CHAPTER-5
METHODOLOGY, SCOPE AND LIMITATION OF STUDY

The purpose of this study is to suggest activities aimed at improving the efficiency of industrial training institutes with the active involvement of Institute Management Committees (IMCs). It has been an opportunity to review training policy, system, demand for skills training, and capability of ITIs to respond to the needs for skills training in the most efficient way.

5.1 PROPOSED WORK

There have been number of studies on Industry Institute Interactions in India and abroad. These studies are mainly based on mutual benefits of University/Technical Institutes and collaborating Industry. All these studies depict that as per changing scenario after early 90’s the financial resources are diminishing day by day. Governments at (Center or States) which were major contributor and responsible to run these bodies are now showing their reluctance and asking these institutes to become self-dependent. Under these circumstances institutes are looking for different avenues and opportunities for resource generation. Industry is found to be an important collaborator, which can significantly help these bodies to run their affairs smoothly. Different studies have been done to make these interactions stronger and meaningful. These have been mostly done in Technical Institutes where R & D with Industry is a profitable business. Likewise case studies have also been undertaken in polytechnics to improve the functioning of these institutes. But little attention has been paid to Industry Institutes Interaction in Industrial Training Institutes (ITIs), where as ITIs are backbone of Industrial manpower. All studies/ experiments done on Industry Institutes Interactions, mostly show that industry is only giving an advisory role in all these collaborations. But Institute Management Committee (IMC) concept has been mooted to give industry not only an advisor but a partner in sharing the overall responsibilities of these Institutions. Consequently, these linkages are supposed make them model institutes without any extra aid from the Govt. Hence, it is imperative to make whole hearted attempt to evaluate work of IMCs viz-a-viz improvements made by these institutes. The behaviour impact of industries towards IMC is more effective because they become partner rather than advisors in this collaboration. This reduces the mismatch between training facilities offered and the actual
market demand, because previously the linkage between institute and industry was only advisory in nature under Local Advisory Committee or MOU/apprenticeship scheme.

This model concept of IMC is to collect data on machinery & equipment available in Institute viz-a-viz same related machinery & equipment with up-graded/latest technology available in industry, so that the faculty/students can be made to take cognizance of the latest technology available in industry. Let us take example of Lathe Machines, which mostly available in all technical institutes, but modern industry has CNC lathe machines. Institutes cannot afford to purchase CNC machinery as it is a costly item. So with the help of IMC, students/faculty can easily supervise/understand the working of CNC lathe machines after working on traditional lathe machinery in the Institute. In reciprocation, faculty from Institute can also give advice to the technical/ theoretical problems of industry. In this way we can give an optimal strategy for the best use of these relations.

ITIs/Engineering institutions are equipped with a variety of equipment, instruments, workshop facilities, gauges, computers, etc. It is assumed that overall 25% of infrastructure is being utilised in ITI’s. For mutual benefits of Institute and Industry it is imperative to utilise 60% to 80% of infrastructure available with them for production work. Ultimately aim is to enhance the resource generation.

This new model of IMC will also give more placement opportunities to students. Deserving students engaged in on-job training would have more chances to be selected as industrialists. Their performance and skill on machines will be regularly judged by IMC because IMC will be overall supervisory body of all these activities. Her recommendations of IMC for such candidates will indirectly give them more placement chances in industry.

5.2 REQUIRED JUSTIFICATION FOR DEVELOPMENT OF NEW MODEL

In all technical institutes, it has been observed/assumed that machinery in workshop only being utilized for training purpose to students and on the average these machines are utilized maximum of only 4 to 6 hours in a day, and for remaining 2 to 4 hours in a normal working day these machines are lying idle. These machines include lathes, shape planners, hobbing, smithy, foundry, sheet metal, motor winding, carpentry, plastic injection moulding, blow moulding, extruders etc. Any of the Engineering Colleges, Polytechnics ITIs so far did not try to get the best utilization of these machines, where crores of rupees have been invested by Government to equip these institutes. With machinery & equipment
IMC has tried to get the best use of this infrastructure. There are means available for resource generation for institute under the guidance of IMC by making use of machinery in workshops/labs in Institutes for production purpose.

This new model of IMC will be a unique one as all models developed so far on industry institute interaction are for resource generation based on R&D, faculty & technology sharing, and faculty/students training. No model has so far touched the proper sharing of infrastructure in institutes.

5.3 WHAT IS NEED OF THE STUDY?

Impact of IMC significantly contributes to behaviour aspect of faculty/staff & industrialist. Designing of IMC model has also taken care of human behaviour. Those faculty members/students/institutes interested in “learn and earn more” have been shown significantly in the study because IMCs include only those persons for production work who really deserve and have devotion for work. This model will create an atmosphere of competition, survival of the fittest, yearning for earning and learning. This has been reviewed in literature heading “Human Role in industry Institute interaction”.

Improvement in quality, efficiency and productivity hinges around human resources. With the fast changing teaching economic scenario from protected economy to free market economy, when lot of multi-nationals are coming to India, industry is depending more and more an latest knowledge and information. Those who have necessary skill and knowledge to create, apply and manage the emergent technologies will only survive and succeed. To cope-up with this explosion of knowledge and information in various fields and to provide benefits for development to industries in improving their output, there is a great need for industry-institute interaction. The advances in these areas demand innovative approaches for solving problems, which is possible only through effective interaction of technical institutes and the industry. The working professional becomes obsolete in a very short period if there is no updating of technology through industry-institute interaction. A system of competency based continuing education and consultancy for problem solving in industry is essential to provide effective industry-institute interaction resulting in improvement in human resource development.
There fore, study is required to find means available for resource generation for institute as well as industry under the guidance of IMC for making use of machinery in workshops and labs in Institutes for production purpose.

The study is required to also give more placement opportunities to students especially of ITIs, as deserving students engaged in on-job training have more chances to be selected by industrialists for their units by judging their performance and skill on machines. As IMCs have been notified by Government as an overall supervisory body of all these activities, hence, IMC recommendation for such candidates directly gives them more placement chances in industry.

This study gives chances for better interaction with industry, considerably resulting in more systematic organization of industrial training for students and teachers. Involvement of industrial experts in instructional processes and evaluation of student's performance, conduct of more number of campus interviews and building confidence among the learners to interact with the world of work. With the rapid growth of science and technology the central task of educational institutes is to prepare students to face the problem-solving situations of tomorrow. Efforts have also been made in the study by making qualitative improvements in the traditional teacher-centered teaching-learning systems have had only marginal effects, resulting in continued criticism from employers and the dissatisfaction of students as well as teachers. Conceptual models of teaching learning designed to provide opportunities to the learner to develop real-life problem-solving abilities through an interactive process. The study reported here, which will be conducted in 9 ITIs in Punjab, Haryana, Chandigarh, Himachal Pardesh.

5.4 SCOPE OF WORK

This study aimed at assessing the efficiency of ITIs and ITCs. It was conducted through collecting and processing data supplied by the training institutes’ principals. The study covered the training programmes that were delivered by each ITI and ITC from the years 2001 and 2007. The study aimed at identifying their major employment and other career destinations as well as satisfaction with the trade and quality of training received. The study covered the indicators of change in different parameters after the constitution of IMC in these institutes from 2001 to 2007. Tracer studies of ITI passed students were conducted by the current students of some of training Institutes. The industrial
feedback/study about the role of IMC in respective ITIs were reported by IMC members/chairmen/CII. They also suggested methods on current recruitment/placement policies regarding the skilled workforce. Industrial satisfaction with the quality of the ITI pass- outs was also assessed. Some industrial houses were visited/interviewed. This study experienced problems as many of the industrial houses were not engaging ITI pass outs rather depending on the unskilled man power migrated from eastern part of India

5.5 PLAN OF WORK

Formation and implementation of this modified model of IMC will have multi facets improvement in functioning of institute with stepping towards:

- Self reliance
- More practical oriented courses with upgraded machinery.
- To enhance the generation of funds by production work and their utilization for the benefit of trainers and staff of the institute
- Incentive to staff and students for participation is production work
- Proper utilization of machinery equipment/infrastructure of institute
- Better prospectus of placement for students
- Appropriately sharing of technology between industry and institute
- Last but not the least, IMC role is to treat institutes as ancillary units for local industry for resource generation and ultimately bring improvement in teaching learning process.

The geographical area of the study is comprised of the four states of Punjab, Haryana, Himachal Pradesh and U.T. Chandigarh. The number of studied institutes are located in respective states are as follow:

Table 5.1: Number of study institutes in respective states

<table>
<thead>
<tr>
<th>STATE</th>
<th>No of Institutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Punjab</td>
<td>5</td>
</tr>
<tr>
<td>Haryana</td>
<td>2</td>
</tr>
<tr>
<td>Himachal Pardesh</td>
<td>1</td>
</tr>
<tr>
<td>UT Chandigarh</td>
<td>1</td>
</tr>
</tbody>
</table>
Each selected Institute has been visited for Impact analysis of IMCs on technology upgradation and training skills in ITIs. The data collected is of years before the formation of IMC and it also has data after the implementation/functioning of IMC’s. This study is Ex-post facto. Study is not restricted to one state or region. But it covers Punjab, Haryana, Himachal and UT Chandigarh. Some of the private institutes are also covered, where IMC has not been formed at all. These have been covered to have comparative study of IMCs and study the actual impact of IMC. The study has also covered some more ITIs in other states all over India, where IMC has shown some remarkable outputs. Following number of IMC’s are actively showing some good results in above said states.

Table 5.2: Study result of institutes in respective states

<table>
<thead>
<tr>
<th>State</th>
<th>Punjab</th>
<th>Haryana</th>
<th>HP</th>
<th>UT</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of ITI’s</td>
<td>20</td>
<td>8</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

5.6 TECHNIQUES FOR ANALYZING THE DATA

The data collected has been tabulated as Primary & secondary Data and sources of data collection are explained here under. The analysis is carried out for drawing the inferences, regarding the fitting of trend i.e. for the Placement Rate exhibited increasingly by the few ITI’s by the simple fitting technique of Least Square method in which few models like Power function, Linear function, Polynomial function of higher degree. The ARIMA modeling of random walk were also tried on the data set.

Table 5.3: Proportionate random sampling of the following institutes has been done

<table>
<thead>
<tr>
<th>STATE</th>
<th>No of Institutes</th>
<th>Name of the Institutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Punjab</td>
<td>5</td>
<td>ITI Ludhiana</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ITI Ferozepur</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ITI Jalandhar</td>
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<tr>
<td></td>
<td></td>
<td>ITC Mohali.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ITI Hoshiarpur</td>
</tr>
<tr>
<td>Haryana</td>
<td>2</td>
<td>ITI Gurgeon</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ITI Ambala</td>
</tr>
<tr>
<td>Himachal Pardesh</td>
<td>1</td>
<td>ITI Solan</td>
</tr>
<tr>
<td>UT Chandigarh</td>
<td>1</td>
<td>ITI Chandigarh</td>
</tr>
</tbody>
</table>
The research instrument for data collection is based on interview schedule and questionnaire that is comprised of problems pertaining to industry, employers and passed out students. The data comprised of following indicators:

❖ Employment/Placement of trainees
❖ Placement of trainees as apprentice
❖ Training infrastructure available
❖ Availability of raw material
❖ New courses started by IMC
❖ Any new machines added to institute with the help of IMC
❖ Training of trainees in Industry
❖ Expenditure and revenue earned from job work
❖ No. of faculty/staff sent for training in industry

For working on research work all the active members of nine IMCs has been personally contacted/interviewed & information on actual performance obtained on prescribed Performa. Also studied what type of involvement they are providing to make these IMC a successful body.

5.7 SAMPLING CRITERIA FOR THE STUDY

The following sampling criteria applied wherever possible.

5.7.1 For the Industrial Training Institutes

• Small and large training institutes (by enrolments);
• Both, Government ITIs and Private ITCs and Government Aided to be covered;
• Those offering engineering and non-engineering trades;
• Those assisted through the World Bank (W.B.) project and those that were not;
• Institutions located in industrially advanced and backward areas;
• General ITIs as well as women ITIs.
5.7.2 For Industrial Units

Most of the Industrial units visited were members of the IMC and are in surrounding area of the respective training institute assessed to take on apprentices under the Apprenticeship Act.

A sample for this study has covered about 20 industrial training institutes all over India. More than 70 industrial enterprises were covered for getting feedback.

5.8 THE EVALUATION METHODOLOGY

The current study was undertaken to address the issue of efficiency. Efficiency viewed as a combination of following factors is described below which are indicators for monitoring the performance of IMC:

1) Employment rate within 6 months of completing the course
2) Student output to sanctioned capacity
d) Admission rate
e) Retention rate
f) Pass rate
3) Internship/on-the-job training per student per year.
4) Average number of days of deputation of instructors in industry per year
5) Revenue generated as percentage of operating expenses.
6) Donation of machinery and equipment to ITI by Industry
7) Other cooperation between ITI and industry.
8) Time devoted by experts from industry in conducting classes or other activities in ITI.
9. Recommendations made by IMC and their implementation.

5.9 EVALUATION INSTRUMENTS

The evaluation instruments involved Performa’s/questionnaires aimed at:

1) Details of constituted/notified Institute Management Committees.
2) Year wise Bifurcation of IMC Meetings.
3) Year-wise bifurcation for one month In-Plant Industrial Training.

4) Year wise Bifurcation of Industrial Tours.

5) Placement of Passed Out Trainees.

6) Year wise Details of Campus Interview held.

7) MoU Signed for Industrial Training of Trainees.

8) Apprenticeship Training under Apprenticeship Act.

9) Year wise Bifurcation of Observers from industries for Examination supervision.

10) Year wise Details of Lectures by Experts from Industries/other establishments.


12) Year wise Detail of Utilization of IMC Funds.

13) Development of any MIS System by the help of IMC.

14) Introduction of New Trade with the help of IMC.

15) Year-wise Bifurcation for Deputation of Instructor in Industries.

16) Involvement of Experts from Industries for Maintenance and Repair of Machinery & Equipment of the Institute.

17) Donations of Tools, Machinery and Equipments by Industries.

18) Year-wise bifurcations for Deputation of Instructor in Industries.

19) Filling up of various vacant posts with the help of IMC.

20) Faculty Development Form.

21) Closure of Unpopular Trade with the advice of IMC.

22) Vocational Guidance by Industry for Fresh Admission Seekers.

23) Other infrastructures Internet, Fax, intercom etc. obtained by institute during IMC tenure.

24) Mentors from Industries for One-Day Lecturers (Guest Lecturer).

25) Organizing of Exhibition.
26) Transfer of any Faculty with the consent of IMC.
27) Expectation of Industry from Institute.
28) Visit of IMC Members/Officials from other States.
29) Visit of Principal and Staff Members of other ITIs.
30) Details of Job Order/Work Order obtained by Institute with help of IMC.
31) Year wise Details of Amount of different Job/work order.
32) Training to the Workers of Industries/other Establishments.
33) Discussions/Interview with the State Directorate of Technical Education and Industrial