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Vocational Education

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INTRODUCTION

Vocational Education is not new in Indian Philosophy in general and in the educational process in particular. The system, so deep rooted in our philosophy flourished through the mode of *Guru-Shishya* or father-son tradition. Work was considered important for living and education. Education was related to the life of pupils, bringing into focus the co-existence between education and work. Education became bookish with the introduction of formal education. It prepared the student for white collar jobs. There was no provision for manual work in general education. This was pointed out in Wood's Education Despatch in 1854. The despatch contemplated introduction of pre-vocational education at the secondary stage. Similar recommendations were made by various Committees and Commissions on Indian Education constituted before and after independence. In the post independence period, there has been a succession of Committees and Commissions that went into the questions of reforms in education. The Radhakrishnan Commission (1948) emphasised the need to give a vocational bias to the courses of education to meet a variety of needs of our young men and women, while retaining the emphasis on preparation for University Education. The recommendations of the Mudaliar Commission (1952) related to diversification of education, resulted in the establishment of a chain of multi-purpose schools.

The Education Commission (1966) recognising the views of Rabindranath Tagore, Mahatma Gandhi and Zakir Hussain on the pattern/system of education and its ineffectiveness for the majority of the school going population, emphasised the need for integrating education with work, to give a strong vocational bias to secondary education. The recommendations of the Commission found due acceptance in the National Policy of Education Resolution of 1968. The National Policy on Education and Programme of Action (1986, 1992) gave a new impetus to vocational education at the higher secondary stage and emphasised the need for pre-vocational education at the secondary stage of education. A Centrally Sponsored Scheme (CSS) of Vocationalisation of Secondary Education was launched in February 1988 for providing support to Vocational Education Programme (VEP). The Scheme provided broad guidelines in respect of management of the programme at various levels, curriculum design, infrastructure, vocational surveys, instructional materials, teachers and their training, school-industry linkages, vocational guidance, examination and certification, modification of recruitment rules and Apprenticeship Training and funding norms for various components of VEP. It also made provisions for financial assistance to non-government organisations (NGOs)/voluntary organisations (VOs). A Scheme of Pre-vocational Education at the Lower Secondary Stage of Education was also launched by the MHRD, Government of India in 1993 for funding of schools in a phased manner. Both the schemes continued till the end of the Eighth Five Year Plan.

The Ninth Five-Year Plan (1997-2002) identified the key issues facing secondary education as access, quality and diversification. It argued that, despite the pressure to modify

secondary curricula in a vocational direction, secondary education curricula continue to be liberal and oriented to the first degree courses. It proposed further revision and modification of secondary curricula to relate them more to work opportunities, particularly at middle-level manpower, further expansion of vocational education at both lower and senior secondary level, and establishment of effective links between industry and education. It claimed that this further expansion is justified in terms of both economic efficiency and social justice. Need for selecting courses on the basis of an assessment of manpower needs and ensuring greater participation of all the groups within the community was considered important.

The Scheme is still continuing except for a gap of first two years (1997-99) of the Ninth Five Year Plan. The Vocational Courses, under the scheme, are offered by all the States and UTs except Lakshadweep Union Territory. However, it has not been possible to impress upon the implementing states that they should create a comprehensive management system, appoint full time teachers, organise teacher training programmes, develop suitable instructional materials, provide hands-on-training despite provisions in the scheme. One of the major reasons for this is the poor fund allocation for the components covered under the scheme. The scheme has not been revised since 1988. Another reason and may be a stronger one could be the financial position of the majority of the States.

The programme is also suffering because of the lack of suitable management structures at various levels, non-availability of trained vocational teachers, lack of collaborating agencies and poor implementation of Apprentices Act. Majority of these shortcomings have been highlighted by the Operations Research Group (ORG, 1996) which conducted a systematic study on the implementation of the CSS. The studies conducted by Centre for Research, Planning and Action (CFRPA) and others have reported on the effectiveness of the curriculum transaction, collaboration, teachers, examination system and placement of students.

The scheme of vocationalisation of education at the degree level (+3 stage of education) was launched by the University Grants Commission (1994-95). Under the scheme, the UGC provides funds to the colleges and universities for starting vocational subject(s). UGC identified 35 vocational subjects in four discipline areas i.e. (i) Arts, Humanities and Social Science, (ii) Commerce, Economics and Management, (iii) Science, and (iv) Engineering and Technology. Other areas were not taken into account because they were to be initiated by the concerned Ministeries. The UGC has provided financial assistance for running vocational courses to an extent of 152.17 crores. On reviewing the scheme by the UGC it was found that there have been very few takers for 7 subjects out of 35. These have been deleted since 1998-99 and an additional list of 10 have been added considering the need of rural, hilly and tribal areas with specific reference to the North-Eastern Region and that of women.

In the present report an effort has been made to provide international as well as national perspectives with regard to studies in vocational educaton and training (VET). Major concerns and future directions are provided for the consideration of the policy makers and researchers. Shortcomings and deficiencies in studies undertaken during the period have also been highlighted.

INSTITUTIONS INVOLVED IN RESEARCH AND DEVELOPMENT OF VOCATIONAL EDUCATION

Vocational Education in the school education system has not been a popular research topic due to various reasons which include lack of awareness about vocational education. Therefore, there are very few agencies and institutions which are involved in sponsoring or conducting research in vocational education. The NCERT through Educational Research and Innovations Committee (ERIC) supports researches in all fields of education including vocational education. The Pandit Sunderlal Sharma Central Institute of Vocational Education (PSSCIVE), which is a constituent of NCERT conducts research in vocational education and work experience. In addition, Departments of Education of Universities, Institutes of Advance Studies in Education and others working in the field of education conduct research in the field.

At the State level, State Council of Educational Research and Training (SCERT), State Institute of Vocational Education (SIVE) conduct research in education. Besides, Directorate of Education sponsors/conducts research in vocational education.

The Ministry of Human Resource Development, Planning Commission and Ministry of Labour sponsor external agencies to conduct research on their behalf, besides, sponsoring individual researches. The Indian Council of Social Science Research (ICSSR), Indian Council of Agriculture Research (ICAR), Indian Council of Medical Research (ICMR), National Institute of Educational Planning and Administration (NIEPA) and Institute of Applied Manpower Research (IAMR) also conduct research in the field of vocational education.

PROGRESS OF RESEARCH IN VOCATIONAL EDUCATION

The Fifth Survey of Research in Education indicates that the number of researches carried out and reported during the period 1988-1992 were more than those in the previous period 1980-1986. Year- wise distribution of studies conducted in vocationalisation of education is given in Table 1.

Table 1 : Year-wise distribution of Studies

1988	1989	1990	1991	1992
18	6	19	9	9

The earlier trend report identified a number of shortcomings in researches/studies in vocational education viz., (i) absence in continuity, (ii) gross inadequacy in issue-based studies (iii) imbalance in coverage of areas (iv) lack of studies in sociology of vocational education, economics of the field, comparative studies, manpower planning, management, curriculum analysis, organisational and administrative issues. The report also identified that almost all studies reported a lack of theoretical perspective. The present trend report covers the period from 1993-2000. The review that follows is based on 14 international and 27 national researches/studies/reports.

The national researches/studies included in the report are in the area of work experience (8) and vocational education (19). The distribution of agencies which conducted these researches/ studies is given in Table 2.

Table 2: Agencies conducting Studies

	Number	
Agency	*Work Experience*	*Vocational Education*
Individual	5	5
State Level Committee	-	1
State Level Agency	3	11
External Agency	-	2

THE CHANGING VOCATIONAL EDUCATION SCENARIO : INTERNATIONAL PERSPECTIVES

In an international perspective the term Technical and Vocational Education (TVE), Vocational Education and Training (VET), Technical and Vocational Education and Training (TVET) and Vocational Education (VE) are used interchangably for vocational education. UNESCO defined Vocational Education as a comprehensive term embracing those aspects of educational process involving, in addition to general education, the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in the various sectors of economic and social life. The key to success of VE is efficient interaction between education and productive work. VE is gaining popularity in the age cohort of 16-19 in several developed and developing countries.

Studies in VE in Developed Countries

The economic and social milieu has a profound influence on the acceptance of vocational education in any country. Most of the developed countries have a free market economy. Changes in economic and social conditions have thrown open the challenges to the vocational education policy makers and have compelled them to think of new approaches with regard to TVE. Some of the principal changes, which are affecting the policies are growing enrolments in secondary education, rapid changes in technology (multi-skilling), increasing international competition, changes in employment structure and increasing youth unemployment. By including some significant researches, which these

changes are responsive to, an effort has been made to present an international perspective on TVE leading to trends in developed countries. The researches/studies are in the area of pre-vocational education, technology education, multi-skilling, etc.

In the developed countries, the role of vocational and technical education and training is fast changing. Need for technology education is being realised in more and more countries. Brand (1994) reported that in order to remain competitive, business needs flexible workers, with good analytical and solid basic skills. New jobs, technology, and reorganised workplaces are requiring multi-skilled workers with strong language, mathematics, reasoning, problem-solving and analytical skills.

Buechtemann and Christoph (1994) carried out a synthesis of national studies on the changing role of vocational and technical education and training (VOTEC). The national studies were carried out by the Organisation for Economic Cooperation and Development (OECD). The study suggested that, despite massive and increasing amounts of public and private expenditure on education and training in highly industrialised and also in industrialising and developing countries, there is a scarcity of clear evidence balancing the costs of and returns to such investment. To a large degree, this lack of evidence of returns to human capital is due to the very heterogeneous nature of the societal and private benefits derived from education and training and the long time periods over which the benefits accrue.

Evans (1994) expressed the view that at the turn of 20th century most young people in the developed world will continue in some form of education or training into their 20s. Education should not simply be reacting to the changing social and economic scenario. It must be proactive, long-sighted and geared to increasing individual 'cope-ability'. Young adults will need to become creative and interdependant problem solvers, engage in lifelong learning, to work in cooperation with others and to participate in the 'communication society'.

Leclercq (1994) observed that because of the economic crisis and the threat of unemployment which it brings to bear on young people, it has seemed necessary to familiarise them with technological learning and the world of work even while they are engaged in general education. The process has been brought into gear from compulsory schooling onwards, with the introduction of technological instruction included in the curriculum–in France in 1985, in Britain in 1986, in Netherlands in 1989, and in Spain in 1990. Today it takes place in the upper secondary school.

Wilson (1994) stated that in Japan and Germany, the cross-training trend, in which skilled workers are trained in both mechanical and electrical/electronic skill areas for capability in operating and maintaining robotic and computer-controlled equipment, is becoming the 'norm'.

Mclean (1995) pointed out that globalisation challenges employment and training policies because companies can shift quite rapidly their centres of production across national boundaries. This is due to perceptions of, among other factors, the cost and quality of labour. Higher-skill management and research and development can be located in one country and low-skill production in another.

Psacharopoulos (1997) observed that vocational education and training is perceived throughout the world to be a favoured instrument of social engineering for achieving a series of objectives such as accelerating economic growth, reducing youth unemployment and benefiting from economic globalisation. Many consider it is like building a bridge to lower transportation costs between two sides of a river. Others argue that it is not a panacea for all social ills.

Trends in Developed Countries

Although technical and vocational education and training is deeply embedded in a country's social, cultural and economic structure, it possesses different characteristics. The trends taking place in developed countries (Tabbron and Yang, 1997) are as under:

- The gap between academic education and vocational education is being reduced by means of the introduction of vocational subjects into general education curricula and closer approximation of vocational training to general education;

- Vocational education is being conducted more and more at the post-secondary level and the route from vocational education to higher education is widening;
- Competence-based curriculum development has a more important role to play;
- The co-operation between education authorities and employment organisations as well as industries is being strengthened;
- The delivery system of TVET is becoming more decentralised;
- Employers are becoming more involved in the process of TVET.

Studies in VE in Asia-pacific Countries

Studies on VE in Asia-pacific countries during the period of the report have been restricted to certain aspects which include combining vocational learning with production, flexible access to TVE throughout life and funding problems. As a result, very few studies are available which could focus on the changing trends in VE in Asia-pacific countries.

Combining Vocational Learning with Production

Of late, it has been realised by many countries that vocational education can be best provided, if it has some kind of linkages with industry or if the institution offering vocational education has developed a production centre. Singh (1998) examined case studies of school enterprises in 11 countries viz., China, India, Indonesia, Papua New Guinea, Germany, Botswana, Kenya, Ghana, Algeria, Cuba and Costa Rica. The study focused on the following: type and structures of school enterprises; organisation of learning; competency profiles, learning outcomes and learning goals; curricular processes; teaching staff; the regulatory framework of school enterprises; external relations; school enterprises' impact; financial options for school enterprises; and mixes of private and public roles. Even within a single country, school enterprises were assuming diverse forms that tended to fall into three categories, these were programmes emphasising economic goals; programmes emphasising educational goals; and programmes attempting to reach a balance between economic and educational considerations. Many secondary level school-based programmes were incorporating elements from several of the following modes of organising learning and training : traditional apprenticeships, on-the-job training, and dual vocational training (combining practical training in workshops of private enterprises with training in traditional training centres). The following were among the factors identified as enhancing school enterprises : support from policy makers; institutional-level policies that balance economic, educational, and social goals; diversified financing; incentives; networks; support infrastructure; monitoring system; and high standard of training.

Need for a Flexible Access to Technical and Vocational Education throughout Life

Many countries are experiencing high unemployment rates. Existing traditions of training and available human and financial resources provide little hope of providing access to TVE to the large number of people who need it world-wide. Change is essential in order to meet the demands of enterprises that require a skilled workforce and people in need of TVE so that they can become economically productive. Challenges facing those seeking to improve access to TVE include the following : (1) development of alternative methodologies (combining distance education with TVE, developing learning materials appropriate to students' gender and level of schooling, resolving issues related to intellectual property rights and copyrights, and using appropriate technology); (2) quality assurance (improving the credibility of TVE awards and of assessments of practical skills and making qualifications flexible and mobile); (3) development of appropriate policy and strategy; (4) re-orienting educational institutions, teachers, and teacher unions; and (5) developing partnerships between and among trainers and enterprises, credential granting agencies, labour movement, and other trainers across the globe (Bartram, 1999).

Funding Problems of Technical Education in Developing Countries

Looking at the cost of TVE, countries are examining/adopting a variety of options to fund

TVE. Bordia's (2000) study reveals the trend in funding TVE. Bordia found that during the past decade, funding mechanisms for universities and technical education institutions and colleges have undergone massive restructuring in developed and developing countries alike. Governmental support has generally decreased, resulting in greater reliance on fee-based education or creation of privately sponsored engineering/technical colleges or universities. The following are some of the trends that will likely result from changes in the funding of technical education: (1) export of education will become an important component of the economics of advanced, rich countries such as Australia, New Zealand, the United Kingdom, and Canada; (2) privatisation, commercialisation, and marketing of education, especially business, commerce, and information technology will increasingly play a dominant role in developing countries; (3) quality management in developing countries will also move away from government monitoring to professional monitoring, as is now the case in developed countries; (4) the quality of education in developing countries will eventually be determined by market forces; (5) educational funding from individual family budgets will become increasingly difficult in developing countries as privatisation results in increased fees; and (6) education will move from being a totally governmental activity to a more commerce and industry-based activity and will eventually become a service industry.

Trends in Asia-pacific Countries

The UNESCO, through its International Project on Technical Vocational Education, known as UNEVOC, has organised a large number of programmes for the benefit of the member countries in the region. The project has also sponsored case studies, besides launching a network between the member countries for exchange of information, literature and data bases. Based on the reports of the programme organised in the region and case studies conducted, it can be inferred that technical and vocational education and training is considered by most countries in the region as essential to their development as it is linked to training, job creation and employment.

Qureshi (1996) reviewed the reports of the TVET programmes and case studies of various countries in the Asia-pacific region and noted that there is a growing awareness in countries of Asia-pacific region for the need to adapt technical and vocational education to meet the rapidly changing requirements of the economy at the national, regional and global levels. The significant trends are:

- Increased co-operation between technical and vocational education authorities and those in industry and the market place has progressively become a factor in several systems for updating curricula, equipment and facilities, as well as in introducing new programmes and cost-effective delivery approaches.
- There is an increasing awareness in the region that new information technologies are essential to improve the effectiveness of TVET systems and to make them more flexible and learner-oriented so as to promote life-long learning process.
- TVET curricula content is also evolving rapidly.
- Course designs are oriented more towards a combination of core and elective components as well as competency-based training, so that they are more responsive to the needs of rapidly transforming economies.
- Curriculum planning priorities in most countries now places emphasis on the need to link education to enterprises, particularly in regard to orientation and the study of business economics for small enterprises and life-long education.
- There is a new trend in many countries to provide contextual learning and also integrate traditional disciplines into one single course (for example, "mechatronics" based on mechanics and electronics).
- There is increasing emphasis in some countries, especially in Australia and New Zealand, on preparation of multi-skilled work force, providing job experience required for upgrading of skills, creating mechanisms for the recognition of existing qualifications and credit transfer, introducing competency-based training,and promoting retraining.

- In some countries, such as the Republic of Korea and Singapore, training content is increasingly selected not only for its relevance to specific jobs but also for job clusters, as well as for the transfer to jobs from related areas in business and industry.

The trends indicated by Qureshi (1996) still hold good in the present context of the implementation of VE programmes in Asia-pacific countries, which also indicate that major changes are required to tune the VE programmes for developing multi-skilled manpower.

Challenges in Technical and Vocational Education

The Second International Conference on Technical and Vocational Education, was held in Seoul, Republic of Korea in 1999 to identify challenges which TVE is likely to face in view of the changing demands of the twenty-first century. As a prelude to the International Conference and to provide a national perspective to challenges identified by UNESCO, a National Conference on Vocational Education was organised by PSSCIVE in April 1999. The challenges identified by UNESCO were:

i. Globalisation–unemployment and employability; emerging market economics; and social and economic development.
ii. Improving systems for providing Education and Training throughout Life –vocational education as an integral part of national education system; sound initial education and training to ensure retrainability; flexible access to vocational education throughout life; and educational and vocational guidance.
iii. Innovating the Educational and Training Process–new methods in initial training of teachers and trainers; interaction between learning and the world of work through the educational process; introducing new information technologies, environmental issues and foreign languages/culture into technical and vocational education; entrepreneurship and training for self-employment in small enterprises; and assessment, accreditation of work experience and certification standards.
iv. Technical and Vocational Education for All-ensuring equal access for girls and women; a tool for social integration and coherence for marginalised youth and people with special needs.
v. Changing Roles of Government and other Stakeholders in TVE – provision of vocational education by public and private sectors; roles and responsibilities of government; and financing TVE, including cost sharing and resource generation by institutions.
vi. Enhancing international cooperation in TVE-scope and orientation for UNESCO's long-term TVE programme; and multi-lateral partnership for developing TVE.

THE CHANGING VOCATIONAL EDUCATION SCENARIO : NATIONAL PERSPECTIVES

Human Resource Development in the country is effected by several Ministries and Departments. Ministry of Human Resource Development and Ministry of Labour and their counterparts in the state governments are the key ministries that prepare manpower. They undertake this through Polytechnics, Industrial Training Institutes and Higher Secondary Schools. Polytechnics prepare technicians to work as supervisors in industries and Industrial Training Institutes prepare skilled workers for the industries. Higher Secondary Schools offer vocational courses for preparing manpower mainly for the unorganised sector. Manpower related to agriculture and health is prepared by institutions of the concerned Ministries.

In this report, researches/studies related to work experience/work education programme at the primary and secondary level and vocational education programme at the higher secondary level have been included. Researches related to vocational guidance and counselling and special education have not been included as the report on these aspects has been dealt with separately in the survey.

Studies in Work Experience and SUPW Programmes

The National Policy on Education (1986) gave due emphasis to work experience in school

education. The recently brought out *National Curriculum Framework for School Education* (2000) has further emphasised the importance of work education in overall education. Work oriented education is offered in schools under different nomenclature like craft education, work experience (WE), life-oriented education and Socially Useful Productive Work (SUPW). A number of studies have been conducted on the status of work experience, attitudes towards work experience and what teachers feel about implementation of this curricular area.

Status of Work Experience/SUPW

Brahmbhatt (1994), critically evaluated the programme of socially useful productive work in Classes VI and VII of the schools of Gujarat state. The study indicated that the main activities subsumed under socially useful productive work programme were craft/paper work, sewing, gardening, carpentry, spinning and weaving, agriculture, preparation of soap and detergent, tooth powder, vaseline, painbalm, chalk, clock repairing, wire knitting, etc. The tools and materials were brought by the children from their home in urban areas, whereas in the rural areas they were supplied by the schools. Lack of a separate room for conducting activities was a major handicap in almost all the schools, except for a few in the urban areas. The grant which was given to the sponsored schools by the government, was surprisingly not fully utilised by them. Whereas in the case of urban private schools either necessary funds were created for these activities or the expenses were borne by the respective managements. Discussion and explanation of the activities to be taught under the subject, followed by demonstration was the method used to impart knowledge of the subject. Time allotted to this activity was one period of 30 to 40 minutes per day but it varied from school to school. No common procedure of evaluation was followed by the schools. A majority of them had practical and written examinations. Period of evaluation also varied from school to school.

Kalyani (1995) made a study of the implementation of the work experience programme (WEP) at the primary level in the north district of Delhi. Data was collected from 83 Municipal Corporation Primary Schools by administering questionnaires and through interviews. The study concluded that work experience is not able to respond well to the student's need as it is not considered an essential subject; other factors are insufficient time allocation; lack of proper planning; lack of specially trained teachers, non-availability of funds and lack of facilities in terms of tools and equipment. Finally, the teaching of the subject of work experience was not in accordance with the national guidelines.

Sehgal (1994) made a status survey of the WEP in secondary schools of Delhi. He found that although WE was a compulsory subject in the school curriculum in Government and Government-aided schools, no comprehensive-basis was available to gauge the total implementation of WEP in Schools of Delhi. Some suggestions given for improvement of the programme in the schools of Delhi were :

- Adequate funds should be provided for the conduct of work experience activities in schools;
- Schools should be provided specially designed instructional material to update the knowledge and skill of participating teachers;
- Greater number and more frequent in-service training programmes should be organised;
- Trained teachers should be appointed for organising and coordinating WEP in schools;
- More periods should be allotted for work experience activities in the school time table;
- Teachers teaching work experience should be given some incentives either in cash or kind;
- Comprehensive guidelines must be provided to the schools by the Department for organisation of work experience activities, successful completion and disposal of products and for obtaining better participation of the community.

Sehgal (1998) conducted a critical study of the work experience programme at secondary stage in Government and Government-aided schools of Delhi. The major objective of the study was to critically investigate the implementation of the programme of work experience at secondary stage in Government and Government-aided schools of Delhi, with a view to suggest remedial measures to improve the

situation. Other objectives of the study were a critical analysis of (a) The historical perspective of the development of the concept of work experience; (b) Implementation of the programme at the secondary stage in NCT of Delhi; (c) Implementational problems faced by teachers and heads of institutions; (d) Problems faced by students; and (e) Measures for effective implementation. The sample consisted of head of 90 schools (10 schools per district), teachers, students and parents (20 from each district) and all officials of SUPW Unit of the Directorate of Education. An on-the-spot observation through observation schedule was done in 45 of the schools. For collection of relevant data four sets of questionnaires were prepared and administered to four groups of respondents. Two interview schedules and an observation schedule were also developed and used. The major findings of the study were: (i) Of 90 Principals, only 13 (14%) had undergone in-service training after becoming Principals. Of these 13, only 2 had attended in-service programme in work experience; (ii) Twenty work experience activities were being organised in the sample schools, these included, gardening, meal planning, commercial arts, tailoring, interior decoration, electrical gadgets, music, tie and die, block printing, computers, batik, pre-vocational courses, book binding, electronics, food preservation, photography, woodcraft, marble printing, textile designing and painting. Maximum number of students (40%) opted for gardening followed by meal planning (20%), commercial art (11%) and tailoring, interior decoration, music and electrical gadgets (3-5% students each). Girl students opted for all the activities except electronics and photography; (iii) No uniform criteria were followed by the Principals in choosing work experience activities for their schools. Sometimes a combination of criteria was used for the purpose. Some of the criteria adopted by Principals were (a) As prescribed by CBSE; (b) As prescribed by the Directorate; (c) Survey of the locality; (d) Demand of the community; (e) Interest of teachers; (f) Availability of resources and facilities; (iv) Principals suggested that twelve new activities be introducted. Some of these were : health care, plumbing, computer and scooter repair; (v) Inadequacy or non-availability of facilities was one of the main reasons for ineffective implementation of the programme; (vi) Forty nine per cent of the teachers teaching the subject were work experience teachers; (vii) Evaluation was internal practical work with weightage ranging from 20 to 60 % was the most common method of evaluation; (viii) Seventy three per cent Principals were not in favour of external evaluation of work experience; (ix) 31% schools had received grant of less than Rs.1000/- per annum, 43% between Rs.1000 to 2000 and only 13% had received grant of more than Rs.2000/- annually. Another 13% school did not receive any grant; (x) Eighty nine per cent Principals felt that the grant given was inadequate. Other sources for meeting the expenses were students bringing raw materials, work experience fee, Parents-Teachers Association fund, boys fund; (xi) Important problems identified were shortage of teachers, non-availability of trained work experience teachers, large classes, poor parental cooperation, limited number of periods allotted, lack of space, lack of motivation in teachers and Principals; (xii) Suggestions for improvement were: (a) Frequent in-service training with emphasis on practical training, (b) Appointment of trained skilled teachers,(c) Treating work experience at par with other subjects, (d) Organising exhibitions for disposal of products, (e) External examination, (f) Sufficient infra-structural facilities, (g) Provision of instructional material.

Attitude towards Work Experience

Joglekar et. al (1993) made a comparative study of the attitude towards work experience of the students on the basis of types of management of schools and gender of the students. The sample of the study comprised 235 boys and 204 girls from 11 schools. The study indicated that there was a significant difference in the attitude towards work experience of students from private-unaided, private-aided and municipal schools. Further, it was found that children from private-aided and unaided schools did not differ significantly. But the private-unaided and municipal and private-aided and municipal school children did differ significantly on post-hoc comparison. Boys and girls of different groups did not differ significantly on their attitude towards work experience.

Teachers' Views on Work Experience

Charan et al. (1995) conducted a study to find out the functioning of the SUPW programme at the secondary stage in order to suggest measures for the effective implementation of the SUPW programme at the secondary stage in Himachal Pradesh. The study consisted of sixty craft teachers and other teachers providing instruction in SUPW activities. These teachers were selected through purposive sampling technique from 33 Government higher secondary schools of five districts of Himachal Pradesh. The study revealed that community service was not conducted under SUPW in 64% of the schools. All the teachers reported that their schools did not have adequate physical facilities for various SUPW activities. About 40% of the teachers imparting instruction in SUPW activities were matriculates and more than 60% of the teachers did not have any technical or professional qualification in SUPW activities. All the teachers stated that there was no provision of orientation courses and refresher courses for them at the State level. All the teachers reported that instructional materials on SUPW in terms of source books, guide books, doing-learning units, unit plans, resource units and manuals, etc. were neither published nor available in the state. Ninety seven per cent of the teachers stated that leisure time was not utilised for SUPW in their institutions. There was no SUPW cell in the SCERT of Himachal Pradesh. All the teachers reported that no financial assistance was provided to their institutions by the State Government for the SUPW programme. Twenty-two per cent of the teachers reported that no articles were prepared by students of their institutions under the SUPW. Four per cent of the teachers reported that the products of SUPW were sold to the local community. A large majority of teachers reported that the local community/parents were not involved in SUPW programme in their institutions.

Integration of Technology Education in Basic and General Education Curriculum

More and more countries around the globe are opting for the introduction of technology education as part of compulsory education at the schooling stage to ensure trainability of students. Basu (1997) stated that despite the expansion of technical vocational education and training in nearly all Asia-pacific countries during the past 10-15 years, many of the region's policy makers have called for greater and more effective integration of technical and vocational components in basic and general education curricula.

Studies in Vocational Education

Vocational Education in a much broad sense is education and skill development at all levels of education, post primary to tertiary, both through formal and non-formal programmes (Kulandaiswamy, Government of India, 1985). It is in vogue since 1988, with the launch of centrally sponsored scheme on vocationalisation of secondary education in many states and union territories. A series of on-the-spot quick appraisal and critical studies were carried out in 1990-91 by the Department of Vocationalisation of Education, NCERT to find out the strengths and weaknesses in the implementation of the programme so that states can further improve this programme and, if need be, revise the funding pattern for the various aspects of the programme. Based on the findings of these studies, the grant was enhanced in the CSS in respect of workshed and equipment on one hand and a grant was made for raw materials and for visiting on-the-job training sites from 1993-94 onwards by the MHRD. The scheme still continues till the end of Ninth Five Year Plan except for a gap of two years (1997-99). Since the revision of the scheme (1993-94), five status studies accomplished through organisation of national seminars/ meetings, two national level evaluation studies funded by the MHRD, Government of India and a few others have been conducted. The findings and recommen-dations of these studies are given below.

Status: PSSCIVE, after its establishment, organised five national seminars/meetings to find out area-wise status of vocational education programme, to highlight prospects and to identify emerging vocations. Secondary data was used for determining status and the papers presented were used for assessing the prospects and for identifying the vocations.

The seminar in the area of Engineering and Technology recommended a variety of training programmes for full-time as well as for part-time teachers. These included pre-induction, in-service and organisation of refresher courses. It was recommended that Computer-aided drafting, instrument and control, CNC operator, installation and repair of bio-gas plant and trades connected with video production be introduced as new vocational courses. Establishment of need-based service centres for vocational courses relating to maintenance, repair, fabrication and services was one of the other important recommendations of the seminar (Verma, 1993).

The agriculture and allied area seminar recommended the introduction of agri-business, agro-forestry, integrated water management, marine fish technology, plant propagation and nursery management and dairy technology courses at +2 stage of education. It also recommended that pre-service training should be arranged and made compulsory for all those who become vocational teachers for the first time and that curriculum for apprenticeship training for each course be developed at the national level (Sacheti, 1994).

The seminar in Health and Paramedical Vocational Programme suggested a number of additional vocational courses in the area of diagnostic services, therapatic services, bio-medical services and community related services. With regard to teachers who would teach paramedical courses, it was recommended that exposure in teaching technology may be given to all the professional staff. It was also suggested that school and hospital/medical college should work in close collaboration for effective implementation and if necessary, memorandum of understanding may be signed between the two establishments for use of various facilities. Another significant recommendation was regarding the nature of certificates to be issued by the board of secondary education. Experts suggested that certificates should indicate the name of the course as well as the name of collaborating institution where practical training was held (Guru, 1994).

Economic empowerment of women through VE and the introduction of non-traditional courses in girls higher secondary schools were the two significant recommendations of the seminar organised in the area of Home Science. Some of the other recommendations were need to promote equal access to disabled girls and those of SC/ST groups and sensitisation of teachers and employers towards equity groups (Saxena, 1995).

The National Meeting on Status and Prospects of VEP in the area of Business and Commerce suggested that for improving linkages with industry, the Government should provide some incentive in the form of tax benefits to the industry. Introduction of degree level business and commerce-based courses was another significant recommendation of the meeting. Local needs and the interest of students determined through the use of relevant tools should be considered important for admission into vocational courses. Introduction of pre-service vocational teacher preparation programme and development of entrepreneural skills in vocational students were other recommendations (Vaid, 1997).

Programme Evaluation: Government of Tamil Nadu (1994) constituted a high level committee on vocational education to suggest ways and means to make the vocational education programme effective. Data was collected through personal interaction, group conference, discussions, study of reports and recommendations of committees and commissions, findings from questionnaires and written statements of parents, teachers and public. The committee found that the total number of vocational students are generally increasing year after year but the percentage of vocational students has been decreasing. The percentage of diversion of students to vocational courses during the 1993-94 was 17. The Committee also found that there was no separate administrative structure at any level to concentrate on this important aspect of education. It was of the view that there is a need of a separate management structure in view of lack of supervision and guidance, lack of updated curriculum and modern vocational courses, lack of instructional materials, lack of attention to problems of students and teachers and lack of effort at creating positive attitudes towards work and employment. The committee also gave recommendations to improve every aspect of vocational education.

ORG (1996) undertook an evaluation study covering 21 states spread across five zones of the country. Four agencies including ORG conducted surveys in 132 districts and covered 28.4% vocational schools in the country. The research included extensive primary survey and secondary literature review. The respondents included Government functionaries responsible for implementation, heads of vocational education institutes, teachers, passed out and drop-out students, parents and both employers and potential employers. The survey indicated that the enrolment has increased by nearly 4½ times since 1988-89, but this was largely due to rapid increase in number of schools and vocational sections. The proportionate share of vocational students vis-a-vis total enrolment at the higher secondary stage was only 4.8%, a significant departure from the 10% by 1995 as envisaged in NPE (1986). As high as 38.3% of the vocational pass outs are pursuing higher studies and only 28% got employment (wage or self). The position with regard to Project Implementation Structure and inputs of the scheme was not as satisfactory as expected. State Directorates were executing vocational education programme without appointment of exclusive staff. On the whole, no priority was accorded to vocational education by states compared to state run programmes. With regard to appointment of vocational teachers, majority of the state governments showed reluctance in appointment of full-time teachers/staff because of the unwillingness to take on a long term committed liability in case of the closure of the scheme. There was large scale transfer or deputation of teachers from the general stream, without adequate considerations given to technical merit. Part-time teachers were largely unemployed graduates. Teacher training was conspicuous by its absence. Very few states conducted vocational surveys. On the front of curriculum and textbook development, the survey revealed that in most states there has been a mere adoption of curriculum and textbooks designed by PSSCIVE. Practical training was poorest in the schools of East and North East zones as they were suffering from lack of basic infrastructural facilities. Collaborative arrangements were found missing and most of the states except for few schools in Haryana, Delhi and Chandigarh, the facility of apprenticeship training was not fully utilised in view of the absence of location of seats in the vicinity of the schools. Awareness of the scheme among potential employers was low and quite a good number of students were going for higher studies in the absence of the available jobs.

Government of Himachal Pradesh (1998) conducted a study to evaluate the implementation of the CSS. The study covered 22 institutions out of 24 and interviewed 1158 students of Classes XI and XII. The study also covered students of the six courses in different proportion. The study revealed that enrolment is steadily increasing. Computer and electronics courses attract largest number of students as compared to other courses.It also revealed that the staff for teaching vocational courses are adequate in number, but, the number of equipment were not sufficient and their repair and maintenance was a problem. On the question of suitability of locations of vocational courses, 90.93% students were in favour of continuing the vocational courses in schools instead of industrial training institutes. One of the significant findings of the study was that wards/relatives of 54.5% representatives of the local bodies contacted, had studied vocational courses. They revealed that 25% students have either got the jobs or have gone for self-employment. Another 25% are pursuing further studies. The study evaluator recommended that the vocational unit in every school should be strengthened by starting more courses in each school. The courses however should be introduced only after ensuring that the required equipment is available in the school. The intake capacity of each course should be increased to make better utilisation of the available teachers. Another significant recommendation was related to arranging pre-service programme for fresh teachers, training programmes and periodic refresher courses for in-service teachers and package programmes for part-time teachers and new courses should be offered only after prior assessment of local available job opportunities.

CERPA (1999) conducted a study of the VEP, covering five districts: Agra (U.P.), Jind (Haryana), Sehore (M.P.), Mysore (Karnataka) and Delhi to suggest modifications in the CSS.

The respondents of the study included officials from MHRD, PSSCIVE, Directorate of Education of five states and Principals, teachers and students from 15 schools offering vocational courses. It was reported that there is a need for short modular courses and responsibility of providing relevant vocational education to weaker sections of the society cannot be transferred to the market. For the purpose of funding, it was observed that MHRD could approach the World Bank or Asian Development Bank for taking international fund. In that case, it would require a complete new approach to be followed as has been done in technical institutions in the country. The study concluded that emphasis should be given on the consolidation and restructuring of courses.

Government of Punjab (1999) conducted a study on the implementation of Vocational Education Programme. The study reported that the state introduced courses in six major areas. The distribution of courses was as under :

		sections
i)	Engineering-related trades	614
ii)	Agriculture-related courses	201
iii)	Commerce and Sect. Practice	106
iv)	Furniture making	70
v)	Home Science	20
vi)	Leather goods	5

An analysis of the data indicated that 40% of the total schools where vocational courses were introduced were in towns and cities. One third of schools, where agriculture-related courses were introduced were also in towns/cities. Vocationalisation in schools meant for girls is both patchy and adhoc. Besides, distribution of courses appeared to be random as well as uneven. While engineering-related courses received some attention, most others were left out. Amongst the vital omissions were courses in the field of commerce, home science and health-related activities. Agriculture too was poorly represented. In the case of engineering-related courses, a list of minimum equipment could have been prepared as per the ITI model. This was not done and as a result, equipment available were not according to the requirement of the course. In a few schools, there were lathe machines without the cutting tools. Shortage of equipment was widespread. In some schools where equipment was available there were no teachers.

In addition to programme evaluative studies in vocational education, studies have also been conducted in the area of vocational choices and follow-up of students.

Vocational Choices: The vocational preferences depends on many factors namely family background and environment. A number of studies have been directed to identify these factors and to study how these influence the occupational and academic choices.

Intodia (1993) conducted a study to find out the educational needs of tribal children as perceived by the parents.The sample of the study comprised 120 parents randomly selected from 20 villages of Dungarpur District of Rajasthan. The study observed that due weightage was not being given to animal husbandry, basic knowledge about treatment of sick animals, preparation of balance feed, feeding of pregnant and milched animal and improved method of milking. It also suggested that there is a need for training students in taking care and maintenance of diesel pump/electric motor, soil testing and reclamation, grain storage, land preparation and improved technique of sowing. A need of training in preparation of cheap and nutritious feed, common ailments of children and their treatment, cleaning of home and environmental sanitation and washing and maintenance of clothes with greater importance was felt. The need of acquiring more knowledge to take care of pregnant women was felt. It was felt that the training for the preservation of fruits and vegetables, preparation of supplementary feeding, kitchen-gardening and diet for sick should be included on the priority basis in the school curriculum especially for the girls.

Sundararajan (1993) examined the relative importance given by the higher secondary students to vocational opportunities. Five hundred sixty students of higher secondary stage from 8 higher secondary schools were randomly selected in Chidambaram District. It was found that the boys and girls did not differ significantly with regard to their preference on three vocations namely the medical, engineering and administration (District Collector). No significant difference was found in respect of first two vocations but significant difference was seen in respect of third vocation, viz. District Collector. In respect of the other categories of

students, significant differences in the percentage were found with regard to all the three vocations. There was no association between the gender and most preferred vocations.

Dangi and Intodia (1999) conducted a study to find out the choice of the youth regarding different agricultural vocations. Three hundred fifty youth covering 175 tribal and 175 non-tribal schools constituted the sample. The study revealed that there was a highly significant correlation between overall tribal and non-tribal youth regarding their assignment of ranks to different vocations under agriculture aspects for developing vocational curriculum at the school level. There existed a significant relationship between the groups of tribal and non-tribal educated rural youth in ranking the different areas of agriculture vocation. The agriculture-based vocational courses suggested by the tribal respondents were crop production, dairying, seed production technology, plant production techniques, maintenance of agricultural machineries and establishment of agro-service centres. The prioritisation of agricultural vocation for new vocational syllabi suggested by non-tribal educated rural youth were crop production, dairying, establishment of agro service centres, seed production technology, fruit and vegetable preservation technology and horticulture. Sericulture was the least preferred vocation.

Follow-up of Students: Desai et al. (2000) analysed the views of the limited number of graduates from secondary vocational courses who have entered the world of work and reported that commerce and technical courses attract more students, (40 and 48%, respectively) with first class secondary school certificates than home science (27%) and agriculture (26%). On the question of socio-economic background of the students and ex-students, it was found that the students from poorer and less privilaged background like to enter vocational stream. With regard to variation in choices of course in relation to the income of the family, it was found that lower family income backgrounds were over represented in the home science courses, while those with highest family income backgrounds were not represented in commerce courses and over represented in the technical courses. On family background, it was found that 37% of vocational students come from family backgrounds that has reported income below Rs 1500 per month, compared with 78% of ex-students now in work. The study also endorsed the findings of other studies that students from disadvantaged background were over-represented in the VEP. On the question of job search, the ex-students reported that the waiting period has been lengthy and difficult. Over half the respondents reported great difficulties in finding a job and a further third reported some difficulties. Only 1% of the ex-students had found a job before the end of the course, 15% up to 6 months after the course, and 44% between 6 and 12 months, with 40% taking over 12 months after completing the course. In conclusion, it confirmed the findings of other states which have shown that the provision of vocational secondary education does not mean that student will automatically get work after completion of a vocational course.

Trends in Work Experience and Vocational Education

In work experience, a fair number of programme evaluation studies have been conducted. Issue-based researches are grossly inadequate. Majority of the studies have reported that inadequate time, absence of skilled teachers, poor facilities and non-availability of funds are affecting the implementation of work experience.

In vocational education, the trend of research is towards status and programme evaluation. There are state specific and nationwide studies, which means that coverage is satisfactory. Issue-based researches are far from adequate. Studies related to vocational choices and follow up of students have been undertaken. Comparative studies between different TVE programmes are lacking. Studies in the area of manpower planning, curricular issues and economics of providing vocational education are conspicuous by their absence. Programme evaluation studies have highlighted the need of consolidation and restructuring of vocational courses leading to competency-based modules, linkage between education authorities and industries, appointment of full-time teachers, pre-service teacher training programme and creation of a separate management system at various levels.

Moreover, it will not be wrong to say that demand of VE is increasing in some states but seats in quite a good number of institutions in other states are lying vacant. Only about 50% of the capacity created is being used. This conveys that the system has not adjusted to the needs of the training requirements and market economy. The rigidity in curriculum design and offering is one of the factors responsible for distraction of students in taking up the programme. Age restriction and non-availability of life-long education and training system are some of the other reasons for poor VE programmes. Lack of integration, coordination, duplication, obsoleteness are a few other reasons affecting the VE programmes.

EMERGING CONCERNS AND FUTURE DIRECTIONS

Work Experience

Though, the NCERT at the national level and SCERTs and Boards of Secondary Education at the state level have brought out curricular framework for WE implementation, a number of problems still exist which need attention of all stakeholders at various levels. Major concerns and issues which need to be adressed by the researchers have been briefly discussed to highlight the need for reviewing and consolidating the WE programme to make it more effective.

Many schools in the country hardly have any infrastructure required to implement local-specific activities. Similarly, majority of states do not have teachers for WE. Wherever teachers have been provided, there are no promotional avenues for them, whereas their counterparts belonging to other subject areas get time bound promotions. Flexibility in terms of overall implementation is missing. District Institutes of Education and Training (DIET) are not organising adequate training programmes for teachers (specific as well as general) in this curricular area. Majority of the DIETs do not have trainers and infrastructure required for training in WE. The facilities are either lacking or significantly inadequate. Research with regard to type of activities at various stages of school education is negligible. How general education teachers can be used in implementation of the programme also needs to be investigated. Studies related to cost of arranging WE/SUPW and outcomes realised in the form of behavioural changes on one hand and marketability of the goods and services on the other are also few. The National Curriculum Framework for School Education (2000) recommended a continuous and comprehensive evaluation and the introduction of grading system at the secondary stage of education. On the other hand, there is a strong opinion among stakeholders that the WEP is not being implemented properly as there is no external examination for the subject. Hence, it is a point ponder and needs to be researched so as to give the educational planners a clear-cut view of the stakeholders. There is also a need to study the alternative modes of delivering of work experience such as camp-based activities, establishing production-cum-training centres, establishing skill centres for a cluster of schools, block time allotment for work experience activities in school time table, project mode, summer camps during vacations, etc. and to come out with a model, which can be taken up for implementation.

Vocational Education

The trends in researches done in developed and Asia-pacific countries indicate that there are several issues and problems, which have emerged during the implementation of VET programmes. Evaluation studies conducted by the research agencies based on primary and secondary data have indeed helped in identifying these issues from time to time and in incorporating suitable changes in VET programmes to meet the requirements of a diversified and large number of people. As a result, several models of VET programmes have been developed and tried out to bring about the desirable changes and to solve the problems faced by implementers in executing the VET programmes. Watson (1994) addressed the influence of Western models of TVET in developing countries and demonstrated how western approaches to educational and economic development had disregarded indigenous socio-economic and cultural contexts. He stressed on the use of comparative

education to identify culturally appropriate educational principles and to improve TVET in developing countries.

In Indian context, vocational education programme in schools is suffering because of delay in decision-making to resolve several issues facing the programme. The author has identified the following areas, which require attention of the policy-makers and researchers as they reflect the major concerns and issues in vocational education.

Globalisation of the Market Economy: More and more countries are opening up and going for global economy. India is one of them. The rapid developments in the technological areas is briging in greater uniformity in the products and processes and the economics of sale are becoming crucial to the success in trade and industry. Thus, the firms are not restricting their operations within the boundaries of a nation but are becoming global players. This has brought in intense global competition amongst the firms. The survival of a firm in these situations depends on producing quality products at competitive prices. This cannot be achieved till the requisite knowledge and skills of the work force continuously developed and updated.

The trends of globalisation of trade and industry has its influence on the labour market. The uniformity in the products and processes is bringing in standardisation of skills required to perform the jobs. As a result, the mobility of labour from one nation to the other is increasing. This brings with it the need for developing a system of skill passport whereby the workers are certified to be having certain skills and knowledge, which enable them to work anywhere in the world in that job. Preparing manpower for skills of international quality and standard is a concern which policy-makers and researchers should address. We may note that the use of ISO 9000 standards is becoming a reality in car industry.

Management System: The Ministry of Human Resource Development, Government of India, in its scheme on Vocationalisation of Secondary Education gave emphasis on creation of Management System at the national, regional, state, district and school levels. At the national level, Joint Council of Vocational Education (JCVE) was visualised as the main policy-making body in the field of vocational education. The other management structure envisaged in the CSS has not been created or functioning partially as a result the desired policy interventions and delivery output has not been achieved. Government of Tamil Nadu (1994) observed the need of a separate management system to discharge various functions effectively. It would be necessary that it is provided in best possible way by creating an effective management system with legal provisions. Providing a sound and quality vocational education through a well placed management set up is one of the most important concerns of vocational education. Reorganisation and consolidation of various management setups existing in the country concerning technical, vocational education and vocational training is a major issue that required research-based solutions. The states did not develop a separate management structure for vocational education due to two important reasons. The first reason was that the grant under the scheme was available only for the first five years and that too fifty per cent of the cost of the sturucture. The second reason was that the fifty per cent cost itself was a substantial liability for the state in the first five years and the full cost beyond five years. The pattern and duration of assistance from the Central Government for creation of a sound and meaningful management of the structure, therefore, need for a change. Sacheti (1995) observed that the implementing states have offered several alternatives with regard to management structure at various levels.

Target: The target of diverting Xth pass students to vocational courses was set by the Central Government, without looking at the availability of funds, capability and economic development of various State Governments and social perception about vocational courses. This has led to non-fulfilment of target even after shifting the target date. The target of diverting 50% students to vocational courses suggested by the Education Commission (1964-66) remained a dream as against about 5% achieved. CERPA (1999) observed that the 25 per cent target of the NPE 1986 was absurdly unrealistic and

should never have been included in the document. Even the 10 per cent target for the year 1995 was not achievable. Further, it was necessary to examine this fetish of fixing targets in the irrational manner adopted so far and learn from the experiences of Family Welfare planners who kept on fixing unrealistic targets year after year till it was given up on the World Bank initiative in 1997. Whether we should still set a target of diversion, needs to be researched.

Access: Majority of the +2 institutions offering vocational courses are located in urban and semi-urban areas and many of these institutions do not have boarding facilities. Such a situation prevents quite a good number of students living in rural areas and willing to offer vocational courses from taking admission to vocational courses. Besides, in large number of states, there are separate boys and girls schools which limit the offering of vocational courses. In such a situation, both the sexes are put to disadvantages. For example, Home Science courses cannot be offered by boys as they are generally offered by girls schools. The universities may consider researches on aspirations and expectations of rural masses, unreached population, women and academically disadvantaged population. The studies may be directed to : (i) Type of vocational courses in rural and remote areas, (ii) Identification of non-gender specific vocational courses, and (iii) New institutions at the block level.

Curriculum and Instructional Material

Curriculum and Delivery Patterns: The MHRD has prescribed a curriculum design for vocational courses in higher secondary education. All the states have followed the design with a few exceptions. The vocational courses are of two year duration. There is no flexibility in duration as well as in delivery pattern. This, discourages the willing students and working population to take vocational programmes in other than regular hours of instructions i.e. during evening hours and weekends. There are quite a good number of jobs in the society, which do not require a course of two year duration, but the students have no options. They prefer dropping out from the schools and joining a job at lower wages rather than taking a vocational course and remain unemployed. Whereas, it is well known that the actual success of any educational activity is closely related to the quality and relevance of the curriculum and each training activity in a curriculum must be directed at developing a particular skill.

Vocational Education Programmes are offered by the higher secondary schools by following a rigid curriculum design and examination system. Besides, they have strict age requirement. Rigidity discourages quite a good number of students to opt for vocational education courses. The demand for modular vocational courses, delivered through a number of pathways, including evening and weekend courses, distance learning and on-line learning modes are increasing. Sacheti et.al. (1997) noted that the modular courses will equip the students with multi-skills which will eventually result in better job prospects and income. CERPA (1999) also reported that there is a need for short modular courses. The competencies and motivation in students can be enhanced by running semi-commercial units or production-cum-training centre in schools. Besides, there is also a need for a system which provides access to a large section of the society, irrespective of age and educational level to a number of qualifications leading to life-long education. The system should also provide opportunities for multi-entry and multi-exit to students joining vocational education and training programme. This is yet another concern, which is emerging in the society.

Instructional Materials: Vocational courses were introduced without any preparation in respect to instructional materials. The MHRD through its scheme made provision for staff to be appointed in the existing SCERT's and also for holding workshops to develop instructional materials. Except a few states like Maharashtra, Tamil Nadu, Rajasthan, Orissa, Karnataka, a majority of them did not take up this activity seriously. The PSSCIVE has made a modest begining to bring out exemplar instructional materials for a wide variety of target groups. On reviewing the availability of Instructional Materials, the JCVE directed the PSSCIVE to develop instructional material for the most

popular vocational courses. A number of research studies can be carried out on the modalities of development and content of instructional material development, need for a national or state-specific instructional material and language of instructional material. The studies are also required to assess the type and format of the materials. Some studies may also deal with content coverage, standard and quality of instructional material. Looking to the economic background of the students joining vocational courses, it may be worthwhile to study the need of free and subsidised distribution of books.

Teachers and their Training: The International Commission on Education (1996) is of the view that the importance of the role of the teacher as an agent of change, promoting understanding and tolerance, has never been more obvious than today. It is likely to become even more critical in the twenty-first century. Besides, a teacher preparation programme, which does not include proper industry experience may not be desirable in view of the changing workplace requirement of the future. Preparation of such teachers for a country of our size is a concern and should be taken up in the right earnest by the researchers in the universities.

The scheme made provision of full-time and part-time teachers so that knowledge and skills are taken care by both the type of teachers together. In most of the states, fresh graduates or post-graduates were appointed as part-time teachers on full-time basis (ORG, 1996). The imparting of skills were not given due importance. The programme of vocational education is being implemented like any other academic programmes. The important reasons for not appointing full-time teachers are : (i) the Central Government reimburses only 75% of the cost incurred on teachers appointment, (ii) reimbursement of the cost is allowed for first five years, (iii) there are no qualified trained teachers. The issues are (i) pattern and duration of assistance, (ii) availability of trained teachers, (iii) better pay scales and promotion avenues, (iv) developing a cadre for the management of vocational education, (v) provision of secondment as in developed countries, (vi) relaxation in qualification in case of non-availability of industrial experience, and (vii) nature of appointment. All these issues need to be studied. The outcome of studies will help in preparing better teachers.

Training of teachers is key to a good health of vocational education programme. Pre-service training is absent and in-service training programmes are not being organised in want of funds. Government of Himachal Pradesh (1998) highlighted the need of pre-service teacher preparation programmes. The CSS made provision for organisation of in-service training programmes for teachers but the cost to be incurred on TA and DA was to be borne by the state itself. The cost incurred on TA and DA is far more than on the resource persons and contingencies for which the provision was made in the scheme. Under these situations, the teacher training i.e. (i) training of existing teachers, (ii) modalities of organisation of training programmes, (iii) funding for pre-service and in-service training programmes, (iv) appointment of trained teachers and (v) retraining and retooling of trained teachers in case of withdrawal of a particular course, itself becomes the key issue.

School-industry Linkage: The distinction between education and training is slowly disappearing as the education system increasingly integrates basic training and even occupational or industrial training within its fold. Vocational education was launched with the same philosophy as it was to be offered in collaboration with relevant institution or industry willing to participate in instruction. The infrastructure provided under the scheme presumes that the institute shall have collaboration for effective and meaningful curriculum transaction. However, the situation at the ground is not very encouraging. Quite a good percentage of schools offering vocational courses have not been able to establish collaboration with the concerned institution or industry (ORG, 1996). The reason may be non-availability of such organisations in the vicinity, absence of interest in collaboration by such institutes. The issues relevant to this aspect are: (i) Extent and nature of collaboration (ii) Modalities of collaboration (iii) Legislation for school-industry linkage (iv) Commuting problems (v) Supervision of collaboration and (vi) Providing adequate infrastructure in absence

of collaboration. Researches on various aspects of school-industry linkages will help in developing a workable model of enterprise education, suited to the local needs and requirements of the institutions offering VE courses.

Examination and Certification: The Boards/ Councils of Secondary or Higher Secondary/ Intermediate Education conduct examinations and issue certificates to vocational pass-outs. The courses offered are limited to the concerned state. It was observed that boards do not give due importance to the examination of vocational students as the number of students are small as compared to students offering academic courses and the cost of examination per student is high.

In addition, in the absence of clear cut guidelines on the role and functions of Examination Board in CSS, barring one or two boards, all other boards do not consider the capabilities of the institutions, as the basis for affiliation in respect of vocational courses. Need for affiliation offers yet another area of research.

The certificate issued by the Board is almost similar to that issued to academic students. If two certificates are issued, one by the Board and another by On-the-Job Training (OJT) providers, it is quite plausible that the employability of the vocational pass-outs will be enhanced. This is yet another area of research for the students of university system. Rigidity in terms of duration of the course and holding of examination at the end of the year and not providing any flexibility in offering are some of the other reasons which are restricting the popularity of vocational courses. These issues could also be considered for research.

Vertical Mobility: Any educational programme, which does not have a mechanism to allow students a lateral or vertical mobility or entry into higher education is considered a 'dead end' activity. This is what is happening to the VEP. The rush in academic programmes continues as they allow them to pursue higher education, at least in the Arts stream. Although it is agreed that majority of the students enrolled in vocational courses should join the world of work after completion of the course, opportunities to pursue higher education should also be provided to those who wish to upgrade their learning as and when desired. The issues, therefore, are (i) non-recognition of vocational courses at higher education institution (ii) absence of a mechanism of recognising prior learning (iii) non-availability of vocational courses at the degree level (iv) resistance to change in delivery patterns by the higher education institutions including the universities.

Apprenticeship Training: The pass-out students of vocational courses have been covered under the Apprentices Act (1961) under a separate category called Technicians (Vocational) Apprentices. Due to this, vocational pass-outs can obtain practical experience and training for a period of one year. The four regional Boards of Apprenticeship Training which look after the placement of vocational pass-outs are unable to cater to the increasing demand of placements of vocational pass-outs of their region. At present, less than 10% of the vocational pass-outs are being placed as apprentices, mainly due to lack of identification of training sites in and around the schools especially in unorganised economic activities. Research study directed to identify the reasons for low placements of vocational pass-out in industries as apprentices will be useful in making necessary amendments in the Apprentices Act and procedure of placement of students. It would be interesting to know the cost of providing apprenticeship training to pass-outs of different subject areas. It will help in deciding the distribution and allocation of funds to apprenticeship training programme.

Funding: The cost of providing vocational education and training is much higher than the academic courses as it involves more hands-on experience, using modern equipment and raw material. The cost is increasing day by day, as a result of increase in cost of services, equipment and raw material, besides, basic infrastructure. The private sectors which are being encouraged are coming in a big way in imparting VE and charging heavy fees which is beyond the reach of a common man. To support this, the Government of India has come out with a scheme under which students can take loans for higher or technical studies. This facility is

being used by those who can provide collateral security for the amount derived from the bank or any financial institution. Research can be directed towards finding out the cost comparision between delivery of technical, vocational and academic programmes offered through various modes. Based on such researches, strategies of providing various components of vocational education through appropriate funding and allocation from various sources can be taken up.

Employment Pattern: Employment pattern is fast changing around the world. So far, the manufacturing sector was the single most important sector offering large number of wage employment opportunities. But, the opportunities in this have started shrinking because of infusion of hi-technology. In other words, hi-technology is reducing wage employment opportunities in the manufacturing sector but shall create additional jobs in service and maintenance sector. It is estimated that the service sector alone would provide employment opportunities to the extent of 40% of all employment opportunities around the globe. Similarly, quite a substantial opportunities are offered by self-employment and employment in small enterprises which means that these two areas are becoming important from the point of view of employment opportunities in future. It is believed that self-employment requires entrepreneurial skills for availing opportunities, developing small business ideas and personality traits and for interacting with people and resources to generate wealth for the country. Employment in service sector and self-employment are the two other concerns which are likely to throw opportunities for researchers in the country. Whether vocational courses are fulfilling the expectations of the gainful employment or not is yet one of the another area of research for researchers.

Integration of Training in the Informal Sector with Vocational Education Sector: The skills and knowledge base available with the manpower in non-formal sector are not counted as 'technical' enough in the formal sense in the country. The existing training and education system, at the same time, does not give due recognition to training and experience acquired through informal mode. Competency-based training curricula and certification standards are absent. The training programmes provided by a variety of institutions are generally based on the need assessment of the target group.

Sacheti et al. (1997) observed that there is no system through which either the training acquired through informal system or experience gained by working at the place of work could be recognised. A mechanism for assessment of prior learning, accreditation of work experience and certification standards is lacking in our country. The formal linkage and the inter-dependence between the informal training system and education is a major concern as millions working with their hands are looking for respect in the society.

CONCLUSIONS

The Technical and Vocational Education systems in India are fashioned after the Western models of the developed countries. This model of socio-economic development have increased global disparities in wealth, consumption and quality of life. They have added to the ecological stress in many regions surpassing earth's carrying capacity. Eighty per cent of the world's population holds merely 20% of its wealth while the 20% people have cornered 80% of the total wealth. That is the net result of the 20th Century's developmental model made possible through superior knowledge and skills of the developed world. Therefore, it is necessary that the developmental paradigm must change in the new millennium to reverse these trends and create a more equitable world. For India, sustainability and ecological aspects should determine the educational model for skills and competence. In the rural context, the vocations are to be sought in the management of environment, water, food, energy, information, human comforts and reduction of drudgery in work (PSSCIVE, 1999). The manpower preparation in services sector should find a prominent place rather than preparing manpower in industrial production processes. These are some of the potential areas of future research.

Lower rate of literacy and poor participation in education is a cause of concern. The model of Vocational Education must accommodate the aspirations of students for wider acceptability.

The efforts of the last 20 years in vocationalisation of education at the school level has not contributed much to enhance the social status and acceptability. The education has to be given a developmental orientation as opposed to industrial orientation. Vocationalisation of education would, therefore, require a total educational transformation. The overall national development and the total human potential development cannot be narrowed down to meet the needs of the organised industry alone. It should also target the large unorganised sector, where 92% people are employed. The industrial training institutes and technical education system should build on the human potential developed through this new philosophy.

Looking to the size of the country, institutions involved in research are very meagre in number. There is a need to identify the factors responsible for failure of vocational education programme in our country. There is a need to sponsor researches directed towards critical analysis of the strength and weaknesses of the various components of VEP delivered through various modes (formal and non-formal).

The researches covered in the report are a few in number and, therefore, have not been able to provide the exact picture of the situation existing in implementation of VE programme in the country. In addition, the findings of the evaluation studies conducted by the various agencies, have not been taken seriously in framing policies for the VE. As a result, most of these studies have not been able to provide new directions and changes needed to make existing VE programmes more effective or to introduce new need-based programmes. A review of the roles of evaluation for vocational education and training in USA and U.K. conducted by Grubb et al. (1999) has highlighted this fact and pointed out that the results of the programme evaluation studies are often met with reservations as they necessitates policy revision.

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