

INSTITUTION'S ROLE IN INDUSTRY INSTITUTION PARTNERSHIP

•Dr. P. H. WAGHODEKAR,
••Prof. D. B. LIMAYE

ABSTRACT

The need for Industry Institution Partnership is being advocated at all levels in institutions and HRD organisations. Educational institutions play a significant role in preparing and making available trained manpower with right kind of knowledge, attitude and skill base so essential to run industry. In view of the new economic policy of globalisation of the Government of India, the mission; goals; task structure; and teacher's profile in engineering institutions need a critical examination. Teachers do have the inherent backbone of missionary attitude. Even today, there is no dearth of teachers who are willing to take a step forward, as a social commitment, in establishing a link with industries. The important resource available with institutions is manpower with spirit of enquiry and with problem handling ability. This paper identifies some areas which need attention in this respect. Improvement and progress in this areas can hopefully bridge the gap between institution and industry.

1.0 INTRODUCTION

The basic question which appears in respect of Institution Industry Partnership (IIP) is who needs IIP ? The answer could be :

Institutions,

Industries, and

Society as a whole.

In the present IIP scenario, the first two agencies are showing a mere awareness of the need of IIP. The third agency, however, has a standing desire for IIP, as IIP is expected to promote the well-being and socio-economic prosperity of a country. Similar de-

sires of society are " Truth ", " Honesty", free from "bribery" and the like. Every one knows the fate of these desires. To get such desires materialised, it is necessary that it is the need of a group of people under one roof. Institutions with their talented potential man power and with a little time resource at their disposal need to adopt this brain-child of society. If nourished properly, it will grow into its youth to become beloved of industry.

As a first step towards IIP, institutions must strive to strike a balance between what industry needs are and what institutions can provide in turn

• Principal, •• Prof. & Head, Mechanical Engineering Department

to industry.

2.00 AREAS FOR IIP : A SAMPLE SURVEY

Over 20 areas like faculty exchange programmes, teachers training programmes, industry sponsored projects, etc., have been identified for effective IIP (1, 2, 3). However, since the last one decade or so, much talk has been talked even more vigorously than walking the walk. This paper, therefore, is an humble attempt with an objective to investigate what goes on in real life situation, both in industry and institution. A questionnaire, with this objective in mind, is desired and circulated amongst 30 young mechanical engineers having 3-5 years experience in companies like TELCO, PMT, Mahindra and Mahindra, Alfa-laval, etc., located in Pune. Simply because of time constraint, the authors, at length, could interview only 12 engineers working in such areas as production, materials management, design, HRD, etc. The basic objective of this interview, in other words is to investigate the relationship between work-life requirements of engineers, and the knowledge and skill acquired by them during the course of their study programmes at undergraduate level. Table 1 summarises these findings. The general finding of this survey can be

summarised as given below :

-Students depth of theoretical technical knowledge is more than adequate; and

-This knowledge base, however, needs to be supplemented by practical field experience or at least by its simulation in laboratories.

The findings relate to only mechanical engineering stream. Moreover, it is pointed out that this finding is only an attempt indicating a direction towards effective IIP. For want of enough time a sample of small size is selected which obviously could not be tested against the tests of statistical significance. Therefore, the findings may not be statistically acceptable. This is a limitation of this study.

However, the fact remains that IIP will have to play a vital competitive role in the global market; the very key for socio-economic prosperity of a country in the 21st century. Globalisation is not a lofty ideal. This needs a joint venture of institution and industry for achieving this ideal or else both shall perish. Such a venture can help turn a competent engineering graduate, a semi-product of institution, who hopefully can squarely meet the challenges of globalisation.

(See Table on next page)

Table 1 : Some finding of Survey Useful for IIP

Sr. No.	Criteria	Particulars
1.	Ranking of theory subjects taught.	1. Mfg. Engg. & W/S
		2. PPC
		3. Matl. Sc. & Met.
		4. Computer Programming
		5. Eco & Indl. Mangt.
		6. Measurement & QC
		7. M/C Tool & Tools Design
		8. M/C Design
		9. M/C drawing
		10. Engg. Drawing
		11. Theory of M/C
		12. Maths & Appl Sc.
		13. fluid M/C
		14. Thermodynamics
		15. Heat Transfer
2.	Ranking of references used in industry.	1. Company's own standards (80%).
		2. Manufacturers cataogues (50%).
		3. M/C catalogues (50%).
		4. Matls catalogues (50%).
		5. Hand books (50%).
		6. Text books (40%).
		7. Collaborator's manuals (40%).
		8. Technical periodicals (30%).
		9. Competitors standards (30%).
		10. Others (00%).
3.	Ranking of time utilisasion in industry.	1. Communication 30%
		2. Direct on work 28%
		3. Planning 21%
		4. Other (Co-ordination with other Departments) 11%
		5. Administration 10%
	Total	100%
4.	Relevance of formal education.	1. Relevance 44%
		2. No relevance 22%
		3. Indifferent 34%
	Total	100%
5.	Areas needing emphasis.	1. Problem handling skill 39.0%
		2. Communication skill 31.0%
		3. Inplant trg., computer and Material Sc. 15.0%
		4. Awareness of Taxes, laws etc. 07.5%
		5. Indifferent 07.5%
	Total	100.0%

6. Suggested areas : Career planning computer application for effective Production Management, industrial training at-least for two months p.a., planned industrial visit effective implementation of seminar, project, group discussion etc.

To turn competent (successful) engineering graduates, Technology Transfer need to be done as a two way traffic involving both industry and institution through a balanced blending of such means of Technology Transfer as " Discovery Push " and " Demand Pull ".

3.0 INSTITUTIONS AS TECHNOLOGY TRANSFER CENTRES :

The concept of technology is not static. World class companies keep themselves abreast of technology developments and introduce them in their design and manufacturing processes. Institutions, therefore, can develop cells for the following activities (4) :

- (1) Developing new production processes or methods improvement through project work.
- (2) Developing new materials and construction methods to reduce cost.
- (3) Developing product design ensuring reliability.

As an humble beginning institutions can enrich their libraries using recent information sources. Institutions can compile a directory of ven-

dors with pertinent information about their products and capacities.

Further, some challenging areas reported for institutions are (5a):

- (1) To formulate a clear vision of mission and goals for institution.
- (2) To tightly link its activities with firm's goals and properties, i . e . academic excellence with industry relevance.
- (3) To find training needs of industries and have a plan for meeting them in an integrated manner.
- (4) To identify internal weaknesses for executing the plan and overcoming them.
- (5) To obtain management commitment and involvement.
- (6) To develop management and sustain excellent management practices within the Institutions.
- (7) To demonstrate and convince the need of IIP to all concerned.

The next section presents that through two way effective Technology Transfer, profile of an engineer can be built up with certain traits and values so essential to be a successful engineer in industry world.

(See Table on next page)

4.0 SUCCESSFUL ENGINEER : A PROFILE

FIG. 1. Presents the stages to turn out a successful engineer:

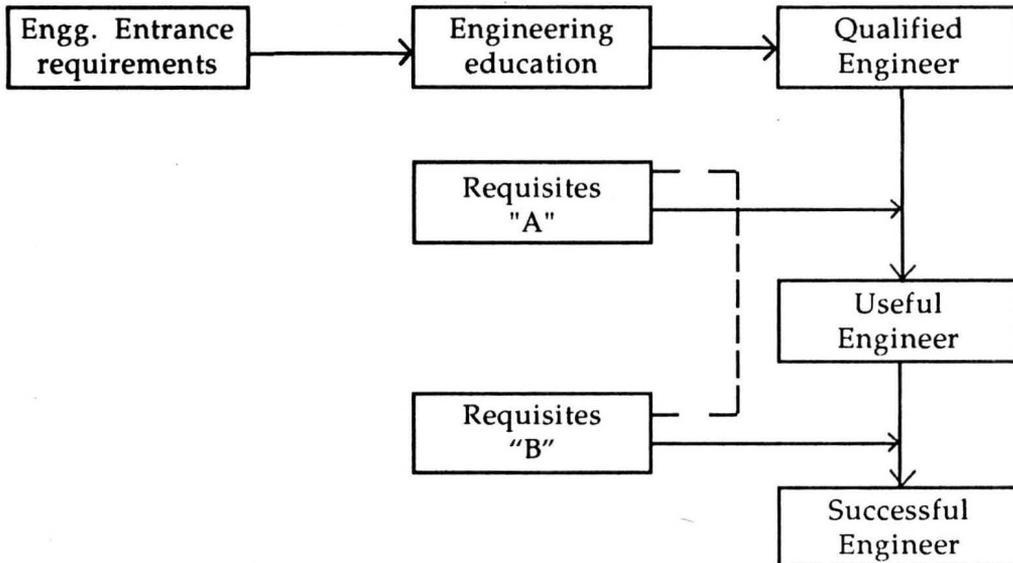


Fig. 1. Stages for turning out a Successful Engineer.

LEGEND :

Requisites "A"

- (1) Basic traits,
 - a) Integrity,
 - b) Loyalty,
 - c) Punctuality,
 - d) Will to work and win
- (2) Ability to plan,
- (3) Ability to control,
- (4) Ability to co-ordinate,
- (5) Communication skill,
- (6) Ability to take decision,
- (7) Spirit of enquiry, and
- (8) Physical and mental fitness.

Requisites "B"

- (1) Sense of belongingness,
- (2) Commitment, and
- (3) Knowledge of behavioural sciences.

Institution must realize the importance of requisites "A" fully and requisites "B" at least partially. Appendix "A" suggests some sources which institution can provide for inculcating requisites "A" in a qualified engineer to make him a "Useful Engineer" Requisites "B" can be inculcated by the presence of matured staff. The job of turning a "Successful Engineer" for industrial world is a herculean task. This task can be taken up only by committed and dedicated teachers. Next sections presents the profile of such a teacher.

5.0 TECHNICAL TEACHER : A PROFILE

The teachers need introspection to bring their shortcomings to the surface. Engineers in industries are found to refer to product catalogues, company standards, etc. in their work as engineers. Most of the teachers, however are referring to text book which are primarily examination oriented. Manufacturers are not likely to hesitate in supplying their product literature to institution library. The teachers need to equip themselves with latest information on material, tools and processes through this industrial literature.

Though the curriculum of University in respect of contents of theory subjects is like rigid frame, the practicals do not have this rigidity. This latitude in conduct of practicals can be exploited. Many of the practicals can be redesigned to bring them closer to industrial practises and/or the simulation thereof. It needs to be further noted that the theory and practical contents as prescribed in the curriculum only indicate

the minimum level of academic achievement expected from graduates. Teachers are, however at full liberty to cross these limits set in curriculum so as to make students aware of the latest development in the areas concerned.

Majority of text books made available in library are mostly written by acadamecians with a very little practical reference or background. A few teachers certainly can come forward for writing suitable and need based books with their counterparts in industries. For instance, the books on quality control written by J. M. Juran, who started his career in industry as a Forman, are the most popular one. A teacher who refers, in this lecture, to what he has seen in industry, is listen more carefully by students. If a teacher spends a month every year in industry he unknowingly gather this skill of delivering a lecture full of industrial feel and experience.

Most counterparts of our teachers in other countries have patents to their credit. This needs attention.

Moreover, the for effective IIP need to have close liaison with such agencies as (5b)

- (1) Directorate General of Employment and Training (DGE & T).
- (2) Confederation of Indian Industry (CII)
- (3) Association of Canadian Community College.
- (4) National Committee on Technical Education and Training (TET).
- (5) Hi-Tech Apex Institute, Bangalore.
- (6) Department of Electronics (DOE) under its projects IMPACTS.

One of the most important com-

ponents of any technical institution is the "Placement and Training' officer (P&T). The scope of work of this vital post is unfortunately restricted to only such a few activities as campus interviews, etc. In fact , P & T officer is the eyes, ears, and mouth of institution and, therefore, must work as PRO for institution. In view of this, the role, responsibilities and commitment of the P & T Officer need to be redefined.

6.0 SOME RECOMMENDATIONS

In view of the earlier discussion, the following recommendations are made :

- To institute Industry-Institution Partnership (IIP) cell in every College consisting of the following members:

- Honorary Secretary of Trust/Society
Chairman.
- Principal
Vice Chairman
- Two management nominees
Members
- All Heads of Departments
Members
- Three local industry representatives
Members
- Registrar of the college
Member
- Students representatives from
each discipline Member
- Training and placement officer
Member Secretary

- Two or three districts shall from a unit in which all IIP cells shall function in co-ordination with each other promoting such activities as establishment

of Technological Parks, Incubation Centres, Museums, students and staff In-plant training, testing and consultancy cells, etc.

- All units in a region shall co-ordinate their functioning on local need basis.

- Functioning of all the regions in a State are co-ordinated at State level under the Ministry of Industry.

- The Ministry of Industry, Government of India, shall in association with Ministry of Human Resource Development, Government of India, AICTE, ISTE, CII and some other professional bodies set the national policies for the effective functioning of IIPS.

The experiences of the university of Warwick Manufacturing Group can advantageously be utilised by IIP cells (6)

7.0 SCOPE FOR FUTURE WORK

Exhaustive studies need to be carried out in several engineering disciplines such as mechanical, electrical, civil, electronics, architecture, etc., so as to make fruitful partnership of institution and industry for the socio-economics prosperity and well-being of this great nation.

8.0 CONCLUSION :

For survival in the world of fast changing technology, it is absolutely necessary to keep pace with such technological changes. The needs of industries and expectations from institutions have been identified. The agency working in the IIP areas are listed. A joint venture of institution and industry is a call of the day for squarely meeting the

challenges posed before India by the world -trend of globalisation. Education institutions need to be proactive, adaptive, innovative and dynamic to meet the changing needs to industry (5c). A few recommendations for future work is also defined. This paper, it is believed, can prove a useful guideline to all concerned.

REFERENCES

- (1) Waghodekar P. H., 1988, On some aspects of Institution Industry Interaction, J. Engg. Education, I (4), June, Page. 43.
- (2) Waghodekar P.H., 1992, Institute- Industry Linkage : Today and Tomorrow, J. Engg Education, Jan.
- (3) Waghodekar P.H., 1994, Some thoughts on Institution Industry Partnership, proceedings of the conference on " Institute- Industry- Partnership", MIT, Pune, 5-6 March.
- (4) Singh A, 1993, World Class Quality, New Delhi : The Associated Chambers of Commerce and Industry of India.
- (5) Rao T V et al., 1995, HRD in the New Economic Environment, New Delhi : McGraw-Hill Publishing /company Limited. The contributed papers are :
 - (a) Bhattacharya S. K. and Ashok Kumar, , Interface between Industry and Training Institute : A Case, p. 417.
 - (b) Verma S. P., Interface between Industry and Education and
 - (c) Rao T. V. Interface between Industrial Service firms and Education and Developmnet Institution, p. 403.
 - (6) Colin A, 1995, Profitable Technology, Engineering Management Journal, Vnl. 5, No. 3, June, and also in Manufacturing Engineering, June 1995, pp. 114-117.

(See Table on next page)

APPENDIX - A

TRAITS	SOURCE PROVIDE BY INSTITUTIONS
(1) Basic Traits	
a) Integrity	Examination.
b) Loyalty	Examination.
c) Punctuality	Progressive assessment.
d) Will to work	Through appreciation of good work.
(2) Ability to plan	Academic calender.
(3) Ability to co-ordinate	Inter-related subject fundamentals.
(4) Communication skill	Oral examination, Seminars. Group discussions.
(5) Ability to Control	Team work practicals. Extra curricular activities.
(6) Ability to take decision	Project work, Plan for study.
(7) Physical and Mental fitness	Mostly neglected, needs provision.
(8) Spirit of enquiry teaching	Factory visits, assignments, class room teaching.

★