

Entrepreneurship Development in India and the Role of Academia

R. C. MALHOTRA

Director, IIT Kanpur, Kanpur 208016 India

Entrepreneurship has a significant role to play in national economic development as a source of employment generation and as a service to large and medium scale companies. The task of entrepreneurship development is particularly difficult in a developing country like India. Structured entrepreneurship training may be expected to benefit only those who possess identifiable entrepreneurial traits. The paper traces the history of entrepreneurship training programmes in India, beginning with the Gujarat Experiment in 1970. Currently there are over 100 official agencies which actually promote entrepreneurship. The National Science and Technology Entrepreneurship Development Board, set up in 1982, has been pursuing a four-pronged strategy for nurturing entrepreneurship. The STEP model being promoted by it is an adaptation of the science park concept, and has been replicated in several places, and serves as a technology business incubator for fledgling enterprises. The strategies also include faculty sensitization programmes, incorporation of elective courses in the undergraduate curricula and entrepreneurship awareness camps.

INTRODUCTION

THE FOCUS of education and training in technical institutes in India has always been towards the development of manpower suiting the requirements of the organized large and medium scale industrial sectors. However, there is now an increasing realization that a steady supply of innovative S&T-based small enterprises is a crucial input in the development of a healthy economy. The contribution of such small firms as a source of employment generation, as a service to large and medium scale companies, in local development and improvement and as a 'seed-bed' for the future is well recognized. With a view towards the spawning of new small firms into the productive system, increased emphasis is being given by educators in devising effective mechanisms for the development of entrepreneurial resources.

The obvious question that springs to mind is whether *entrepreneurship can be taught*. This is really a moot question because in reality nothing can be taught. Everything has to be learnt. It is indeed naive to assume that education can make an entrepreneur. What education can do is impart knowledge and attitudes related to entrepreneurship. It can share information on the type of entrepreneurial skills needed; it can advise as to how information related to entrepreneurship can be located; and it can give a person a better understanding of entrepreneurial processes. This indeed is much more than what education and courses in many fields of endeavour provide. If the entrepreneurship development programmes and formal courses on the subject can focus on the knowledge content and encourage learning, enhance the

ability to analyse the environment and impart information in the given area, then they more than fulfil their purpose. Indeed it has been amply established that this is the case as regards courses and programmes in entrepreneurship. This is evidenced by the fact that persons with appropriate attitudes who have undergone formal entrepreneurship training have successfully set up and run enterprises. However, not everyone can be assisted to become an entrepreneur. Structured entrepreneurial training programmes are of value only to those possessing identifiable (and measurable) entrepreneurial traits.

The task of entrepreneurship development is by no means an easy one, given the fact that traditions of self-employment and entrepreneurship in India are indeed very hoary and mainly focused towards trading or cottage industries and tiny sectors wherein wastage is quite often high, mass production is conspicuous by its absence, and there are severe limitations of the territorial spread of markets. Nevertheless, entrepreneurship development programmes covering aspects of training and the establishment of 'technological incubators' to provide technical and business management support to fledgling science and technology entrepreneurs in their 'entrepreneurial infancy' have now come of age in India.

THE GUJARAT EXPERIMENT

The first major systematic experiment carried out in India to identify and develop new entrepreneurs, especially those with non-conventional community backgrounds, was undertaken in the

state of Gujarat about two decades ago by the Gujarat Industrial Investment Corporation (GIIC). In 1970, the GIIC introduced two schemes of financing 'new entrepreneurs'—the so-called Technicians Scheme (TS) and the New Entrepreneurs Scheme (NES)—wherein for the first time in India venture capital was made available to prospective entrepreneurs on the basis of loans up to 100% of the project cost on attractive terms without the entrepreneurs having to furnish stringent collateral security or third-party guarantees. Reliance was placed on the competence of the entrepreneur and the viability of his or her project rather than on financial background or strength. An integral component of both these financial schemes was a built-in compulsory entrepreneurship training programme provided by a specially created training wing of the GIIC.

Both the schemes started by the GIIC in 1970 are still operational today, though several modifications based on two decades of experience have been incorporated. A recent status report brought out by the GIIC indicates that by 1986 more than 3000 new units had come into existence as a result of their experiment. Another notable feature has been the fact that the successful entrepreneurs have come from a wide variety of technical as well as non-technical backgrounds, including small-scale artisans and craftsmen. Although the number of new enterprises that has been spawned under the two GIIC schemes is not very large, the real impact of the GIIC experiment has been the realization that through the twin strategy of entrepreneurial training and follow-up support (including unconventional financing), it is possible to tap a rich reservoir of hidden entrepreneurial talent from amongst a population base comprising traditionally non-business, middle- and lower-income people.

The success of the GIIC experiment prompted the state government of Gujarat to further broad-base entrepreneurial development activities. With this in view they set-up, in 1979, an exclusive specialized entrepreneurship training institute: the Centre for Entrepreneurship Development (CED). The primary function of CED has been to undertake research and training in entrepreneurship. It is manned by trained professional staff and is operating under sponsorship of four state-level financial and industrial promotion agencies. Since its inception the CED has run 376 training programmes at 130 different locations in the state of Gujarat, covering 9306 potential new entrepreneurs. Statistics issued by the state government of Gujarat indicates that to date 5477 small enterprises have been started by these trainees and that 100 more units are expected to become operational in the near future. An internal performance review of the operational units, carried out by the CED, has concluded that more than 75% of the units under production have a sound financial base and can be classified as successful ventures.

The training package evolved by the CED is a

three-month part-time evening programme offered to a heterogeneous group of working people at various local centres throughout the state of Gujarat. The training inputs provided to the trainees include the following areas:

- Motivation development.
- Project counselling.
- Management orientation.
- Information on sources for making a project plan.
- Overall confidence development.

The responsibility for delivery of the training package at the various local centres rests with a dedicated group of trainer-motivators specially recruited by the CED for this purpose. Each of the trainer-motivators is required to undergo a sensitization/training programme at the CED before being posted to the various local centres. Persons serving as trainer-motivators are local individuals possessing qualities of initiative, high degree of perseverance, a capacity to excel, high motivation in helping others and in influencing people and are generally conversant with the rudiments of business planning.

THE NATIONAL SCENE

The success of the entrepreneurial promotion activities in the state of Gujarat has resulted in a countrywide spread of such activities over the last decade. Today over 100 official agencies can be counted as active promoters of entrepreneurship with the prominent ones being the following:

1. The State Bank of India through its various branches and offices throughout the country concentrating on educated unemployed persons in the industrially backward districts of the country.
2. The 15 Small Industries Service Institutes of the Government of India, concentrating on fresh engineering graduates, technical diploma-holders and unemployed science graduates.
3. The 16 Technical Consultancy Organizations jointly sponsored by various all-India financial institutions (the Industrial Development Bank of India, the Industrial Credit & Investment Corporation of India Ltd, the Industrial Finance Corporation of India, along with the state-level financial institutions) concentrating on young graduates, educated unemployed persons and in some cases, experienced employees, traders and women.

Noting the importance of entrepreneurship to the national economy and the rapid spread of EDP activities, the Government of India considered it desirable to set up some apex, all-India institutions with the mandate of consolidating, accelerating and improving the effectiveness of EDPs. This resulted in the setting up of the following institutions.

1. The National Institute for Entrepreneurship and Small Business Development (NIESBD), New Delhi.
2. The Entrepreneurship Development Institute of India (EDI-I), Bhat (District Gandhinagar), Gujarat.
3. The National Science & Technology Entrepreneurship Development Board (NSTEDB), Department of Science and Technology, Technology Bhawan, New Delhi.

Among these all-India bodies, the NSTEDB is exclusively concerned with science and technology entrepreneurs in conjunction with universities/colleges/R&D organizations.

ACTIVITIES OF THE NSTEDB

The NSTEDB was set up in 1982, under the auspices of the Department of Science and Technology, with a mandate to promote entrepreneurship among 'science-tech' persons and to encourage propagation of 'science-tech' methods in industry in general, and small-scale industry in particular (presently defined by the Government of India as an industrial unit having a capital investment on equipment and machinery of up to Rs. 6 million). NSTEDB has been propagating the following four-pronged strategy for nurturing entrepreneurship:

1. Establishment of 'Science and Technology Entrepreneurs Parks' (STEPs), located in or around engineering or research institutions.
2. Conduct of Entrepreneurship Development Programmes (EDPs) of science and engineering graduates through STEPs and Entrepreneurship Development Cells (EDCs) located in academic institutions.
3. Conduct of faculty sensitization or trainers' training programmes (TTPs).
4. Conduct of Entrepreneurship Awareness Camps (EACs), and encouraging the floating of elective courses in the formal curriculum and the conducting of R&D in the entrepreneurship area in universities/colleges.

THE STEP CONCEPT

The STEP model being promoted by NSTEDB is an adaptation of the concept of the science park that has been operating at the Birla Institute of Technology (BIT) at Mesra, Ranchi since 1972. The BIT park was an outcome of the involvement of BIT faculty and students way back in 1972-73 in the detection of faults in 200 dry-type heavy-duty transformers which the Coal Mine Authority had imported and installed in various coal mines in and around Ranchi. After the fault was detected, the Mine Authority requested that the college also undertake rectification of the fault. The students concerned, who were by then graduate engineers,

were persuaded by their faculty to start an enterprise within the college premises with the objective of initially providing repair services and thereafter to launch into manufacturing activities. Thus was born the first science park in India in association with an engineering institution. The BIT science park was rechristened as a STEP in 1985.

A STEP is conceived as a financially and administratively autonomous society promoted by an engineering or research institution and located in or around the parent institute. The faculty expertise and infrastructural resources of the parent institute serve as the primary resource of STEP, to be supplemented by minimum core staff and infrastructural facilities of its own. STEP management is vested in a governing council which is independent of the parent institute. The STEP consists of a central facility comprising a testing centre, a library stressing trade and manufacturing literature, a computing centre, a calibration centre, a product prototyping centre and a good telecommunication facility. The central facility is surrounded by 15-20 'nursery sheds' which serve as a product prototyping laboratory for the individual entrepreneurs.

The STEP central facility is manned by a small core group of full-time technical professionals who are supported by part-time consultants in the areas of marketing, finance, special technologies, etc., drawn from either within the parent institution or from 'outside'. Interface support between the fledgling entrepreneurs and governmental, banking and other agencies is provided through a full-time liaison officer.

The 'nursery sheds' are leased to 'trainee entrepreneurs' at nominal rents for periods not exceeding 4-5 years. The STEP provides assistance to the 'trainee entrepreneurs' through its core staff and consultants, in product design and prototyping; in preparation of a bankable project proposal; in securing loans from financial institutions; and in actual manufacture and marketing of the product.

Each 'STEP-Trainee' is awarded a stipend equivalent to the national postgraduate scholarship for a period of two years or until he or she becomes a successful entrepreneur, whichever is earlier, through an 'incentive scheme' operated by the NSTEDB. Initial financial support to the trainee for the preparation of a 'bankable project' proposal, for the payment of staff salaries and for purchase of consumables is also provided by the NSTEDB. However, the 'Trainee Entrepreneur' is expected to arrange finances for the purchase of equipment and other items for prototype development and/or manufacturing through personal sources or through loans from commercial banks/industrial financing institutions at normal commercial rates of interest.

Land for locating a STEP is expected to be provided by the parent institution. However, money for construction of buildings, procurement of machinery and equipment for the central facility and for meeting day-to-day operating costs such as

core staff salaries, consultant fees, consumables, library resources, etc., has to be solicited by the STEP management from all-India financial institutions such as the Industrial Development Bank of India, the Industrial Finance Corporation of India, and the Industrial Credit and Investment Corporation of India. Such financing is normally provided in the form of both an outright grant and a long-term loan in equal proportion. In addition, the NSTEDB provides an initial grant for the purchase of essential equipment. Thus the STEP management is expected to function as entrepreneurs themselves.

Currently there are 12 STEPs sponsored by engineering institutes in the country. The status of these STEPs as reported to the National Advisory Committee of NSTEDB at its meeting held in March 1991 is indicated in Appendix I. Among the STEPs, the three at BIT Mesra (Ranchi), SJCE Mysore and REC Trichnapalli have a reasonably good track record, whereas the others are yet to take-off and are currently mainly running entrepreneurship-related training activities or providing services of one kind or another.

An Indian Science and Technology Entrepreneurs Park Association (ISTEPA) has recently been formed with membership drawn from both individuals and institutions concerned with the promotion of the STEP movement.

Although the primary function of a STEP is to serve as a 'technology business incubator' for fledgling enterprises, it can also serve both as a delivery system for conversion of research ideas generated in the parent institution to commercial products/processes and as an 'impedance manager' to match the impedance of academia with that of industry.

'SCIENCE-TECH' ENTREPRENEURSHIP DEVELOPMENT PROGRAMMES (EDPs)

With a view to developing 'Science-Tech' entrepreneurs, the NSTEDB has been promoting EDPs exclusively for science and engineering graduates through financial support of the all-India development finance institutions—IDBI, IFCI and ICICI. These programmes are conducted by STEPs, EDCs in engineering and management institutes, and other field agencies. EDPs aimed at non-Science-Tech' persons are generally conducted by financial institutions, banks, other government departments, etc.

Since the 'Science-Tech' trainee groups are homogeneous in character, EDPs aimed at them last for 6–8 weeks. During this period, the participants, who are selected after a set of psychological tests, learn about preparation of a project report, incentives for small-scale S&T entrepreneurs, rules and procedures, etc. They also learn to interact with licensing authorities and banking officials and how to conduct a market survey before launching their products.

The STEPs and EDCs also provide post-training support, typically for 18–24 months. This support involves:

- Assistance of a technical nature in product/process development up to a prototype stage and in preparation of a manufacturing plan.
- Follow-up on loan applications with banks/venture capital firms.
- Facilitating acquisition of infrastructure such as land or factory shed, power, water, etc.
- Assistance in acquiring in-plant industrial experience for those needing such exposure.
- Business counselling.
- Trouble-shooting.

FACULTY SENSITIZATION

Faculty involved in entrepreneurship development serve as facilitators and motivators for entrepreneurship development. The multifarious roles that have to be played by them include the role of a development officer; technical, commercial and financial analyst; promotion officer; a motivator; an effective counsellor; an able administrator and a behaviour expert. Keeping the above roles in mind, the faculty selected as motivators would need to possess qualities of initiative, a high degree of perseverance, a capacity to excel, high motivation in helping others and in influencing people. They would also need to undergo a sensitization programme.

Faculty sensitization programmes have been organized under the NSTEDB at various parts of the country. They are typically last for 11 working days, and cover the following topics: Learning modes for faculty; selection of entrepreneurs; new selection techniques; general management concepts; systems approach to entrepreneurship development; personnel growth strategies; opportunity identification; project feasibility; innovation and creative problem solving; developing entrepreneurial motivation; follow-up support needs of EDPs; functional areas of management such as marketing, cost–volume–profit relationships; working capital planning; organization management; human resources management; role of financial institutions; case studies by successful entrepreneurs; information selection for entrepreneurship; forms and processes; methods of instruction in entrepreneurship.

ELECTIVE COURSES IN THE UNDERGRADUATE CURRICULUM AND ENTREPRENEURSHIP AWARENESS CAMPS (EAC)

With a view to enable undergraduate engineering students to get an awareness of the entrepreneurship process, IIT Delhi has developed a set of three elective courses entitled 'Introduction to Entre-

preneurial Ventures', 'Entrepreneurial Operations' and 'Entrepreneurship Management' offered at the II, III, and IV year levels of the fourth-year undergraduate programme of the Institute. Details of the course contents for these three courses are given in Appendix II. The NSTEDB has also evolved the syllabuses of a similar set of courses and has been propagating their inclusion in the formal undergraduate curriculum for engineering and science students.

With a view to expose more students to the concepts of entrepreneurship, three-day general Entrepreneurship Awareness Camps (EACs) are

also being promoted by the NSTEDB. Statistics issued by the NSTEDB indicate that around 34,000 students have attended EACs organized under their sponsorship. IIT Delhi runs such camps two or three times in a year. The topics covered during these camps include: historical background and Indian values; tradition of entrepreneurship; the contemporary entrepreneurial scene; creativity and innovation in entrepreneurship; opportunity identification; product line selection; R&D laboratories; communication skills for effectiveness; interaction with practising entrepreneurs.

APPENDIX I

Current Status of the STEPs as reported to the National Advisory Committee of NSTEDB in its meeting held in March 1991

Name of the STEP and parent institution	Performance						
	No. of units set up	Total capital raised	No. of jobs generated	Annual turnover (Rs. lakhs)	Technologies		Consultancy jobs
					Developed	Transferred	
BIT-STEP BIT, Mesra, Ranchi	50	160.20	376	408.00	35	25	16
TEC-STEP REC, Trichy	44	465.00	306	NA	6	-	9
SJCE-STEP SJCE, Mysore	13	57.18	68	NA	8	3	5
JNECP Bombay MGM Bombay	20	NA	6	NA	4	-	-
STEP HBTI HBTI Kanpur	10	12.25	24	NA	3	1	1
STEP GNEC GNEC Ludhiana	5	6.0	22	NA	4	-	-
MP STEP MACT Bhopal	8	NA	49	NA	-	-	-
STEP Roorkee UOR Roorkee	-	-	-	NA	-	-	-
STEP, IIT IIT Kharagpur	2	1.50	7	NA	1	1	1
HP STEP HPU Shimla	-	-	-	NA	-	-	2
S&T Park Poona University Poona	-	-	-	NA	-	-	14
JU STEP JU Jadavpur	-	-	-	NA	-	-	-

1 lakh = 100,000

APPENDIX II: DETAILS OF ELECTIVE COURSES IN ENTREPRENEURSHIP**A. Introduction to entrepreneurial ventures**

LTP structure 3-0-0

Level: IInd year

What is entrepreneurship? Who is an entrepreneur? Need, scope and characteristics of entrepreneurship; Indian economic and industrial heritage and entrepreneurial development; current economic and industrial environment with special reference to entrepreneurial ventures.

Identification of opportunities; choice of technology, biography of Indian entrepreneurs.

Elements of production processes; production planning; leadership (Path Finder) group dynamics; time management.

Understanding human behaviour.

Achievement motivation; flexibility/resilience; creativity; opening with uncertainties; attitude towards wealth and work.

The need, scope and approaches to project formulation.

B. Entrepreneurial operations

LTP structure: 3-0-0

Level: IIIrd year

Nature of entrepreneurial ventures in India: opportunities; ancillaries; sub-contracting; demand-based industries; resource-based industries; servicing industries; import substitution.

Business information; periodical review of business; how to procure; acquaintance with national laboratories; identification of and navigation through sources.

Resource management; team building; personal management; marketing management; financial management; essentials of costing and pricing; capital management; bookkeeping; materials management; product development; credit institutions; break-even analysis; delegation.

Planning methodology; communication.

Transactional analysis.

Stages in project identification; skeleton of a project format; analysis of project reports.

Prevailing industrial policy; organizational structure and process for small and medium scale industry; selecting and recruitment of personnel; methods of market analysis.

C. Entrepreneurship management

LTP structure: 3-0-0

Level: IVth year

Self-employment need and mode; structural base of Indian economic life; industrial sector in the national developmental life; indices of an entrepreneurial activity; interaction between enterprise and society; business objectives and strategies in a pre-industrial society; selecting for entrepreneurial ventures; problem solving; decision making; conflict and change in a new industrial enterprise; systems consideration in an entrepreneurial venture; management reporting and information systems of a new business enterprise; preparing for an entrepreneurial career; issues in resource management; managing innovations.