Impact Assessment of the Scheme of Financial Assistance for Setting up of Electronics and ICT Academies

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Executive Summary

Technology development in the last two decades has led to increased automation and digitization across all sectors of society. It has changed the way we consume, create, communicate, entertain and collaborate. It has even altered the very nature of work and work spaces within the society. The E&ICT sector and industry, in the coming years, is thus poised to be at the forefront of economic growth and development of country. In this context, it becomes increasingly necessary to facilitate growth and improvement within the industry as a whole, so that India is able to carve out a substantial share for itself in the global market. This will not only allow the country to take lead in various innovations, but also contribute to its socio-economic growth and development.

An educator's responsibility in this backdrop is higher than ever before. This can largely be attributed to the sheer scope, speed and impact of the technological changes around the world. Education models will thus have to adapt, equip and prepare the future workforce of the country to be critical, individual thinkers in an innovation driven economy. This can only be made possible through a training ecosystem which is closely aligned with the needs and demands of the industry.

The Scheme of Financial Assistance for Setting up of Electronics and ICT Academies was part of this endeavour by the Government of India. This scheme envisioned setting up Electronics and ICT academies in select 07 states and union territories which would focus on enhancing the quality of teachers/mentors at various educational institutes through the medium of specialised trainings and faculty development programmes (FDPs) in various emerging technology areas and market trends. The major objective of the scheme was to

create a mechanism which would make it easier for the faculty to keep up with the changing industry needs and technological advancements. This trained faculty would in turn help addressing the employability issues amongst students in various academic institutes cutting across engineering/arts/commerce/science colleges in the country.

With the scheme about to complete its initial time frame, Indian Institute of Public Administration (IIPA), New Delhi was entrusted the task to undertake the impact assessment analysis at this current phase of the scheme. To do so, IIPA proposed a customised framework. This framework has been designed in a manner to draw out a comprehensive understanding of the scheme from the viewpoint of different levels of management, the beneficiaries as well as other important stakeholders of the scheme.

The existing structure of the impact assessment has been understood as resting on four pillars (Beneficiary, Infrastructure, Training, Policy), each of which cover key concerned areas related to different beneficiaries of the scheme, the infrastructure at each of the seven Electronics and ICT Academies, different aspects of training at these academies and lastly, the policy framework set in place for effective implementation of the scheme. These pillars will also serve as the data capturing metrics for the assessment exercise.

Further, the data gathered on the basis of these assessment metrics was triangulated along the Vision and Objectives of the scheme; the perspective of management at these academies; these will all be validated against the beneficiary viewpoint through the medium of the primary survey-online survey tool and field visits. An online survey tool was developed and sent to all scheme beneficiaries across the country. In addition to this, IIPA research team also undertook field visits to each of the seven (07) E&ICT Academies.

This field survey cum workshop also allowed us to get an insight into the actual working and ground realities of the scheme as well as understand the some of the problems faced by the largest stakeholders within the programme- the Beneficiaries. The major aim behind this exercise is to juxtapose these different viewpoints from different stakeholders within the scheme against each other and finally validate along the vision and objectives of the scheme.

After this comprehensive and methodological evaluation, IIPA concluded that the Scheme of Financial Assistance for Setting up of Electronics and ICT Academies as a training ecosystem will be fundamental in driving the creation of an indigenous technology ecosystem that is innovative, dynamic, agile and able to easily adapt to the ever-changing technology landscape in the country. It further plays an indispensable part in not only bridging the industry-academia in the country but also transforming it into a knowledge economy and society. Observing the vital contribution of the scheme, IIPA lauds its potential and recommends its continuation.

The following sections highlight some of the major findings of the study briefly:

ACADEMY WISE PERFORMANCE

BENEFICIARY

Target Beneficiaries: 13,091

18,533

Total Number of beneficiaries trained by IIT Guwahati

Total Beneficiary Trained*

15,139

Number of faculty trained

Faculty Trained

3,394

Students Trained

* The total number of beneficiaries trained and FDPs conducted are till 31-01-2023

TRAINING

326

Total Number of FDPs conducted by IIT Guwahati

Number of FDPs*

Conventional Classroom Mode - 155
NKN Mode - 46
Online Mode - 103

Mode of Training**

** The number of FDPs conducted through each mode of delivery are till 20-08-2022

57

13 Academic Partners, 02 Industry Partners, 41 Training Partners and 01 Govt. Partner of the academy

Partners

MoU Model with Institutions
04 MoUs signed

FINANCE

Grant

12.26 Cr

Expense

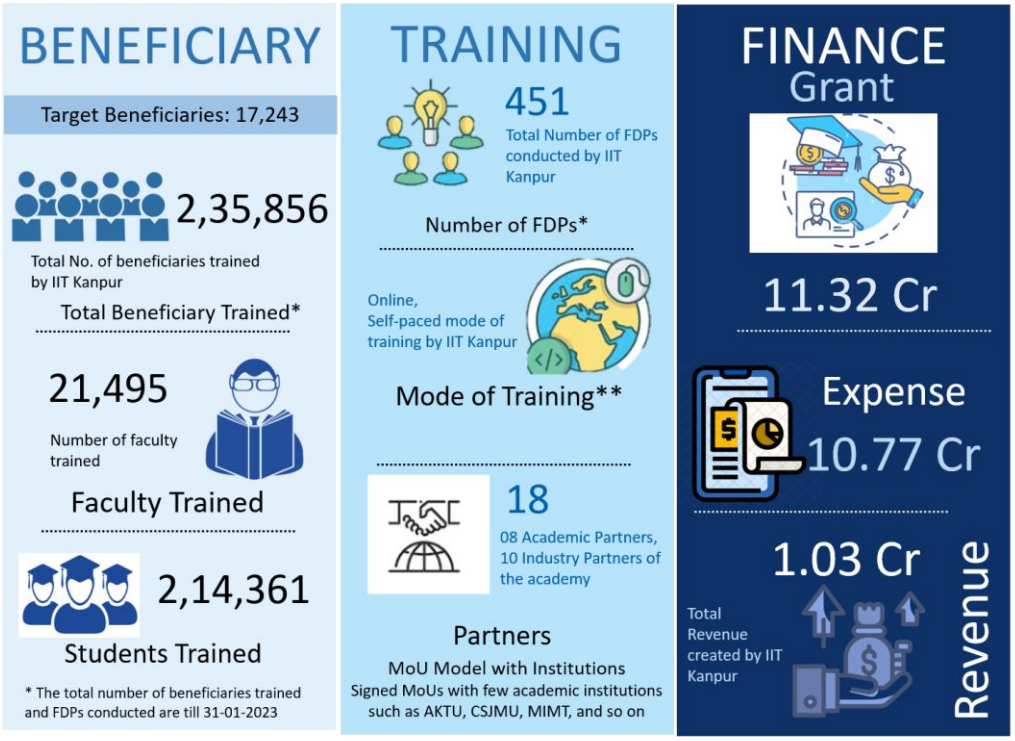
11.43 Cr

2.02 Cr

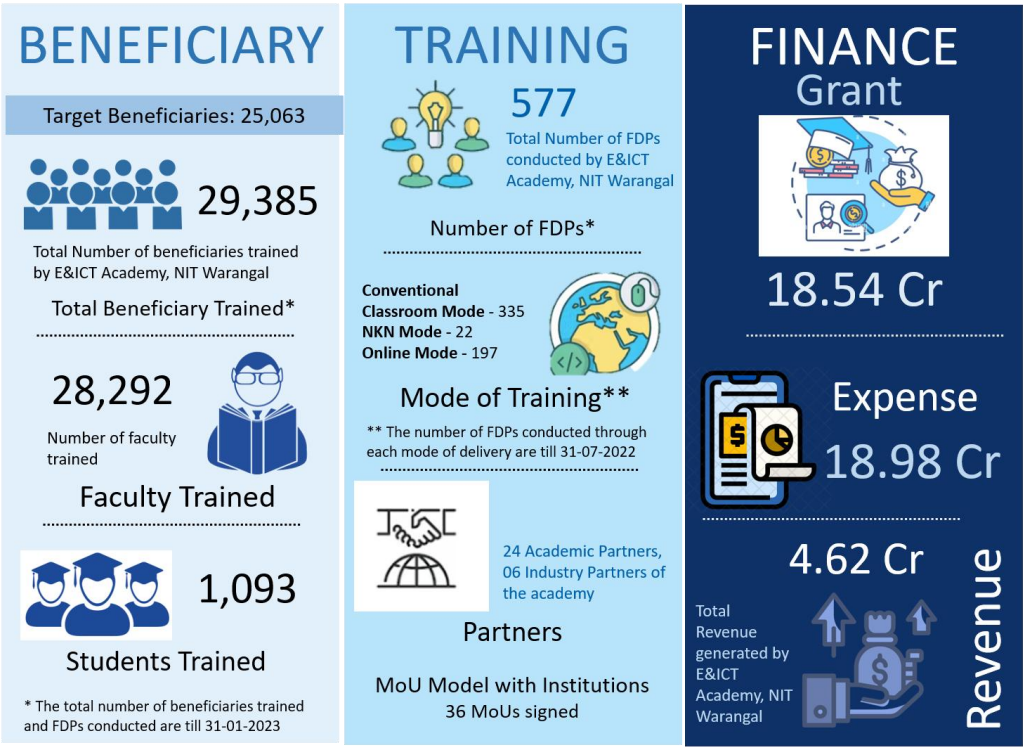
Total Revenue created by IIT, Guwahati

Revenue

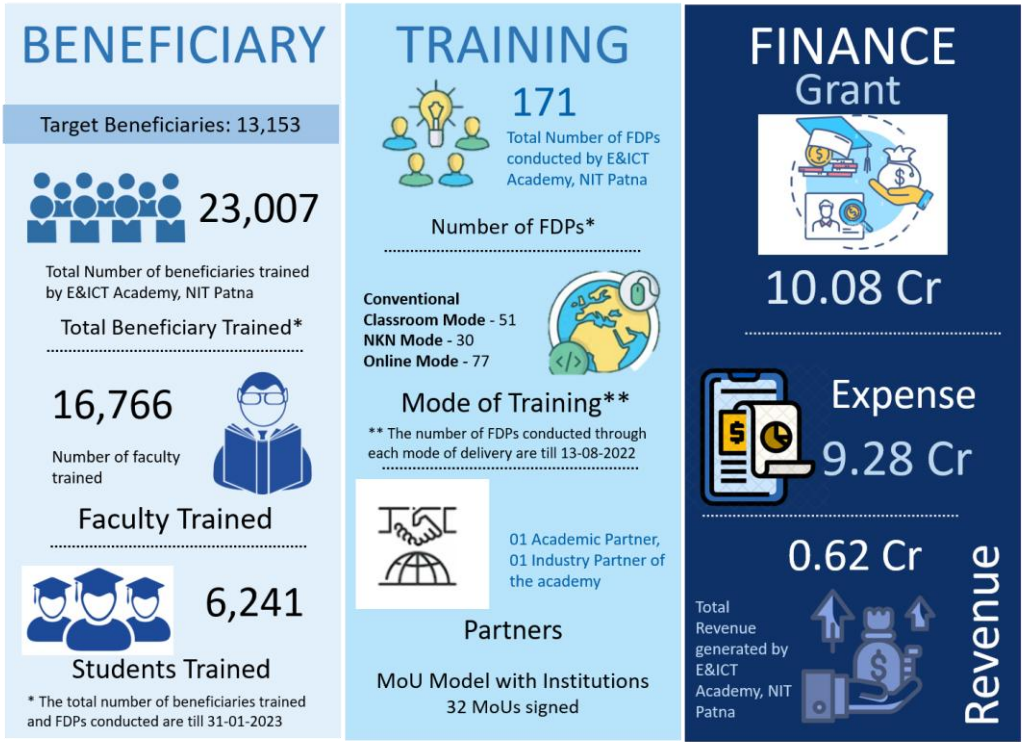
E&ICT Academy, IIT Guwahati (A)



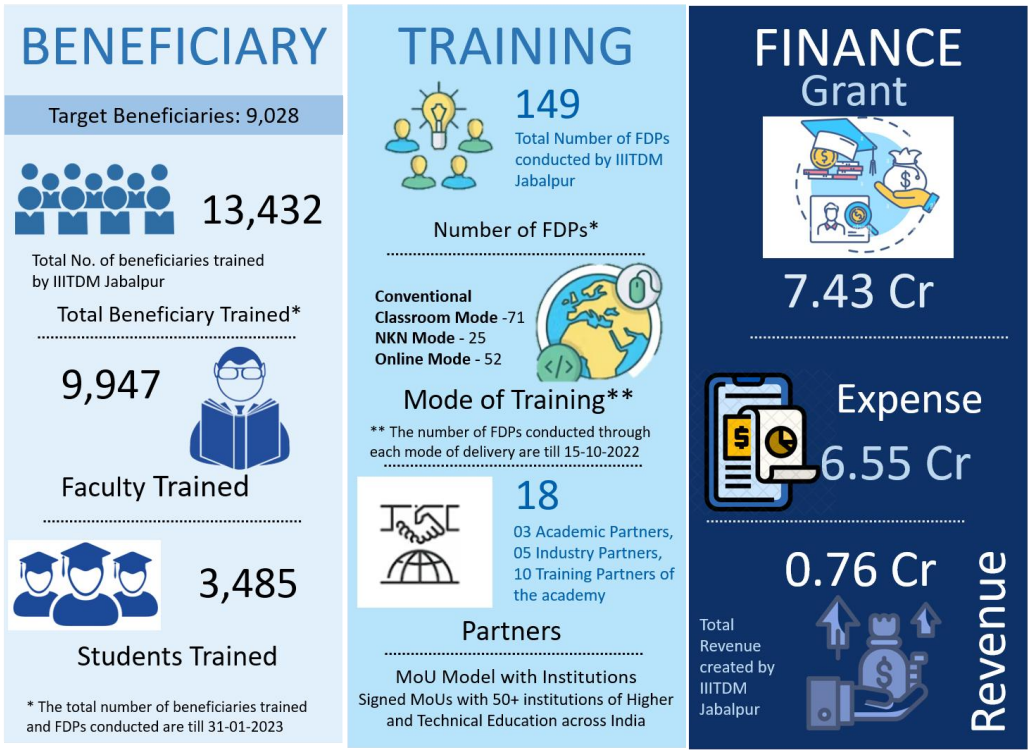
E&ICT Academy, IIT Kanpur (A)



E&ICT Academy, NIT Warangal (A)



E&ICT Academy, NIT Patna (A)



E&ICT Academy, IIITDM Jabalpur (A)

E&ICT Academy, IIT Roorkee (B)

BENEFICIARY

Target Beneficiaries: 5,200

10,853

Total No. of beneficiaries trained by IIT Roorkee

Total Beneficiary Trained*

8,565

Number of faculty trained

Faculty Trained

2,288

Students Trained

* The total number of beneficiaries trained and FDPs conducted are till 31-01-2023

TRAINING

176

Total Number of FDPs conducted by IIT Roorkee

Number of FDPs*

Conventional Classroom Mode - 91
NKN Mode - 30
Online Mode - 38

Mode of Training**

48

23 Academic Partners, 25 Industry Partners of the academy

Partners

MoUs with Industries & Academic Institutions

Signed MoUs with 50+ industries and HEIs, formed Activity centres in remote locations

FINANCE

Grant

5.38 Cr

Expense

5.79 Cr

0.79 Cr

Total Revenue created by IIT Roorkee

Revenue

E&ICT Academy, MNIT Jaipur (B)

BENEFICIARY

Target Beneficiaries: 10,094

15,902

Total Number of beneficiaries trained by E&ICT Academy, MNIT Jaipur

Total Beneficiary Trained*

12,323

Faculty Trained

3,579

Students Trained

* The total number of beneficiaries trained and FDPs conducted are till 31-01-2023

TRAINING

154

Total Number of FDPs conducted by E&ICT Academy, MNIT Jaipur

Number of FDPs*

Conventional Classroom Mode - 68
NKN Mode - 32
Online Mode - 49

Mode of Training**

08 Academic Partners, 16 Industry Partners, 01 training partner of the academy

Partners

MoU Model with Institutions

No MoUs signed

FINANCE

Grant

7.79 Cr

Expense

6.54 Cr

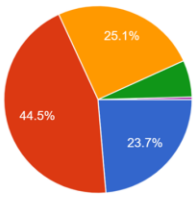
0.56 Cr

Total Revenue generated by E&ICT Academy, MNIT Jaipur

Revenue

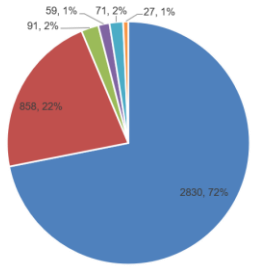
Survey Outcome

Age



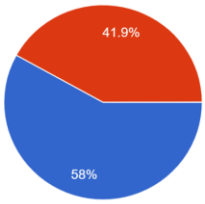
- Below 30 years
- 30-40 years
- 41-50 years
- 51-60 years
- 61 years and above

Work Profile



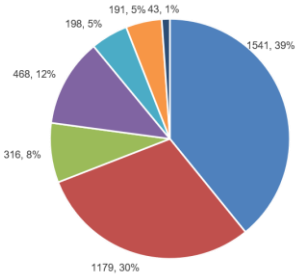
- Faculty Member
- Students
- Service/Government
- Industry Professional
- Research
- Others

Gender



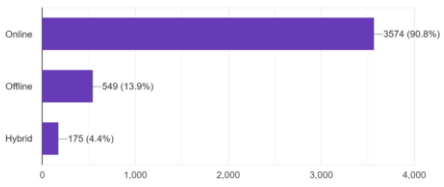
- Male
- Female
- Prefer not to say

Areas of Study

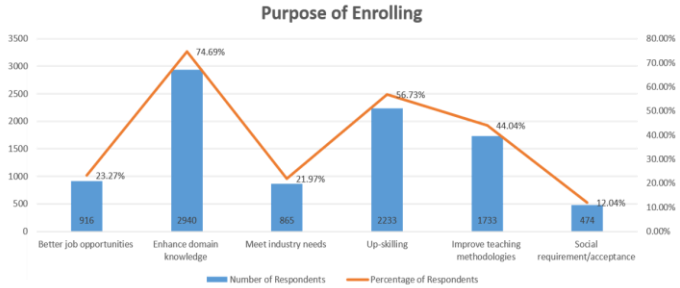


- Computer Science and Engineering
- Electrical, Electronics and Computer Engineering
- Engineering Other
- Science
- Commerce
- Arts/Humanities
- Other

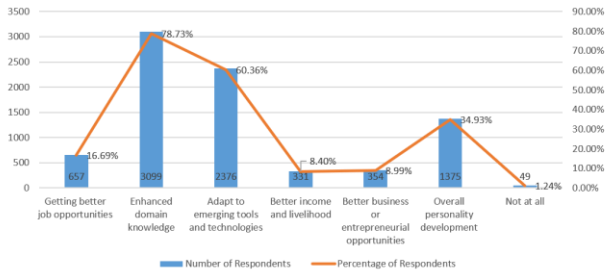
Mode of Training



Purpose of Enrolling



How has Training Helped



78%

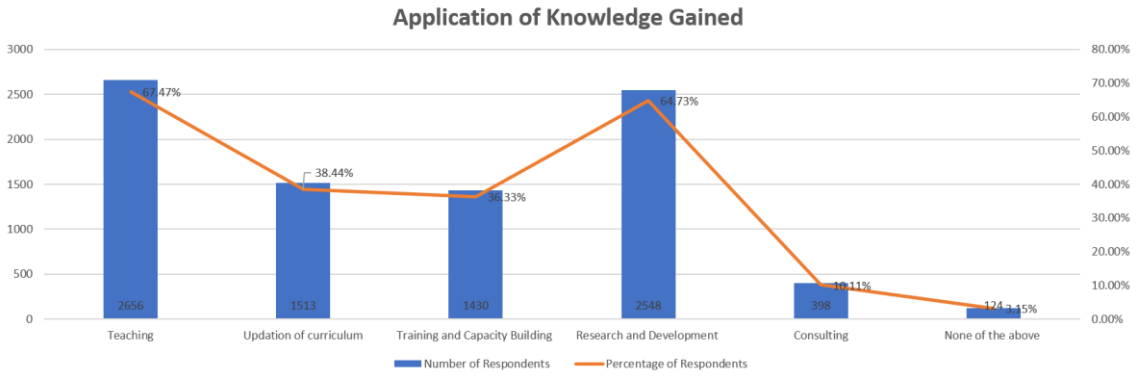
Enhanced Domain Knowledge

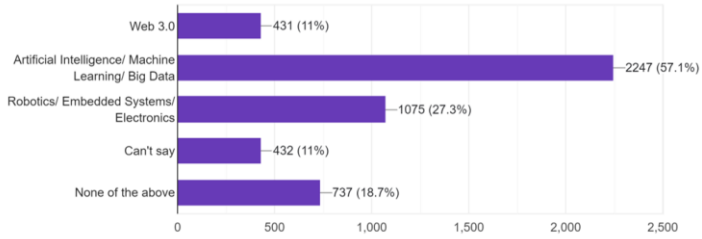
60%

Adapted to New Emerging Tools and Techniques

35%

Overall Personality Development





Beneficiary Feedback on Application of Knowledge Gained

67%

Teaching

38%

Updation of Curriculum

36%

Training and Capacity Building

65%

Research & Development

10%

Consulting

Beneficiary Feedback on Application of Technology at Work

57%

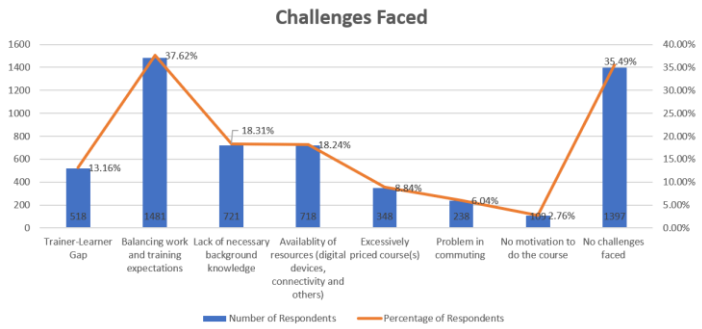
Artificial Intelligence/Machine Learning/Big Data

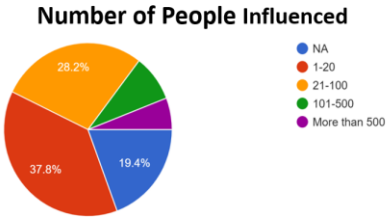
11%

Web 3.0

27%

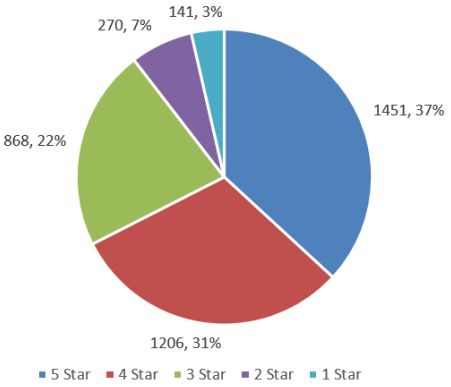
Robotic/Embedded Systems/Electronics



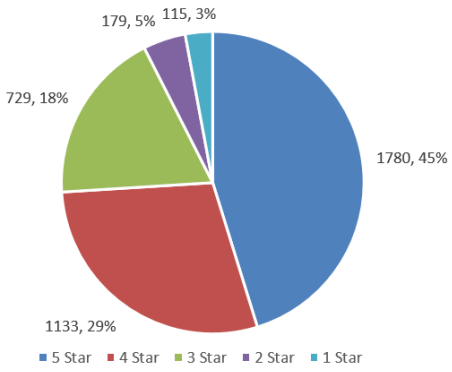


Satisfaction Rating

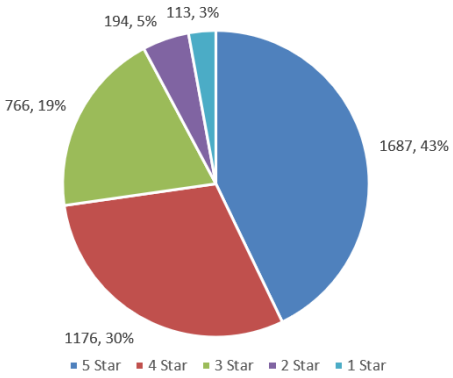
Infrastructure



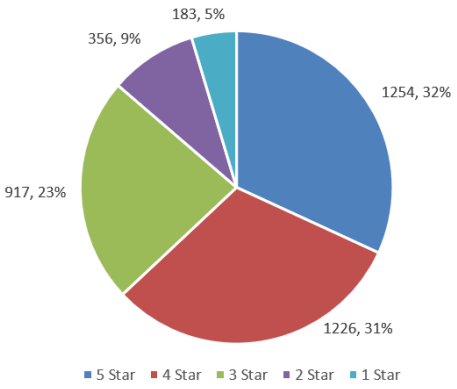
Quality of Trainer



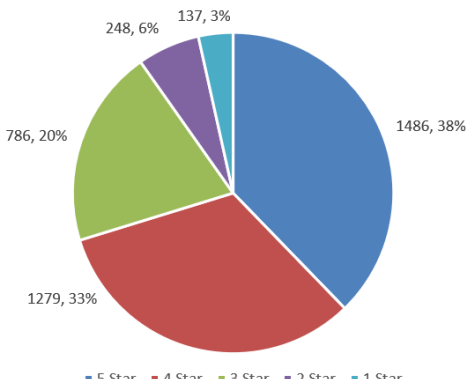
Quality of Content



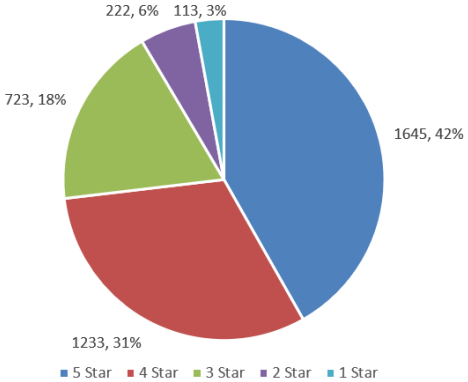
Industry Experience/Exposure



Alignment with Latest Technology



Overall Training Experience

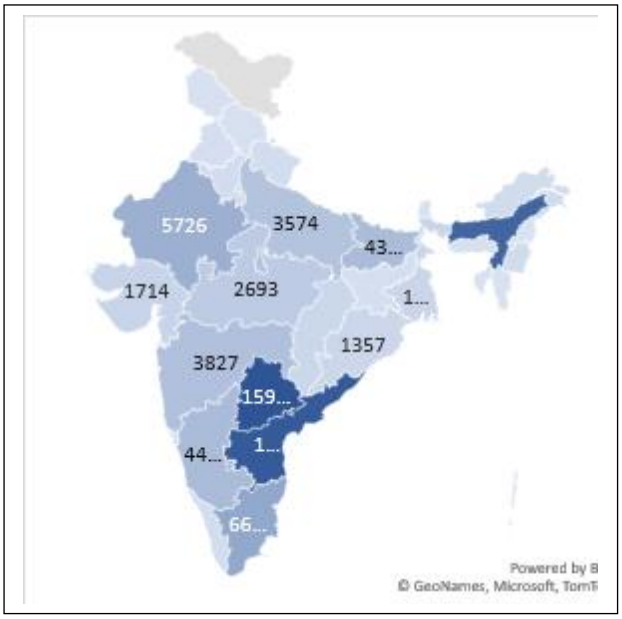


ANALYSIS: BENEFICIARY

Targets v/s Achievements

The academies were initially assigned the target of collectively training 92,800 faculty members in total over a period of 4 years. Despite a slow start and rationalisation of initial targets, the academies can be observed to have successfully achieved the numbers assigned to them. They, as a matter of fact, managed to surpass their given targets, with each academy having trained a number higher than their rationalised targets. The academies were able to go beyond and train a total of 3,46,968 beneficiaries as on January 31, 2023. Out of this, about 1,12,527 candidates were faculty members and 2,34,968 were students.

Geographical Spread of Beneficiaries



The map presents an indicative analysis of distribution of scheme beneficiaries across the country

*Since the geographical distribution for E&ICT Academy, IIT Kanpur wasn't available. It couldn't be represented in the section.

**The data represented for E&ICT Academy IIT Roorkee, is only for three years 2020-2022 (2994 beneficiaries)

Benefit to Trainers in Technical and Engineering Institutes

The learnings, skills and knowledge that scheme imparts will positively impact the trainers at our technical and engineering institutes. The teaching landscape at these institutes as per AICTE[1], today, comprises of over 4,33,133 teachers across the country. This number, when seen in context of the total number of faculty member trained under the scheme, highlight the considerable percentage of teachers that the scheme has been able to influence.

Impact on Higher Education Ecosystem

According to the All-India Survey on Higher Education (AISHE) 2019-20, there are a total of 15,03,156 teachers at higher education institutes in the country. The number of faculty members trained under the scheme, when seen in this backdrop present a significant number. This proportion, though small, is indicative of a suite of teachers, who have been trained in different emerging areas such as AI, ML, Robotics, Industry 4.0 technologies, Electronics, etc.

[1] "List of Faculties in AICTE Approved Institutes in 'ENGINEERING ...." Accessed February 14, 2023. https://facilities.aicte-india.org/dashboard/pages/faculties.php.

Area of Influence

The number of faculty member trained as part of the scheme when seen in context of the proportion of teachers influenced at the higher education as well as technical and engineering institutes in the country is quite large. These teachers will in turn be able to impact an even larger number of students at their respective institutes. The area of influence thus created, is expansive, not only in terms of the students influenced, but also in terms of the geographical reach across the country. It also translates into these students having access to and experiencing the qualitative difference the scheme has and will be able to bring towards knowledge, content and delivery.

The area of influence created by the faculty members can also be inferred from the beneficiary survey. A surprising 80% respondents indicated that they were able to impact people with their knowledge gained in varying degrees. Over 37.8% of the respondents were able to help 1-20 people, approximately 28.2% were able to assist 21-100 people, 8.7% respondents 100-500 people and over 5.9% were able to benefit more than 500 people after their training under the scheme.

This wide-ranging scope of impact created by the faculty members trained is an achievement for the scheme. The students, that these educators impact become the indirect beneficiaries of the scheme. It is also an important outcome when seen in backdrop of the role that our teachers and education models will have to play. Their knowledge, adaptability and skills will be crucial equipping the future workforce of the country with the skills to thrive in an innovation driven digital economy.

ANALYSIS: INFRASTRUCTURE

Expenditure on Infrastructure

The academies can be seen to have undertaken the expected infrastructure development for the scheme. Each of the E&ICT Academy, upon a brief overview, also demonstrate a unique approach towards the utilisation of funds under this budget head. Some academies have used it for creating and updating physical infrastructure, while others have utilised the same for the development of virtual (digital) infrastructure.

By experimenting on these different approached, the academies have been able to carve out best practices of course delivery which has resulted in a right mix of blended learning for optimised use of resources.

Leveraging Existing Infrastructure

The scheme has utilized the premium institutions of India who have already got sufficient infrastructure and capacity which was extended to the academies. Academies have built their own infrastructure but at the same time leveraged the existing infrastructure of the parent institutions. Extra capacity of the infrastructure, labs and equipment’s are shared and optimized for the welfare of the scheme. Quality of these infrastructure is also world class and building them within the scheme would have been an expensive exercise. This also contributed a lot in the implementation of the scheme successfully.

Innovation in Investment

Academies have found out their own methods of investing in infrastructure to achieve their short terms and long terms goals. Some academies have prioritised their investment on physical infrastructure like buildings, labs and equipment's. While others have invested heavily on the virtual platforms, learning management systems, performance systems and Virtual labs and Conferencing.

Collectively the academies have invested innovatively and, in the progression have built a vast spectrum of knowledge, content, processes and infrastructure both physical and virtual.

Shared Outcomes

The activities undertaken by all 7 E&ICT academies as part of the scheme has also resulted in shared outcomes. A large ecosystem has been built that comprises of the buildings, labs, equipment's, courses, pedagogy, instructional design, software, platforms, partners, incubations, industry relationships, mapping on local aspirations, knowledge management, academics, performance, administration, case studies, best practices and trainers. This ecosystem should be managed and shared across the academies and new aspiring institutions who wants to take up these initiatives for training.

ANALYSIS: TRAINING

Faculty Development Programmes

The academies, over the course of the scheme, have successfully conducted over 2.004 faculty development programmes and trainings collectively. This achievement was executed through different modes (Conventional, NKN, Online) and through different phases of the scheme.

Improving the quality of faculty at institutes and colleges across the country had been identified as one of the major objectives with which the scheme was initiated. For this purpose, academies were to conduct FDPs and specialised training programmes to help faculty members (and students) in various engineering, arts, commerce, science colleges and polytechnic institutions in the country get acquainted and up-to-date with latest industry and market trends. This was done with aim to optimise learning outcomes for all the stakeholders involved.

Analysis of the Programmes Conducted

While it would have been difficult to evaluate the entirety of training ecosystem (training material, modules, course content etc.) given it extent and scope. An assessment of distribution of courses was possible. It not helps us understand different focus areas at each academy but also gives us a glimpse into the same. Courses and programmes conducted by all seven academies were thus classified into three broad categories for this purpose. These related to courses':

1. Alignment with Core Areas
2. Alignment with Emerging and Contemporary Areas
3. Alignment with Industry 4.0

The courses at each academy were tallied, totalled and plotted on a line graph to observe the focus areas across the identified core areas, emerging areas and industry 4.0 at all 7 academies over the years.

Mode of Delivery

An Online or Hybrid mode of delivery can prove to be potentially beneficial for both the academies and beneficiaries. For the beneficiaries it can translate to better accessibility in terms of cost, convenience as well post training support. They can approach mentors, instructor and tutor at all time. It also creates a space where they can discuss and collaborate with fellow learners for a richer learning experience.

For the academies, the amplified scope of the scheme can assist their move towards sustainability with increased revenues. This model also allows the academies to develop a mechanism which can automatically monitor and measure learner progress and develop tailored lessons accordingly.

Knowledge and Content Library Created Collectively by the Academies

The complete spectrum of courses offered by the academies is vast. It covers the core areas, emerging tech and industry 4.0 horizontally and vertically. In addition to this, some courses are jointly offered by the academies, enhancing the courses with expertise and specialties across academies. The courses should be analysed with the complete requirement of the industry and the local aspirations and gaps should be filled with additional and modified courses. The course spectrum already is very fulfilling and with this analysis the courses offered collectively by the scheme/academies can be very empowering for the quality of faculty, industry academia gap, employability and availability of manpower for the new challenges to take on. A rich course library will also help towards the self-sustainability of the scheme.

ANALYSIS: POLICY

Expenditure

The initial outlay for the scheme was revised and fixed at 77.26 Cr post rationalisation in 2019. This amount was set aside to train a total of 92,800 beneficiaries. As of January 31, 2023 the expenditure of E&ICT Academies collectively stood at 69.33 Cr. The academies, within the revised sum were able to train more than each of their set target i.e., 1,12,537 faculty members and 2,34,441 students/professionals and other beneficiaries. Additionally, the academies were also able to create pool of assets in form of physical infrastructure as well as content and knowledge libraries.

All these factors, collectively help build a substantial return on investment for the scheme making it an overall economical investment by the ministry.

Sustainability

The scheme envisioned financial sustainability for all seven academies by their fifth year of existence. This was to be achieved by undertaking various income generating activities such as design and development of courses aimed at different beneficiaries, provide R&D, consultancy, capacity building and training services etc.

All academies can be observed to have laid down a sustainability plan moving forward but complete financial independence still looks hazy for an ambitious outcome. Only, E&ICT Academy NIT Warangal has been able to generate a substantial revenue of 4.62 Cr, which stands at approximately 24.34% of its total expenditure, followed by E&ICT Academy IIT Guwahati with a revenue of 2.02 Cr. This experience and knowledge of different

academies, however, can serve a learning experience in building a model for the next phase of the scheme.

Academic Collaborations

The scheme has also been able to facilitate collaboration amongst academies in form of Joint FDPs conducted via NKN mode. This enabled the sharing of resources, manpower and expertise to empower the entire education and training ecosystem under the scheme. This was also visible in the innovative models of academic partnerships undertaken by the academies. This allowed the academies to increase the extent and reach and gave an opportunity to learn and benefit from the knowledge offered.

Activity centres set-up by E&ICT Academy, IIT Roorkee is an example. It allowed for better proliferation and gave access to beneficiaries who were not able to travel because of lack of leaves/allowances. MoU model by NIT Warangal, IIT Kanpur, NIT Patna; Remote Centres by IIITDM Jabalpur and MNIT Jaipur similarly demonstrate this approach.

The academies in the next phase should focus on building joint research projects and intellectual capital for the country. Setting-up incubation centres will also contribute to the same.

Focus on Non-Technical[2] Courses

The E&ICT Academies, in addition to conducting specialised training programmes for engineering faculty in the country were also to focus on pedagogy, soft skills and utilisation of ICT tools in a classroom setting. All seven E&ICT Academies, in this respect, have introduced courses focusing on pedagogy, various soft skills (for both teachers and students) and utilisation/application of ICT tools and techniques for faculty members from Arts, Commerce and Science colleges. Over the years, these courses have focused on topics such as Outcome Based Education, Use of ICT Tools of Research Writing and Authoring/Reviewing Manuscripts, Pedagogical Methodologies, Curriculum Development in Light of NEP 2020, Intellectual Property Rights, Behavioural Remodelling and Classroom Delivery Enhancement Techniques for Teachers, MOODLE, MOOCs, ICT in Teaching, Learning Process and Institutes, Use of ICT Tools and Techniques in Classroom Delivery, Communication and Soft Skills, Challenges of Blended/Online Delivery etc., among several others.

Partner

The scheme needs to build a clear engagement model with the partners. Currently the definition of the partner and the role of the partner is very ambiguous. The partner ecosystem should be governed by the central system and should have defined roles and definition of the partner. Their enrolment, contract, entry and exit criteria, roles and responsibilities should be governed centrally. Currently the academies have partners in different categories, but the definition of these partners and their roles and responsibilities are not understood across board. Availability of clearcut guidelines will help in developing a healthy environment for the industry collaboration which is mutually beneficial and not exploitive in nature.

Focus on Electronics

[2] Effectively these courses involve some level of use of technical skills but have been classified as "non-technical' for the purpose of this study.

The scheme's emphasis on Electronics as an area of focus can lead to positive outcomes for the country in the future. The sector with both, the government and industry push is poised to witness exponential growth and usher a new era of electronics production. All seven academies can be observed to have taken this up in varying degrees. Approximately 30% of respondents to the online survey tool were from Electrical and Electronics engineering field. Additionally, academies over the course of the scheme have taken up and offered numerous courses related to the field. They have also collaborated with industry to facilitate the same.

The E&ICT Academies, can thus potentially emerge as a great medium to further strengthen the ESDM ecosystem with a complete value chain and position India as the hub for ESDM in the world.

Alignment with Emerging Tech

Almost all academies have introduced courses in emerging tech right from the early time of the scheme and the subject matter spread of the courses covers the above spectrum well. A very large percentage of beneficiaries have taken up the courses on emerging tech, even the participation of women in emerging tech in academies is very encouraging. Overall academies have done excellent on emerging tech alignment.

On the downside the research team saw less focus on immersive technologies (AR, VR and MR), drones and smart applications of emerging tech.

Alignment with Industry 4.0

Industry 4.0 focusses on Artificial Intelligence, Robotic Process Automation, Cloud Computing, Machine Learning and smart technology. This is changing not only the industry but also the future job demands and education in itself.

An early focus has resulted in a workforce readiness in large numbers.

With the total of 1,12,527 faculty members and 2,34,441 students are trained by Academies under this scheme and roughly from our sample survey around 40% have gone through the courses where the beneficiaries can contribute to Industry 4.0.

Focus on Research

64.73% of the respondents indicated that they have used the knowledge gained towards Research and Development efforts. It was further validated with the research team's interaction with beneficiaries and faculty members (trainers) during the field visits.

The research ecosystem that the Scheme creates can potentially contribute in helping India boost its investments in Research, Innovation and Technology.

Quality of Manpower in Higher Studies

The beneficiaries as part of the scheme were experience access to some of the best institutes, their infrastructure, faculty and industry training professionals in the country. They were able to undergo training in different modes of delivery (both online and offline) and cover different emerging areas in form of courses offered at the academies. These courses were future centric and the academies were able to dynamically modify from time to time to keep in pace with the global trends within digital space.

Collectively, all of these factors can be seen facilitating and enabling the improvement of the quality of manpower in higher studies in the country. All of these can be inferred to be the

necessary pre-requisites that have been known to have enable the move towards better quality manpower.

Need a system to measure the improvement in the faculty trained by E&ICT Academies post training also.

Industry Academia Gap

The scheme's emphasis on student centric training of trainer has led to positive outcomes for the programme. By creating a unique blend of both hard and soft skills the academies have been able to build a balanced training ecosystem. The academies have also collaborated with the industry varying other degrees to be able to provide beneficiaries with best possible exposure to industry. The emerging industry topics in association with industry experts are combined with the didactical approaches and prevailing concepts. This has also led to bridging of the gap that exists between the industry and academia.

Sustained focus to create more meaningful partnerships with the industry is still required. This can be in form internships, live projects, industry visits, guest speakers from the industry, joint research projects etc. It will allow the academies to build an even more collaborative learning environment which will be mutually beneficial for all stakeholders. The academy will be able better align their courses with the industry, provide required industry exposure to their beneficiaries and create a more hands-on training environment.

Employability

Employability is one of the major issues faced by higher studies in India. The same has been raised by several institutions including NASSCOM in its report on employability of engineering graduates and graduates of other streams. The E&ICT Academies have focused on the quality of faculty, content, pedagogy, industry-oriented courses, infrastructure, platforms and industry partnerships to fill this gap and in turn work towards the employability of the target group.

The survey results also indicates that the trained faculty and further the students of the affiliate institutions of the state universities have gained the required knowledge and using them in their respective careers. Before and after requirements of the students, alignment with Industry 4.0, Emerging Tech and Web 3.0 have made the employability journey of the trainees more effective and easier.

High Value GDP Impact

The scheme has been able to influence a significant number of teachers from both the higher education ecosystem as well as Technical and Engineering ecosystem of the country. They represent Faculty members who are going to train a large number of students, that will eventually be are going to be absorbed by the IT industry and the other industries of India and Outside India. As per our sample survey also 75% of the students and faculty are from CS field. The average income in IT industry is 33 lakh as per 2009-2019 estimates of NASSCOM Techade report. 4.1 million is the number workforce absorbed by IT sector of India. With 1 lakh faculty and 2 lakh students, where a large part of them will directly and indirectly in some way will contribute significantly to the IT sector. Every IT job further creates 2.5 jobs in the related sectors as per the same Techade report. Value of these jobs and work in the sector contributes significantly to the GDP of the country and comparative value of the sector is much higher than the other sectors.

New startups and new ventures will emerge out of these beneficiaries which are also aligned with the Startup India and Make in India initiatives of Government of India. In the year 2022 the number of Unicorns in India is at 22. This is also a very high value impact area for the Government.

For the Year 2021-22, India's export in software services is estimated to be 156.7 billion. Software export is already a high impact area for the Government. With the addition of emerging tech and Industry 4.0 the value of the export will be much higher in value in comparison to other technologies. This will add significantly to the employment and GDP of the country.

RECOMMENDATIONS

A Centralised System with Decentralised Control for Collective Wisdom

A central learning system with components provided by academies and the legacy of current infrastructure. Institutes will provide the local interface for the empowerment of tier 2, 3 and 4 faculty & students, and local industry from the same system.

Pooling the Resources: Making the Limited Unlimited

Building from the last statement, academies in the las avatar has built a large pool of resources separately. These resources can be utilized as a one big system where the resources are available as a big distributed system. All academies collectively can use the resource pool and the utilization will be optimized when right controls are put in place.

Glocal Mindset: Alignment with Local Aspirations

Caters to local requirements and aspirations can be one of major outcomes of the scheme in its next phase. A part of the courses at the academies could be curated and developed mapping with the specific needs and requirements of local industries in the region.

Women in Tech

38% of the total beneficiaries are women. The scheme is creating more accessible and flexible opportunities of skill development and formal training for this important section of the society. The IT industry with 34% od women workforce has been leading the way for its global counterparts and has emerged as a bastion of female empowerment in the country.

Industry Engagements for Better Results

Industry participation at academies exists in form of visiting and guest faculty, training partnerships and corporate training but there is still a need for deeper engagement with the industry. This will be necessary for better exposure, research, internships, live projects, case studies and consulting projects for not only the beneficiaries but also the faculty (trainers).

Sustainability

The revenue generated by the academies, when seen in the backdrop of their expenditure also presents a hopeful picture and is also reflective of academies performance on earning capabilities. Warangal has clocked a revenue percentage of around 25% with other academies following their lead.

The academies can further help the society achieve its sustainability goals. Industry 4.0, Emerging Technology and Environmental Technology have been identified as some key focus areas that will help accomplish this. These technologies will further be fundamental in helping the country deliver its target of becoming a net zero emitter by 2070.

Innovation Management

A large number of innovative ideas often go to waste because of the lack of an innovation management process. There is thus, a need for these E&ICT Academies to become a hub of innovations where the beneficiaries can have access to apt environment and tools to be able to nurture their ideas and innovations.

Effective Awareness and Social Media Strategies

Trainers at different academies highlighted that although their courses enjoyed enthusiastic participation there was still a need for a more dedicated awareness and outreach programme. A national level awareness campaign is required which is governed and financed centrally at regular intervals to impart a much-needed recognition to both the academies and the scheme. Integrated offline and online campaigns along with engaging social media strategy can go a long way in devising a holistic communication strategy around the scheme.

Measuring the Delta in the Life-cycle of the Beneficiaries using Technology

A system can be designed that helps the beneficiary not only during the course but after the course completion also. This system captures the different data points related to the beneficiary and its performance, certifications, responses, collaborations, teamwork, ideas and research.

E&ICT is the right medium to provide the required training impetus to the faculty of technical institutions and higher studies. This will further help nation reach the $ 5 trillion economy as this is a high impact area for the nation.

Continuation of scheme is essential to not only to empower more and more faculty but also to provide next level of engagement to the existing beneficiaries.

The cost benefit analysis will be much higher for the continuation and opportunity loss will be very high if this is stopped.

EXTENSION & EXPANSION OF E&ICT Scheme

E&ICT has served the beneficiaries by facilitating their access to a range of information and services for multitude of purposes. The readiness of the workforce for the coming challenges is very important. It is uplifting the faculty and industry of Tier 2, 3 and 4 level towns & improve their quality of life.

Innovative delivery mechanisms are required to cut down the costs.

The Way Forward

The scheme aspires to become trainer ecosystem in new tech sector of India driving collaboration and innovation. Quality of higher education, quality of faculty in higher studies, industry academia gap and other challenges can be mitigated using the proposed framework.

Proposed Training Ecosystem

1. Technology Subsystem
2. Process Subsystem
3. Physical Infrastructure Subsystem
4. Operations Control Subsystem
5. Industry Connect Subsystem
6. Delivery Subsystem
7. Measurement System

Delivery Subsystem

These interfaces can be accessed by the consumer directly or can be consumed from the host institutions and spokes in hub and spoke model. The availability of the interfaces on different devices will increase the availability and ease of the accessibility of the system immensely.

Way Forward

The trainer ecosystem created along with the empowered industry, local needs and employment will help in building not only the intellectual prosperity/wealth of the country but also the direct impact on GDP.