

Participation Of Industry in Curriculum Design and Development

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Abstract Role of industry is very much essential to prepare the students for employment. Industries can collaborate in many ways with institutions to enhance the skills of the students. They can participate in curriculum design, development and delivery. They can offer industry specific core / elective courses. They can conduct student workshops, contests and conferences. They can also offer industry specific international certifications. In this paper, as a case study we have considered our own institute and analysed in detail about how our association with industries have enhanced skills and employability of our students. The objective of this study is to showcase that by involving industries in curriculum design, we can see developments in all the frontiers of academics. We have shown the developments in the areas of research publications, industry relevant courses / electives, industry relevant workshops / faculty development programs, improvements in research and consultancy and student placements.

Keywords: Curriculum Design & Delivery, Skills, International Certifications, Employability

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Curriculum Design

The process of framing the curriculum starts with its design. While designing the curriculum, the industries and academic institutions carefully choose the components to be included. In general, the Engineering Curriculum contains Basic Science Core Courses (30-40 credits) and Engineering Science Core Courses (30-40 credits) usually offered in first year of graduation. Professional Core Courses (60-80 credits) are generally offered from second to final years. Professional Elective Courses (20-30 credits) and Open Elective Courses (10-20 credits) are offered in third and final years. Humanities and Social Science Core Courses (10-20 credits) are usually offered in final years. Industries contribute in deciding the courses to be offered in Professional Core and in Electives (Srinivasa Pai & Niranjana N Chiplunkar, 2014, p.3). In this paper, we have included only IT industries, whose involvement has improved in bringing excellence in the curriculum of Computer Science and Information Science streams. Board of Studies

Usually Industry Representatives will participate in Board of Studies meeting conducted by academic institutions. They will thoroughly scrutinize the Professional Core Courses. Wherever upgradation is required to meet the current industry requirements, they will suitably suggest and that will be implemented in the curriculum after getting the approval from the Governing Council (Pai et al., 2007, p.44).

Industry Electives

The Autonomous and Deemed Universities have the flexibility to include Industry Electives as a part of their curriculum. Popular industries design their own courses as per their needs and offer them as Electives to advanced semester students. This is one of the finest and fruitful models working successfully. Students who opt for those electives will undergo training and qualify in the examination. Those students will be absorbed by respective industries. Industries used to develop the required courseware for the electives and usually upload on to their respective Students Resources portals. Some industries have developed Video-Instruction Led Tutors also by involving their subject matter experts. Also, they develop Course Slides, Facilitator Guides, Student Exercises, Case Studies and Lesson Plans. Some industries also develop Student Project Banks where the registered students can deposit artifacts related to their projects.

Curriculum Development and Delivery

Once the needed Curriculum is designed, the next step is to deliver it effectively to the students. In this aspect, the industries collaborate in various ways with academic institutions, as shown below:

a. Train The Trainer Workshops

As the electives are designed by Industry Experts, the academic faculty should be trained in those emerging areas to effectively train the students. In order to roll out the electives successfully, industries used to conduct Train The Trainer (TTT) workshops in Academic Campuses and their Development Premises with their own experts. The program duration would vary from three to five days. During these workshops, faculty will be given exhaustive training on practical components. Industries also certify the faculty who successfully complete the workshops. These workshops are also called as Faculty Development Programmes.

b. Peer Enablement Programmes

Faculty who underwent Train The Trainer (TTT) Workshops in turn conduct similar kind of workshops in their own institutions involving their peers in large numbers. By this way, they disseminate the knowledge among their peers, who will in turn train the prospective students. These kinds of programmes are

called Peer Enablement Programmes.

c. Workshops for Students

Industries regularly conduct workshops for students in emerging areas of technology and engineering. By this, industries directly address the students and train them in the best practices followed in industries. These workshops fill the gap between the faculty offering and industry requirement, if at all any (AICTE-CII Survey Report, 2012).

d. Seminars

Industries regularly visit academic campuses to offer seminars to both faculty and students. Usually seminars revolve around the topics not immediately available in the curriculum. It may be about recent happenings in the technical and engineering world or about improving the soft skills of the student.

e. Newsletter

Some industries develop their own Newsletter and circulate them among the registered students. These Newsletters contain most recent technical articles and discussions.

f. On-line Faculty Community / Networking Forum

Industries have developed On-line Faculty Community / Networking Forum to collaborate with respective subject matter experts. Faculty from different parts of the world exchange their ideas with industry experts in chosen fields and get themselves updated.

Curriculum Enrichment

Curriculum delivery is not a one-time process. Every year, the curriculum should be revised and the cycle continues. It requires a lot of motivation from faculty and students. In this regard, industries come up with a lot of motivational programmes for the benefit of faculty and students. Industries used to recognize best performing faculty and students in various aspects.

a. Faculty Enablement Programmes

These programmes are conducted by industries to update and refresh the knowledge gained by the

faculties through TTT workshops. By undergoing these programmes, faculty will keep in touch with the latest trends in their field which will ultimately benefit their students.

Industries in association with academic institutions conduct various Research Conclaves. In this Research Scholars & PG students will get an opportunity to present their own research initiatives in the form of ideas, papers, proposals and products. Best Research Scholar will be awarded suitably.

c. Roadshows

Industries conduct Roadshows in Technical Campuses. In these Roadshows, they exhibit their features and orient students / faculty towards industry practices.

d. Industrial Visits

Industries encourage Students / Faculty to visit their Development Premises. These Industrial Visits give real time exposure to students as well as faculty. This helps the faculty to engage their classes in a lively manner by citing various real life examples.

e. Programming Contests

Industries organize various Programming Contests in emerging platforms to both the faculty and students in a wide manner. Students and faculty from all over the country can participate in these Contests. There may be different levels such as Regional, State and National. Winners from various levels used to get attractive prizes in addition to citation.

f. Sabbaticals

Based on the contribution of faculty towards implementing various Industry Electives in their curriculum, Industries allow faculty to undergo sabbaticals in their Development Centres for a period of 4 – 6 weeks. During sabbaticals, faculty will be assigned with some real time projects. Faculty will develop those projects by getting assistance from industry experts. This gives more depth to their practice. As this will be shared with students, students also will get real time exposure.

g. Technical Events

Industries used to send invitations to faculty / students regarding various Technical Events conducted in their centres. Faculty / students enhance their knowledge by attending these events.

h. Research Paper Publication Sponsorships

Again, based on faculty / student levels, industries sponsor them to publish their original research papers in reputed journals and conferences. Also, industries fund for the Research Projects carried out by the faculty.

The real success of a professional depends not only on their technical skills but also on their soft skills. Industries leverage on this aspect as well by providing Soft Skills training to the students / faculty.

j. Certification Exams

Renowned Multi-National Companies provide Certification Exams to Students at discount rates. Those who clear those exams have a chance to get Internships / Placement in the company.

k. Best Student Project Award

Some industries have the practice of awarding prizes for the Students' Best Projects.

l. Centres of Excellence

Some popular industries setup their Centres of Excellence in academic campuses to train students and faculty.

Industry Institute Interaction Initiatives at NMAMIT

a. Infosys Campus Connect: Infosys Campus Connect was started in the year 2014 at our campus. Through Infosys CC, we offer industry specific electives such as Essentials of Information Technology, Web Technologies, C# and .NET Programming, Python Programming, Software Testing, Business Intelligence, Building Enterprise Applications, Big Data and Analytics, Machine Learning, Cloud Computing and IoT, Cyber Security and Block Chain (<https://infyq.infosys.com/home>). Also, every year we used to conduct two Faculty Development Programs through Infosys CC and we regularly participate in the Principals' Meeting

organized by Infosys at Bangalore. Infosys is following the practice of issuing College Score Card, wherein we can understand our strengths and weaknesses in effectively implementing CC program. Recently Infosys introduced a Web and Mobile Application called InfyTQ, through which faculty and students can take all the above MOOC courses. Successful students will be certified by Infosys and will be eligible for Infosys placements.

b. DellEMC Academic Alliance: Through DellEMC Academic Alliance we train our students in the areas of Information Storage Management, Data Science & Big Data Analytics, Cloud Infrastructure & Services and prepare them for International Certifications (<http://www.ictacademy.in/emc>). Also, we are looking forward to establish DellEMC External Research Centre (Centre of Excellence) in Data Science and Big Data Analytics. Through this faculty and students will undergo training by DellEMC professionals and successful students will be issued EMC Associate certificates.

c. VMWare IT Academy: Through this academy, we provide specialized training on Virtualization using vSphere (<http://www.ictacademy.in/vmware>). Training and Certification will be done by VMWare.

d. Salesforce Academic Alliance: Through this, we train our students to build different apps using Salesforce App Builder platform. This platform is more appropriate for Business Administrators.

e. UiPath Academic Alliance: Through this, we train our students on Robotic Process Automation using UiPath Studio (<https://www.uipath.com/rpa/academic-alliance>). We are looking forward to establish Centre for Robotic Process Automation in association with UiPath. Students completing Advanced RPA Developer course will get internship and placement opportunities from UiPath.

Benefits Obtained and Looking Forward

Due to strong Industry-Institute Interactions, NMAMIT has witnessed increase in the number of elective courses, certificate courses and skill development courses offered

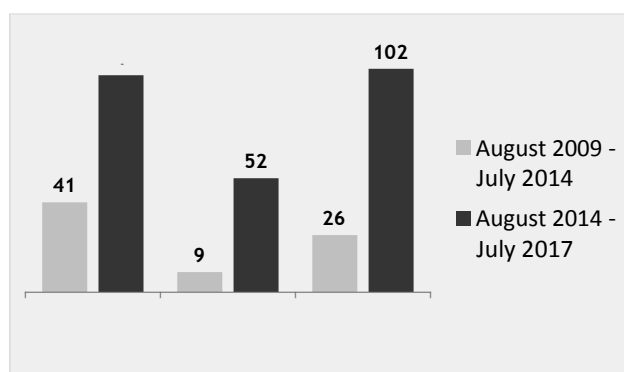


Figure 1: Statistics on courses offered at NMAMIT before and after participation of industry in curriculum design i.e. from 2011-2014 and 2014-2017.

Also, faculty members attending faculty development programs, training and workshops also increased.

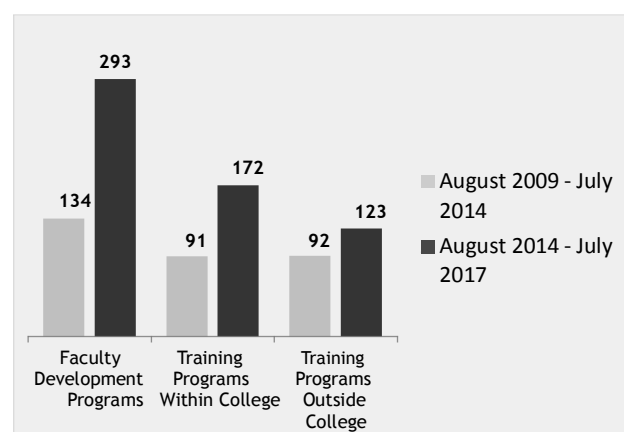


Figure 2: Statistics on faculty attending FDPs and Training Programs before and after participation of industry in curriculum design i.e. from 2011-2014 and 2014-2017.

NMAMIT has also witnessed a good progress in the quality publications by the faculty.

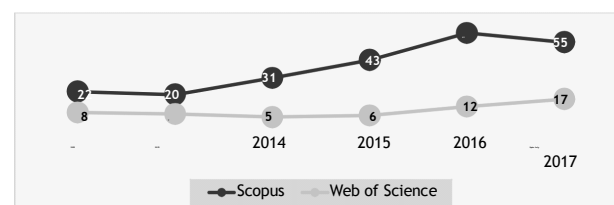


Figure 3: Number of Publications by our faculty during 2012-2017

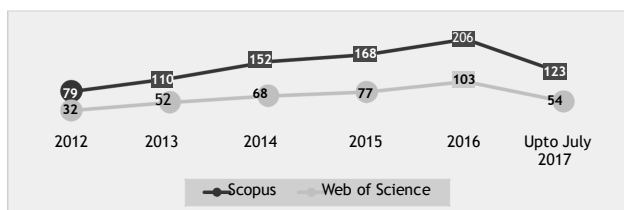


Table 6 : Maps the Microsoft Office 2016 features to OBE components.

Our placement data: Due to our strong association with industries in curriculum design and delivery, number of corporates visiting our institution is increasing year by year. Our placement records are also continuously improving.

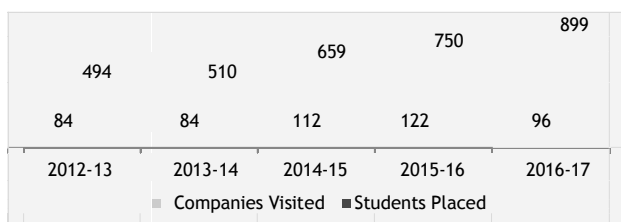


Figure 5 : Our placement data from 2012-2017

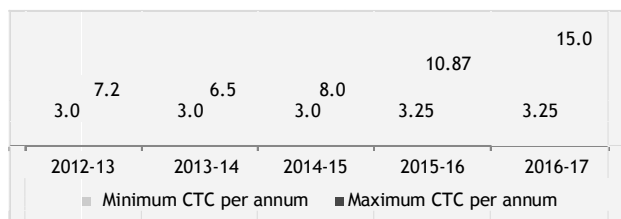


Figure 6 : CTC offered to our students during 2012-2017

Last year (2017-18), 280+ corporates visited our campus for campus placements and provided 616 placement offers and 16 internships.

Conclusion

This paper provides an overview about the current status of industry associations at NMAMIT in curriculum design and delivery to enhance

employability skills of the students. Year by year the number of students getting placement through our campus placements is also increasing, which is evident from the data provided. This has also helped NMAMIT to have better branding among academic fraternity.

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