Academic Practices for Sustainable Growth – DKTES Textile Department

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Abstract: DKTES Textile and Engineering Institute enjoys a unique place in the Textile Engineering Education. In textile programs, the activities like the industrial tour, practical in industry, international training, MoUs with reputed International universities and industries, excellent industry-institute interaction and support to society are helping the student in building a successful career in the field of textiles. This paper reviews impact of such activities in academics being carried out in Textile programs of the Institute.

Keywords: Academic, Engineering, Education, Textile

Introduction

Engineering is a profession concerned with the creation of new and improved systems, processes, and products to serve human needs. The success of the industries is dependent on the value and quality of the engineering education. Cut throat competition and new technological developments have demanded quick and dynamic changes in today's industry. Because of this employer prefers to hire engineers and technologists with the high potential knowledge and skills. Therefore engineering education must do certain changes in order to maintain the effective pace. With the objective of molding and furnishing students to be ready to face the challenges and responsibilities in their future, the education should be value based. It has become essential for the education system to give high-quality education which meets the international standards with respect to the global demands, technology and scenario.

Today's engineering education focuses more towards making graduates job-fit. But along with technical knowledge industry demands a graduate with additional attributes like learnability, communication skills, individual and teamwork, positive attitude, project management and finance, professional ethics, adaptability, and self-motivation. Considering the above facts and to develop the students in all respects from the point of view of program outcomes, the textile department has adopted the approach towards teaching and learning, adopting few innovative academic practices.

Work culture in Textile Department

Generation and dissipation of knowledge, especially for the benefit of the student, industry and society is an important function of any professional educational Institute. In spite of the process of phenomenal growth of the textile industry, which was taking place at Ichalkaranji during last 25 years there was no educational institute up to 1980 which could cater an industry's need for technically trained manpower. The local industry was facing handicapped due to the dearth of technically qualified personnel. Different co-op. organizations from Ichalkaranji, therefore, came together to educational society in 1981 with a view to start institutes and colleges to cater to education in the field of Textiles. A journey towards academic excellence since last 35 years, DKTES Textile and Engineering Institute (DKTE*)* are consistently ranked topmost amongst all the institutes affiliated to the Shivaji University, Kolhapur. Learning follows teaching and teaching follows learning. Stronger the teaching-learning process, the stronger is the quality education. In DKTE teaching and learning process focuses on the goals and objectives of the program. Today, textile programs enjoy an international reputation for the high-quality education and graduates, many occupying leadership positions in industry, education and research. The textile department is taken as a role model for interaction with industry.

Textile & Engineering Institute offers five undergraduate programs in textile stream namely, Textile Technology, Man-Made Textile Technology, Textile Plant Engineering, Textile Chemistry and Fashion Technology.

The objective of programs is to imbibe knowledge and skills in the students for overall growth in the profession. These students will have a successful career in textile manufacturing, quality assurance, product development, technical sale segment and will have continuous learning ability for adopting constantly changing technology. They will have the ability to take up entrepreneurial venture.

Various Academic Practices in Textile Department

Along with regular teaching and learning practice, the textile department conducts several activities to meet the above-mentioned objective. Few of these best practices are,

1. Compulsory Industrial tour
2. Conduct of Practical in industries
3. International training
4. Visit to exhibitions
5. Linkages with other Institutions.
6. Alumni meet
7. Strong Industry Interaction
8. Centre of Excellence in Nonwoven
9. Support to Society
10. Empowerment of women

1. Compulsory Industrial tour

Industrial visit is very important to any student undergoing engineering professional education. No institute providing enough infrastructure to show all the real working equipment, machinery, operational methodology and everything else, that students will come across once they enter into the professional field, after the completion of their respective courses, so these industrial tours are an effort to bridge this gap of practical exposure. So our institute has made industrial tour mandatory for all the students' since last 20 years.

Importance of Industrial Visit

1. It helps students gain first-hand information regarding the functioning of the industry.
2. Provides an opportunity to plan, organize and engage in active learning experiences both inside and outside the classroom.
3. It helps to fulfil certain curriculum requirements.
4. Provides an insight into the real working environment of the industry.
5. Helps them to see their future place in the working world.
6. This also serves as a relationship building process between institutes and industry.
7. Many of the companies also use it as a tool for building brand awareness.
8. Helps to enhance their interpersonal skills and communications.
9. Helps to understand the do's and don'ts of the industrial practice.

Following table shows industrial visits arranged for students in last three academic year.

Academic Year	Name of Organisation
2016-17	Hindustan, Rieter, Becart, ICC, ITME, BTRA, WRA, Rajarambapu Mills, Garware, Century Enka, Brinton Carpets, Reliance, Welspun, Raymond, CETP Vapi, Killer Jeans, Alok, Raymond, Welspun, Kusumgar CORCOT, NIFT, SGS, Creative, Fritzberg, Intertek Testings.
2015-16	Rieter, BTRA, WRA, SGS, Reliance, Alok, Raymond, Grasim, Shahi, Himatsingka, Zenith, Reid & Taylor, Chamundi,, Anjaneya Cotton Mill, Annapurna Ginning Unit, Arvind, Shahi, HSL, SGS, Arvind, Madhura, Laguna, Silver Oak, Intertec, Reach Technology, Tamilnadu Textile Process, Maxwell, NCC, Colorburg, CETP, Knitsburg, Inditex, Shakti, K G Denim, PSGCOE
2014-15	Welspun, Alok, Reliance, CIRCOT, Reliance Ind., Alok, Raymond, Keval Kiran Industries, Shahi Exports, Reid & Taylor, Indusfila, Zenith Fibres, CSRTI, Chamundi Silks

2. Conduct of Practical in industries

Formal education from academic institutions is basically the proper place for acquiring appropriate knowledge and skills necessary for future employment. Exposure to the industry forms an important and integral part of engineering students' undergraduate studies. This activity connects the gap between theory and practice as well as between classroom education and real industry life. Practical in the industry has been established to provide students with an overview of industries and to expose them to different aspects of formal education which they had learnt in the institute, under the guidance of skilled and experienced persons within the organization. Practical in industries is teaching or developing in oneself or others, any skills and knowledge that relate to specific useful skills. Through the practical in industry students will be able, to apply engineering knowledge learned in a classroom environment in real industrial situations and to expose to professional engineering practices in the industries.

3. International training

After completion of the second semester of the second and third year, the students have to undergo the in-plant training for one month in the industry. A separate curriculum is prepared for the various activities to be covered during in-plant training and same is given to the students. Also, a separate dairy is given to the students in which they have to write date wise activities completed in the industry and take the signature of concerned in-charge from the industry. After completion of the training, a student has to prepare an in-plant training report in the bound form and submit to training and placement officer.

Afterwards, an external person from the reputed industry is called to conduct a viva-voce examination to assess the performance.
Every year around 20 students get internship opportunities in machine manufacturing industries like Trützschler, Mayer & Cie, Indorama Synthetics and Foreign Universities like Technical University of Liberec, Czech Republic and University of Applied Sciences, HOF University Germany.

4. Visit to exhibitions

Institute organizes visits of students to various national and international exhibitions, mandatorily, such as ITME, GTE, Techtextil India, etc., to give them exposure to new technological developments.

5. Linkages with other Institutions.

The image the Institute has created in the field of education has attracted many Universities from India and Overseas to enter into collaboration with DKTE. The institute has signed MoUs with institutes of national and international repute.
Important aspects of these MoUs are:

1. Student and Faculty Exchange
2. Joint Research & Development
3. Sharing of Infrastructure Facilities
4. Sharing of Information
5. Institute has an alliance with the following universities.

Following are the MoU signed with Universities

- Troy University, USA
- North Carolina State University, USA
- Eastern Michigan University, USA
- Busitema University, Uganda
- The Copperbelt University (CBU), Zambia
- University of California Los Angelis (UCLA Extension), USA
- School of Textile Technology, Indonesia
- Banasthali University, India
- Chenkuo Technology University, Taiwan
- Kenyatta University, Kenya
- Hochschule Niederrhein University, Germany
- Saechsisches Textil Forschungs Institute (STFI), Germany
- Technical University of Liberec, Czech Republic
- University of Applied Sciences, HOF University, Germany

6. Alumni meet

Every year, on 26th of January institute, organizes alumni meet to have interaction with alumni. This annual meet helps the alumni in sharing the business ideas and fulfil the concern needs. During this meet, institute invites and felicitates all the alumni from silver jubilee batches of all textile programs. Along with this meet, the department also organises international alumni meet at various exhibitions such as ITME, ITMA.

7. Strong Industry Interaction

The culture of the institute-industry interaction existed right from the inception. The Institute, since the beginning, was directed to conduct cooperative research, integrated with graduate research, as a means of helping the industry meet the challenges facing it. The broad areas in which the institute provides support to the industry are:

1. Training at different levels in industry
2. Testing facilities & Consultancy
3. Product / Process development, Process Optimisation
4. Project report preparation / Project appraisals/ Feasibility reports
5. Turnkey projects
6. Research & Development for industry

Institute has organised 335 training programs during last 10 years for personnel from various industries at different levels. The training facilities are extended for industries and educational institute from overseas also. Over 11,600 test reports have been given during last 10 years. Institute has been helping the industry in the development of products and processes. The institute has been organizing training courses, workshops for the benefit of technicians and executives of the industry. This gives students a unique opportunity to interact with personnel from the industry and develop valuable relations.

Wide industry – institute interaction has resulted in agreements in the form of Memorandum of understanding (MoU) with various national and international industries. The concept of MoUs includes collaborative research activities, training to industry personnel or faculty and staff of institute, training to students and placements.

Following are the MoU signed with industries

- Sultanate of Oman, Oman
- Indian Textile Accessories & Machinery Manufacturing Association
- Rieter Ingolstadt GmbH, Germany
- ITEMA, Italy
- Textiles Committee (Government of India, Ministry of Textiles), Mumbai
- Smit Textile, Italy
- Swainsiddha, Kolhapur
- The Association of Italian Textile Machinery Manufactures (ACIMIT), Italy
- Himmatsingka Linens, Hasan, Karnataka
- DyStar India Pvt. Ltd, Mumbai
- Ichalkaranji Garment Cluster Ltd. Ichalkaranji
- Mata Balak Utakrash Pratishtan, Sangola
- Resil Chemicals Pvt. Ltd. Banglore
- Shri Chhagan Bhujabal Paithani Cluster, Yeola
- Dogetech Industrial Co. Ltd., Taiwan
- Solapur Textile Cluster Ltd, Solapur
- Siddhipriya Eco Textiles Park Ltd, Nandurbar

- Trutzschler, Germany
- Pinter S. A., Spain
- Advance Academy for Development of Textile Technologists (AADTT), Mumbai
- Schoch & Co.s.r.l. Italy
- Rieter Machine Works Ltd., Switzerland
- Fong's National Engg.Co.Ltd., Hong Kong

Due to strong interaction with the industry of the institute, many machinery manufacturers have been attracted towards the Institute and they have offered their support in form of donations of State of the Art machinery and equipment to various laboratories and workshops of the Institute.

This has really helped the institute to have been awarded as **'Best Industry-Linked Engineering Institute-2015'** in the nation-wide survey conducted jointly by **All India Council for Technical Education (AICTE) and Confederation of Indian Industries (CII).**

Also, Institute ranked as **Best Private Textile Institute in India** through the survey conducted by **One Planet Research – Indo Italian Research Centre.** The survey was based on Infrastructure, Academic qualities, Research & Development etc. provided by the private Institutes throughout India.

8. Centre of Excellence in Nonwovens

Our institute has been designated to establish a Center of Excellence in Nonwovens and Govt. of India, Ministry of Textiles has sanctioned Rs.25 Crores to set-up and establish this very prestigious project of CoE in Nonwovens. Centre of Excellence is to provide technical support, know-how and all the necessary infrastructure at one place for the convenience of the manufacturers of technical textiles in India. Additionally, 3 crores are sanctioned by Ministry of Textiles for incubation centre.

Following facilities are available in this CoE:

- Facilities for testing and evaluation of products of Non-wovens segments of technical textiles with national/international
- accreditation and collaboration with foreign institutes/laboratories
- Facilities for indigenous development of prototypes
- Facilities for training of core personnel and regular training of personnel from the technical textile industry
- Knowledge sharing with stakeholders
- Incubation Centre
- Setting up of standards at par with global level

9. Support to Society

i. Cluster Management and Technical Agency (CMTA)

With a view to providing a boost to the Textile industry in India, Ministry of Textiles, Govt. of India has decided to develop Ichalkaranji as Power Loom Mega Cluster, in order to provide impetus to the power loom sector. The Government of India has sanctioned funds of Rs. 100 Crores for this power loom mega cluster. The Scheme is envisaged to create state-of-art infrastructure and production chain at traditional textile clusters. This will fulfil the needs and requirements of local small and medium enterprises (SMEs). We are proud to inform that Ministry of Textiles, GOI has accorded the appointment as a Cluster Management & Technical Agency (CMTA) to our Institute on the basis of merits.

ii. Design of Common Effluent Treatment Plant

The Institute has designed and developed effluent treatment plants for **15** processing units. It has also designed and developed Common Effluent Treatment Plant for Ichalkaranji Municipal Corporation, Ichalkaranji (12MLD) & for Laxmi Industrial Estate (1 MLD).

iii. Mahila Kranti Garment Training Centre

Mahila Kranti Training Centre which is run jointly by our Institute and Ichalkaranji Municipal Corporation has trained above 5000 women in the area of garment manufacturing.

10. Women Empowerment

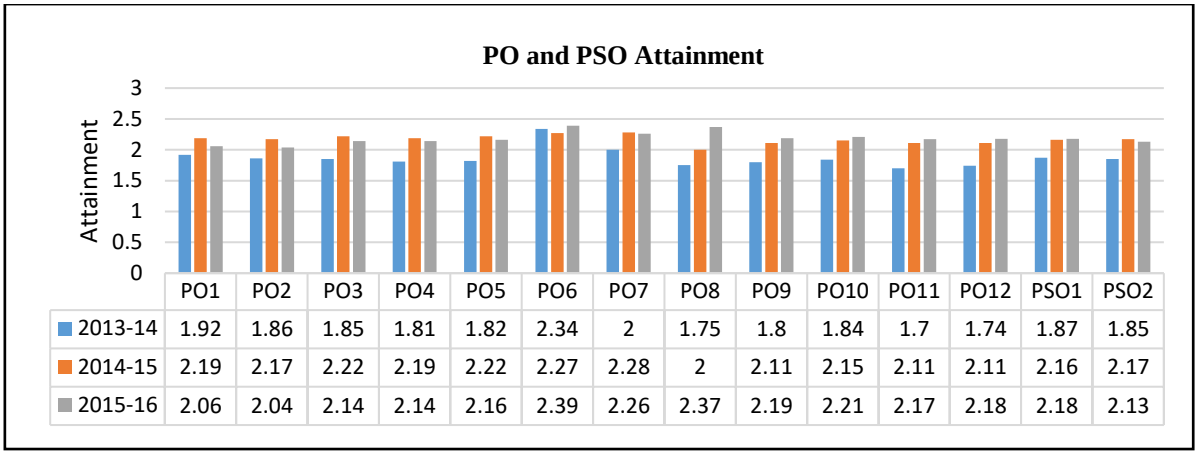
DKTE has been entrusted a Project of Training the Entrepreneurs from the North-Eastern States on Powerloom by Ministry of Textiles (MoT). 23 women Entrepreneurs from Sikkim State and 24 women Entrepreneurs from Manipur State underwent training.

Impact Analysis

The vision and mission of the textile department are realized through the best practices in teaching learning process, state of art infrastructural facilities, industry-institute interaction, linkages with institutions and various government-sponsored projects. The impact of activities, discussed above, is categorized into direct and indirect impact.

i. Direct Impacts :

The direct impact of above practices has been analyzed through attainment of programme outcomes, students' placement, placement package, international placement, and international training, as shown in following tables and figures.



	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
2013-14	1.92	1.86	1.85	1.81	1.82	2.34	2	1.75	1.8	1.84	1.7	1.74	1.87	1.85
2014-15	2.19	2.17	2.22	2.19	2.22	2.27	2.28	2	2.11	2.15	2.11	2.11	2.16	2.17
2015-16	2.06	2.04	2.14	2.14	2.16	2.39	2.26	2.37	2.19	2.21	2.17	2.18	2.18	2.13

Fig.1 PO and PSO Attainment

Fig. 1 shows the PO and PSO attainment of one of the programs in the textile department. It has been observed that, through the exhaustive teaching and learning methodology, all the PO are attained against set target level for all the three years. There is a progressive increase in attainment of non-technical POs because of the above-said activities.

Table 1. Placement records of the textile department

Year	No. of students available for Campus Recruitment	No. of students placed	% Students Placed	Package (in Lakhs)
13-14	162	162	100	2.14
14-15	162	162	100	2.19
15-16	170	170	100	2.61
16-17	172	172	100	2.85

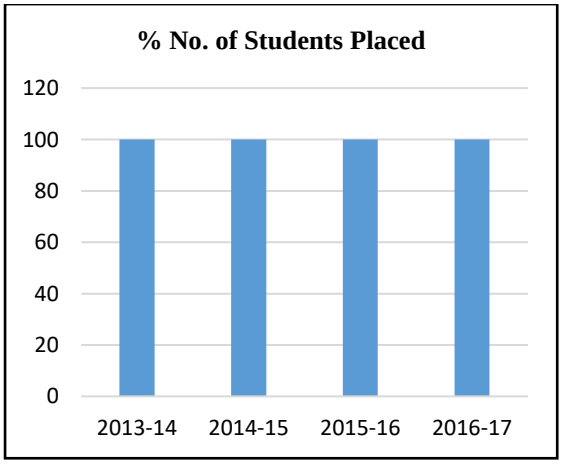


Fig.2 Placement Record

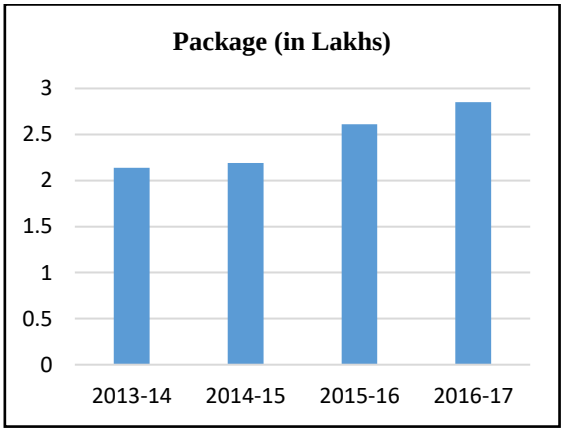


Fig.3 Average placement package

Table 2. International Placement records

Year	No. of students placed
2013-14	2
2014-15	3
2015-16	5
2016-17	15

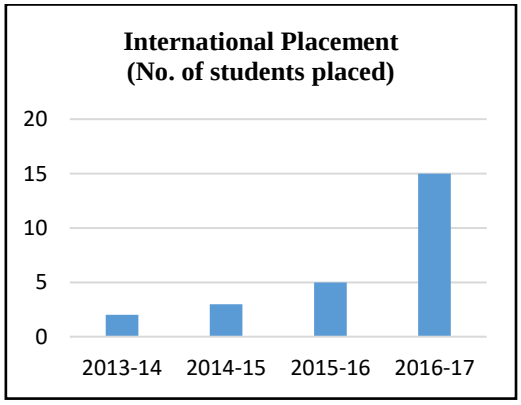


Fig.4 International Placement (No. of students placed)

From table no. 1 and fig. no. 2, 3, it has been observed that there is consistency in placement of the department. Throughout the batches, there is 100% placement and the department is maintaining that record since last 30 years. Also, it is observed that there is continuous improvement into the average package of salary from Rs. 2.14 to Rs. 2.85. Also, it is observed that there is incremental change into a number of students placed at international organisations.

Table 3. International Training records

Year	No. of students
2013-14	4
2014-15	8
2015-16	17
2016-17	20

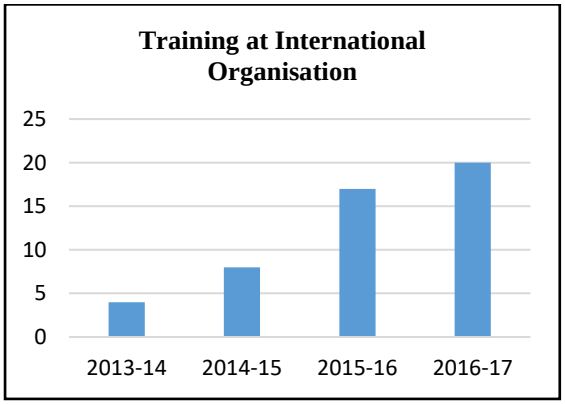


Fig.5 Training at International Organisation

Table no. 3 and fig. no. 5, shows there is increase the number of students opting training at international organisations. This is because of the MoU between various international universities and industries, resulted in an increase in the number of students opting for training at the international organisation.

Table 4. Higher studies and entrepreneurs

Year	No. of students
2013-14	35
2014-15	34
2015-16	51
2016-17	38

Table no. 4 shows that a significant number of our students every year, pursue higher studies at Premier Institutes and have gone abroad to the leading foreign universities like USA, UK, France, China, Germany, Australia, and Singapore for their higher studies and have come out with flying colours. Also, few students opt for entrepreneurship in the field of textiles.

ii. Indirect Impacts :

Impact of above practices is also reflected through the government-sponsored projects costing more than 50 crores, donations of state of the art machinery and equipment costing more than 20 crores from various national and international textile machinery manufacturers and industries. This all has indirectly helped students to work on various projects and perform practical on industry scale machinery. These activities certainly contributed towards the overall development of Ichalkaranji city.

Conclusion

These academic practices support students' to excel in various fields of textiles such as manufacturing industry, research associations, higher studies, entrepreneurship, co-curricular activities, extracurricular activities and bring laurels to our Institute. All these development will set the new benchmark to our institute for the prosperity of society in general and the upcoming generation in particular.

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