internship through the portal. In order to sensitize students,

develop creativity and innovative ideas among college youths about scientific, economic, environment spiritual importance, it is recommended to establish 'Kamdhenu Chairs' in all the institutions. This Chair will create entrepreneurship, livelihood, and employment opportunities in technical sector.

AICTE Pragati Scholarship Scheme for Girls' Students is a MoE scheme enforced during 2014. Meritorious girls students will be awarded scholarship per annum to encourage them to pursue higher education. Every year nearly 10,000 scholarship are being released to girls' students of all the States/UTs. Saksham is a MoE scheme implemented by AICTE in 2014, aimed at providing encouragement and financial support to specially-abled children to pursue technical education. Lilavati Award-2020 is based on the theme 'Women Empowerment' intends to recognize efforts being made by the institutions to treat women with 'equality and fairness' in prevalent issues of gender discrimination, such as illiteracy, unemployment, economic and nutritional disparities, maternal mortality, human rights, etc. The scheme AICTE-INAE-TG encourage engineering students to engage in research by providing partial travel grant and registration fees for PG and UG students to present their research paper in an international scientific event. The objective of the scheme SSPCA is to provide travel assistance, registration fees to a team of minimum 2 to 10 Bachelor degree students for attending competition on scientific event at international level in order to encourage engineering students to improve their field of technical education. AICTE Mitacs Inc Globalink Research Internship (GRI) Scheme (UG) aims to provide internship to students from non-affluent families in India to engage in research in collaboration with Canadian universities. The Accelerate International Programme, will support students studying in the Master's degree in India to participate in advanced research projects with a Canadian industry partner for 4 to 6 months

during three years from January, 2021 to December, 2023.

#### vi. Swayam Cell

AICTE has been nominated as a National Coordinator for Annual Refresher Programme in Teaching (ARPIT) during 2018 and 2019. Under ARPIT 2018, nearly 71 Online Courses were developed for faculty and 1980 faculty were awarded certificate. Similarly, under ARPIT 2019, about 48 Online Courses were designed and 12,486 were awarded certificate. Keeping in view the current COVID-19 crisis, MoE has decided to re-run all 48 ARPIT-2019 courses during 2020. The exam would be conducted by NTA on 30<sup>th</sup> April, 2021.

MoE has taken a decision for translation of 80 Online Courses into eight Indian regional languages, i.e., Hindi, Tamil, Malayalam, Kannada, Telugu, Marathi, Bengali, and Gujarati by IITM/AICTE. In the first phase, 48 courses are under the process of translation. Out of these, IITM has undertaken the translation of 27 SWAYAM/NPTEL online Engineering Courses, and AICTE has been allocated 21 Courses for translation. AICTE has undertaken translation of 4 Courses through offline into 8 different Indian Regional Languages, and translation of 17 courses is on-going through Translation Portal.

### III. CONCLUSION

Technical Education at all levels in the Country is witnessing a consistent growth pattern marked by the setting up of new Technical Institutions, and the improvement of the existing ones in tune with the quality norms set by the regulating and accreditation agencies. The AICTE has already focused towards the changes as proposed in the NEP, 2020 since last three years. Short and Medium term Perspective Plans for Engineering Education have been proposed for qualitative improvement. These plans focus on the

development of courses on Artificial Intelligence (AI), Internet of Things (IoT), Machine Learning, Block Chain, Robotics, Quantum Computing, Data Sciences, Cyber Security, 3D Printing and Design, and other technological areas.

AICTE admits that it is receptive to the technological changes happening across the global scenario, and believes in framing new policies and initiatives, and intends to augment the existing ones by scheduling workshops, conferences, etc., it will provide a platform for discussion and inputs from stakeholders. The endeavor of AICTE is to bring the best input into the technical educational system for the benefit of students. AICTE intends to be a perfect model for developing a bright, noble and creative brains in the light of the NEP, 2020.

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