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Research in Vocational and Technical Education

A TREND REPORT

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Problems associated with the development and modernization of Indian economy and society present a bewildering spectacle and pose a challenge to educators. Class imbalances and regional disparities are integral to the prevailing profile. Associated with these problems are: mass illiteracy among the lower classes and caste groups, abundance of unskilled labour, acute shortage of middle-level skills, large and dispersed regions of underdevelopment, unbalanced growth of urban townships, shortage of employment for available skills as well as shortage of certain categories of skills for available employment, irrelevance of certain forms and levels of education to developmental needs, resulting in unsuitable outputs for the employment market, improper use and wastage of limited budget resources for education, etc. In brief, the national way of life has been highly unscientific. A redirection of the educational sub-system and its integration with other sub-systems of Indian economy are hence needed to provide some systematization and discipline so as to place the nation on the road to growth, equity and modernization. In this way it would be possible to honour and realize constitutional values and commitments. One of the efforts at systematization would be the provision of a well planned, efficiently executed, cost-effective and relevant programme of vocational and technical education.

When national development is defined in non-monetary and non-institutional terms, it is essentially a human resource development process. It implies the provision and augmentation of skills and capabilities of the people of the country. This is possible through a well designed and efficiently executed programme of vocational and technical education. It would not be out of place to briefly trace the history of interest in vocational and technical education in India. It has its origins in Wood's Despatch of 1854. Several education commissions and committees had stressed the need for diversified curricula. A chain of polytechnics was created following the recommendations in 1937 of the Abbot-Wood Advisory Committee. Committees have worked specifically on vocational education or technical education. The report of the Education Commission headed by Dr. Kothari was the first systematic attempt to formulate a policy for progressive vocationatization of education in India. Though this report was accepted in 1968, vocationalization of higher secondary education, which is a crucial stage, was implemented only in 1977 by several states of the country. Even to this day, there are a few regions in the country which have yet to implement this policy. A few national level working groups and review committees have studied the problems and progress in implementation of the programme of vocationalization, among them being the Sabanayagam, Adisheshaiah and Kulandaiswamy committees. In addition, the Institute of Applied Manpower Research at New Delhi, and similar state level agencies, have studied and reported on the programmes and planning of technical education in the country. All these efforts have not been wholly successful in putting vocational and technical education on an even footing. A number of problems still persist in the field, some of which are conceptual in nature, requiring the attention of researchers interested in fundamental and theoretical

issues, while others are embedded in micro-level planning and implementation of programmes, requiring the attention of researchers from a wide range of disciplines and interests to research themes which are empirical in nature.

ISSUES FOR POLICY AND PLANNING

The most significant and subtle issue in vocational and technical education concerns the nature and purpose of such education. The earliest exposition of this problem was by Plato who drew a distinction between the education of free men, who were to be prepared for a meaningful and productive life of leisure, and the education of slaves, who were to be prepared for a life of work, as toil and labour in manual occupations. The same distinction was stated in another form by John Locke in his exposition of his conception of the education of a gentleman. But the outlook began to change after the industrial revolution. It began to assume distinct direction through two parallel developments, one of them being the institution of 'Land Grant Colleges' in the United States, and the other, which was more pervasive and profound, the influence of Karl Marx and the translation of his political philosophy into action by Lenin through the October 1917 Revolution in Russia, wherein work and workers' education were raised on a high pedestal.

However, the basic questions all along have been: Should education be liberal or vocational in nature? If it is to be both, what should be the proportion of the mix between the two? Should the educational system turn out a worker with a minimum amount of general education or should it produce a 'person' through an adequate grounding of general knowledge, appreciation of and attitudes about the universe which help him to live as a liberated individual, along with the provision of a few manual skills? If skill development is the chief concern, is it desirable to prepare him for particular and specific vocational or technical skills, in contrast to his preparation as generalist through polytechnic education? These problems have been solved to a large extent in East European countries, the USSR and other centrally planned social systems. But the problems have persisted in the developing parts of the world, including India. Though both vocational education and technical education are concerned with the production of middle-level non-technical and technical skills, still secondary and post-secondary, non-degree technical education is treated in India as part of 'technical education', governed by a separate directorate and guided by the All-India Council of Technical Education (AICTE), with separate budget allocation and coverage in plan documents. On the other hand, vocational education and vocationalization of higher secondary education is a part of general education in the 10+2 pattern. This has often created problems of mobility beyond the +2 stage. It is also not guided by National Council of Technical and Vocational Training (NCTVT) or the state councils. In other words, there is a lot of confusion in regard to the status of vocational education. At the moment, it is only one of a group of electives at the +2 stage of education or a subject in diversified curricula in some secondary schools. There is no integrated policy for vocational education and technical education in the country. Philosophical and historical researches in vocational and technical education along with comparative studies will be of value for policy making and planning.

ISSUES FOR MICRO-LEVEL PLANNING AND IMPLEMENTATION

The Department of Labour launched India's first national craftsman training scheme in 1941—the 'Wartime Technical Training Scheme'. Problems of rehabilitation of trained craftsmen after the Second World War and their utilization for peace-time requirements prompted the creation of the Directorate General of Rehabilitation and Employment which started nationwide technical and vocational training schemes for ex-servicemen and displaced persons in 1945. These schemes were abandoned in 1950 and the existing centres for vocational instruction numbering 63 were renamed, Industrial Training Institutes. The department itself was renamed, Directorate General of Training and Employment, as rehabilitation was no longer a problem. It is under the Ministry of Labour and Employment and administers all technical and vocational training schemes through a Directorate of Training.

Vocationalization of higher secondary education as mentioned earlier was introduced in 1977. Establishing close links between education and employment, training persons for self-employment in agriculture, small industries and the service sector, diversifying educational courses, and training persons for middle-level jobs anticipated in industry and the service sector were some of the objectives of this programme. Weaning away a large chunk of post-secondary aspirants for higher education

from courses in general education was an implied objective.

Quite a number and variety of problems have been experienced in the implementation of programmes of vocational and technical education. Most of them are micro-level problems which deserve the attention of research-workers. A research base for decision-making is very much needed. Who are the persons that can benefit most from vocational education? How do factors like intelligence, parental background, social class, motivations, aptitudes, etc. operate in the success of the clientele in vocational courses? Do vocational or occupational aspirations determine performance in vocational and occupational spheres? How are such aspirations fashioned? Is there a relation between vocational aspirations, vocational maturity in early life and job satisfaction in later life? Does a person grow in vocational maturity over time? What is the age at which such maturity is reached, rendering the child ready for vocational education? What is the role of self-concept in vocational maturity and vocational aspirations? How does vocational guidance contribute to the development of vocational interests, vocational maturity and aspirations? What is the prevailing pattern of attitudes among parents, students, educators, employers and community leaders towards vocational education? How do such attitudes facilitate or impede the success of vocational education? How is achievement in co-curricular and curricular subjects related to vocational interests and aspirations? What are the vocational needs of children belonging to different age-groups? How does one measure all these variables? Can admission for vocational courses be based on some scientific admission testing programmes? How can occupational and income mobility be promoted among weaker sections through a well organized vocational programme? These are but some of a long list of questions which confront the teacher, administrators and heads of institutions offering programmes of vocational education. Psychological and psycho-social researches in vocational and technical education would be of value for grassroots implementation of national policies.

It is will known that there is a scarcity of resources for education in general. This is even more true of vocational education in particular. Further, it is easier to organize courses in general education than in vocational education. Vocational education and technical education involve heavier capital costs for laboratory, workshop, equipment, etc. Expenditure on library will not be much as adequate books for vocational education are not available. Even maintenance costs for vocational and technical education are relatively high. It is also perhaps true that returns to students and the state from vocational and technical education are also correspondingly higher than that for general education courses. In such a situation, where heavy costs are demanded, identification and utilization of community resources will be valuable. In fact, vocational courses need to be related to ecological structure, techno-economic resources, industrial and vocational needs of the region, so as to render relevance to such courses. Supply of vocational and technical skills in a region and the demand for them also merit consideration. Researchers interested in the economics of vocational and technical education should be able to contribute in these areas. Specific questions of value in this regard are: What are the private and social costs of vocational education and technical education? What are the unit costs in vocational and technical education? How do course-specific costs differ? What are the private and social returns from vocational and technical education? How do costs and returns in vocational and technical education compare with alternative forms of education? What is the extent of wastage in vocational and technical education? How do the external and internal labour markets and secondary labour markets respond to vocational and technical education? How do segmented labour markets absorb vocational and technical skills? What is the waiting time for absorption of successful clientele? How does vocational or technical education fare in contrast to other variables like intelligence, defined as general ability, social class leading to reference for jobs, experience, sex, dynamics of the employment market such as labour queue, etc., in the absorption of successful graduates in the economy? What is the relative potential of courses for self-employment? How to project the need for skills in the economy across regions and over a period of time? How to integrate the patterns of vocational or technical education with industrial and non-industrial vocational needs and thus avoid the need for retraining? How to increase the cost-effectiveness of programmes of vocational technical education? What are the relations between supply and demand for skills with the developmental level of regions? These questions are illustrative for researchers in the economics of vocational and technical education.

Perhaps due to imbalances in emphases between education for work as against education for leisure, one of the problems of an industrializing society is 'alienation'. Development of proper attitudes to work,

life and society will assist one in coming to terms with this problem. It will also bear a relation with the role expectations and role performance of workers, resulting in varying levels of job satisfaction. Family life, interpersonal interactions, leadership styles, organizational climate of an institution, etc. have intervening influences in transforming the students passing out from vocational and technical institutions into both 'workers' and 'human beings'. Further, social change in the hierarchical structures of Indian society requires large scale upward social mobility of lower strata of society. This can come through occupational and income mobility. How far do the present vocational and technical education programmes promote mobility in various strata of society and contribute to social change? What are the value patterns of vocational students with special reference to work values? These types of issues would be of interest to sociological researchers. They would also throw light for curriculum planners.

As the programmes of vocationalization of higher secondary education and vocational education in high schools are still in their formative stages, they would profit from concurrent evaluations. Types of management, quality of student-flow, availability, adequacy, and utilization of facilities, organization and administrative styles, methods of evaluation of performance, nature and types of problems affecting programmes, teacher preparation programmes, problems of supply and demand for skills, availability of human resources, etc. are the variety of variables that merit the attention of researchers interested in evaluation of vocational and technical education. Surveys, concurrent as well as terminal evaluations, would be quite useful for planners, policy-makers and administrators.

Apart from the foregoing types of issues, there is also scope for curriculum studies which involve an examination of the existing curricula for various subjects from the points of view of on the job requirements, 'balance of knowledge' and non-formal approaches to the organization of programmes of vocational and technical education.

The issues discussed so far in relation to vocational and technical education can be classified under the framework outlined below.

FRAMEWORK FOR RESEARCH IN VOCATIONAL AND TECHNICAL EDUCATION

Research issues in vocational and technical education that have been identified in the foregoing analysis under policy formulation, planning and implementation can be pursued by researchers from the angles of various disciplinary orientations in education. They may be fitted into the following framework: Philosophy of Education, History of Education, Comparative Education, Educational Psychology, Educational Sociology, Economics of Education/Education Planning/ Educational Management, Evaluation, and Minor Fields. This framework is also used for classifying the studies that have been completed over the years in the field of vocational and technical education and are surveyed in the present trend report.

This trend report is based on 95 research abstracts. Some of them have already appeared in the first, second and third volumes of surveys of research in education under different classifications. For the first time they are here presented together under the headings, 'Vocational and Technical Education', along with abstracts of researchers in these fields completed after 1983, the terminal year of the third survey. It does not include several researchers in professional education which may figure under 'Higher Education'. It also does not include a few other researches that have been completed by institutions such as the IAMR and the TTTIs as abstracts were not available.

PROGRESS OF RESEARCH IN VOCATIONAL AND TECHNICAL EDUCATION

Table 26.1 presents the decadal progress of research in vocational and technical education.

Table 26.1

RESEARCH IN VOCATIONAL AND TECHNICAL EDUCATION (NO. OF STUDIES)

1959 *and before*	1960-69	1970-79	1980-86
Nil	9	41	45

It may be observed that research in vocational and technical education were undertaken only from 1960 onwards. It gathered momentum after 1970 and stabilized after 1980. Further analysis of the growth of research reveals that 61 out of the 95 researches reported here were completed during the ten-year period, 1977 to 1986.

The abstracts reviewed here have been completed by

several agencies with 'universities' as the chief partner. The breakup of researches completed by agencies is as follows: Universities (53), Research Institutions (18), State Institutes of Education and Departments of State Goverments (7), Technical Institutions such as IITs, and TTTIs (7), Agricultural Universities (3), NCERT (4), Planning Commission (1) and Colleges (2).

Table 26.2

AREA-WISE COMPLETION OF RESEARCH IN VOCATIONAL AND TECHNICAL EDUCATION AS REPORTED IN THE FOUR SURVEYS OF RESEARCH IN EDUCATION

Area	*Vol.* 1	*Vol* 2	*Vol.* 3	*Vol.* 4	*Total*
Philosophy of Education	-	-	-	-	-
History of Education	1	-	-	2	3
Comparative Education	1	-	-	-	1
Educational Psychology	-	7	14	8	29
Educational Sociology	1	1	-	-	2
Economics of Education/ Educational Management	1	3	2	-	6
Curriculum Studies	-	3	4	1	8
School Organization and Administration	1	-	2	4	7
Non-formal Education	-	-	1	1	2
Evaluation	7	4	7	19	37
Total:	12	18	30	35	95

It may be observed from Table 26.2 that quite a number of researches are concerned with the psychological aspects of vocational and technical education. Another significant concern of researchers in this field is the evaluation of on-going programmes of vocational and technical education.

Some other areas where a certain interest is displayed are curriculum studies, economics of education and educational management, school organization and administration. A review of all these studies is presented in the pages that follow.

Philosophy of Education, History of Education and Comparative Education

No study has been done from a philosophical perspective. Analytical and critical studies on theoretical issues concerning nature and uses of knowledge, choices before educators in regard to work and leisure in education, general *vs* vocational education, etc. have not been of interest to researchers. However, there have been a few studies in the history of vocational and technical education. J. Mangamma (1971) studied a few institutions concerned with practical education in agriculture, crafts and industries in the Madras Presidency region during the period 1854 to 1921. She attributed the growth of agricultural and technical education in the region to governmental policies on land and exports. Private interest was mostly in technical education. T.N. Barooh (1986) traced the development of polytechnic education in Assam during the period 1948 to 1978. He discovered that demand for technical manpower far exceeded supply. Some of the problems affecting polytechnics were: defective selection procedures, outmoded syllabi, poor administration, inept management of examinations, improper utilization of available facilities and dissatisfaction among teachers. The socio-economic status of successful polytechnic graduates as compared to that of their parents, remained more or less the same. G. Mohanty (1986) traced the growth of vocational education in the state of Orissa from 1947 to 1981. He also discovered that supply of vocational and technical skills always fell short of the demand. Women's enrolment was quite low and there was sex-typing of courses.

K.C. Bhatt (1972) critically compared the status of vocational education in West Germany and India. Secondary as well as primary data were used for the purpose. He discovered that the system was functioning very well in West Germany as observed through attitudes to manual labour, private support, relevance of courses, production of literature, teacher training balance between vocational and general education. India was found wanting in all these respects.

Psychological Foundations of Vocational Education

As is true in general regarding research in the main discipline Education, so is it true in regard to the area of Vocational and Technical Education that, in quantitative terms, researches in the psychological foundations have dominated over the years. Several aspects of vocational and technical education which are of concern for psychologists and educational researchers with a psychological orientation are: admission testing (5), vocational/occupational aspirations (6), vocational maturity (4), vocational interest (6), attitudes and behaviour (5), vocational needs (1), aptitude and achievement (1), educational and vocational problems (1).

Admission Testing

A psychological test consisting of five sub-tests with 105 items relating to verbal ability, numerical ability, natural sciences, health sciences, social sciences, was standardized on 1200 trainee-nurses of Calcutta by S. Chattopadhyaya (1979) for use in admissions for nursing courses. Through a comparative study of self-concept among 440 high-performing and poorly-performing nurses, H.F. Dastoor (1982) not only studied the relation between self-concept and job performance, but also developed a structured questionnaire consisting of 41 items and covering such aspects as dynamics of choice of nursing as a career, opinions and feeling about nursing as a career, eductional backgrounds, efficiency on the job, knowledge of nursing activities, etc. which he used to enlist desirable and undesirable qualities among nurses that would be of use in admission of candidates for nursing course. High correlations were observed between high job proficiency and high self-concept as well as low job proficiency and low self-concept. The Slater Proficiency Scale was used to measure job performance.

K.S. Sidhu (1974) standardized a vocational interest inventory on 2100 successful XI class students of Punjab, taking 300 students in seven criteria groups: fine arts, agriculture, commerce, home science, humanities, medical, and non-medical courses. The purpose of standardization was to provide a basis for diversifying students into different streams.

A selection test battery consisting of a general information sheet, a general ability test, a language usage test, a verbal ability test, and a numerical ability test for selection of pupils seeking admission in technical higher secondary schools of Delhi was developed by D.C. Joshi (1978), after standardizing it on 253 IX grade technical higher secondary schools.

Differences were observed in intelligence scores on artistic and leisure items than on occupational and practical items in the variety of tests used by S.L. Misra (1967) on 306 students of Aligarh Muslim University undergoing courses in humanities, natural sciences, teacher training, business and library science.

Vocational/Occupational Aspirations

Vocational aspirations in the formative years of life are supposed to determine success in later life in regard to job satisfaction productivity, personality adjustment, etc. Several variables appear to fashion the nature and reality-orientation of such aspirations. Parental, occupational and social background, intelligence, school achievement, peer-group experiences, vocational guidance, etc. are some of the variables which may influence vocational aspirations. S.S. Chadha (1979) studied the vocational aspirations of 713 rural and urban school boys of Chandigarh and rural Punjab. He developed a Vocational Aspirations Blank and used other available tests. He discovered a high degree of vocational aspiration among children and parents. Pendharkar (1977) studied the occupational aspirations of 300 Hindu undergraduate students of Indore, through the case-study method. He also discovered the home atmosphere as an important factor in occupational aspiration. Knowledge of occupations and monetary returns from them was highly associated with the level of aspiration. A. Paul (1981) compared the motivational aspects of goal behaviour of 271 students in the academic stream (humanities, sciences) with 224 students in the vocational stream (agriculture, engineering, commerce), of XI and XII standards of higher secondary grade in and around Madras. Goal behaviour was defined in terms of goal perception, school-goal relevance, goal phantasy, locus of goal-control, goal-risk and goal-aspiration. Goal-aspiration was measured by Rotter's Level of Aspiration Board. Goal-related variables explained 73.1 per cent and 31.4 per cent of variations in scholastic achievement respectively of students in vocational and academic streams. Vocational stream students recorded high mean scores in goal aspiration and goal perception. D. Dabir (1986) studied the interaction of vocational aspirations with aptitudes and motivational patterns of 1080 9th, 10th and 11th grade boys and girls of Nagpur district. He used J.S. Grewal's Occupational Aspiration Scale along with other tools and a self-prepared SES scale. Predominant relations were discovered between vocational aspiration and SES, need achievement, need deference and need nurturance.

B.M. Singh (1984) studied the job satisfaction of 571 males and 70 female LIC employees with different levels of education in relation to job aspirations and pre-job aspirations, apart from other variables such as duration of education length of service and clerical efficiency. He discovered that only 12 per cent of the clerical workers ever thought of becoming clerks; job aspirations escalated with levels of education. Investigating the factors affecting the occupational aspirations of 98 girls and 202 boys of class X of 11 schools in Delhi and through a multiple regression technique, J.S. Gaur (1973) discovered that intelligence, type of school, age

and scholastic achievement of students were significantly related. SES turned out to be significant when intelligence was held under control.

Vocational Maturity

Does vocational maturity, defined in terms of awareness, knowledge and understanding of the world of works, grow over a period of time or flash at a point of time? How is it influenced by age, personality factors, perception of one's own abilities, intelligence, parentage, career guidance, etc.? Will any intervention programmes be of use in development of vocational maturity? These and similar questions will be of value in planning a programme of vocational or technical education. H. Chand (1979) studied the correlates of vocational maturity of 480 boys and girls of urban and rural high schools of Chandigarh. Apart from using other tests, he developed a Career Maturity Inventory, a Competence Test and a Vocational Aptitude Scale. Intelligence, self-concept, education, income and occupation of parents, scholastic achievement, and certain personality factors showed significant relationships with vocational maturity.

Treating sex, intelligence and n-achievement as control variables, P.K. Tulsi (1983) studied, in an experimental setting, the differential effects of career guidance strategies on vocational maturity patterns. Twelve groups of students each, with varying combinations of levels of intelligence and n-achievement among both sexes, were used as experimental and control groups. H. Chand's Career Maturity Inventory was used along with other tools. The group which received treatment in both self-awareness and occupational information proved better in realizing vocational maturity than those who were treated with only one of these techniques. Higher vocational maturity was realized by both sexes with low and average rather than high intelligence scores.

Working with 75 boys and 75 girls each of VIII, IX, X and XI standards of Gujarati-medium schools of Baroda city, R.K. Parlikar (1973) discovered that intelligence and achievement in schools were associated with measures of vocational maturity. Neurosis, self-sufficiency, introversion-extroversion, dominance–submission (personality factors), showed inconsistent relationships with vocational maturity. Sex differences were observed. Vocational maturity had been defined in terms of choice competency, choice attitude and choice consistency.

Using a self-made questionnaire and other standard tests, R.K. Reddy (174) studied the role of rural-urban and socio-economic factors in the development of vocational sense among 1103 IX, X and XI grade boys. Middle-level socio-economic groups displayed knowledge of a distinctively higher number of occupations. Agreement between choice of occupations and self-concept was high among urban students. Occupational choices increased from grade to grade.

Vocational Interest

An interesting area for research in vocational education is development of vocational interest among students. This is of value for educational planners, curriculum-designers, career-guidance personnel and educational administrators. Vocational interests influence vocation maturity and vocational choices in later life which, in turn, affect job satisfaction and optimization of job performance. S.J. Saheb (1980) studied, in a comparative frame work, the vocational interests of 455 boys in the vocational stream and 532 boys in the academic stream of English-medium higher secondary schools of Tamil Nadu. Students' academic and non-academic abilities provided the context of study. Vocational interests in ten areas were considered. An adapted version of Thurstone's Interest Schedule was used along with other tools and school-ratings. Marked differences were observed between the academic abilities and vocational interests of the two streams of students. Students of the academic stream were better in academic abilities, leadership, writing and science talent, and displayed interest in physical and biological sciences. Students of the vocational stream displayed interest in business and computation; they were better in social service, music, games and sports. Choice of stream did not depend on the socio-economic status of the students.

J.C. Sinha (1978) examined the role of the family in terms of parent–child relations, parental values, and SES in shaping the vocational interests of students. Thurstone's interest schedule and other tools were used on 460 male higher secondary students of Mathura and Agra cities. The results are quite interesting. A healthy home (amicable parent–child relations) kindled love for scientific and executive fields. Parental avoidance coupled with high economic and social values led to interest in computational, business and persuasive fields. Absence of parental democratic values and non-acceptance of children were associated with interest in artistic and musical fields.

Working with 400 boys and 200 girls of class XII in Eastern UP, J.P.S. Tomar (1985) discovered that sex,

rural–urban residence and SES were determinant factors in the occupational interests of adolescents. Occupational interests conformed to the trends in the job market. A comparative study of 180 institutionalized and 540 non-intitutionalized adolescents of both sexes from upper, middle and lower social strata was made by Mary John (1981) to understand the relation between vocational interest and self-concept as well as perceptions about the furture. Kulshreshta's Vocational Interest Record and other tools were used. It was observed that vocational interests of adolescents were directly related to their socio-economic status. Middle class adolescents had a more stable self-concept and extended future orientation. The ideal–actual discrepancy in self-concept was greater among institutionalized than among non-institutionalized lower strata of adolescents. H. Bhatnagar (1983) discovered that vocational interest was the chief factor in determining occupational choice among adolescent girls. This was pronounced among girls belonging to higher income groups. Urban and semi-urban differences were not significant. Girls displayed diversified vocational choices.

C.P. Mathur (1975) was essentially interested in preparing a projective tool and establishing norms to predict vocational interest in the fields of medicine, engineering and teaching. He developed a tool using the free expression drawings technique among 75 trainees and 75 in-service personnel from urban Rajasthan, and prepared stanine-grade norms for each of the three vocations and for vocational interests in general.

Attitudes and Behaviour

Attitudes towards (i) work and leisure, course content in vocational education, relative values of vocations, one's own capabilities among students, (ii) vocational or technical education among parents, community leaders, and especially teachers, of such courses are quite significant in success of vocational education and personal adjustment of students and teachers. Career guidance programmes need to consider the prevailing attitudes among students and teachers. Several factors are associated with the development of attitudes. B.G. Bhandarkar (1980) studied the interaction of age, qualifications, training, jobmobility and family problems with the attitudes of polytechnic teachers towards the teaching profession. He used a self-standardized Thurstone-type 50-item scale on 400 urban, semi urban and rural teachers from 18 polytechnics of Maharashtra to study attitudes towards teaching, content, training, students, colleagues, institution and administration. One significant finding was that training of polytechnic teachers rather than their qualifications had a significant association with favourable attitudes. B.G. Kulkarni (1975) discovered that a great majority of parents, teachers and pupils held favourable attitudes towards work experience programmes in IV to VII standards. Drawing was most preferred and spinning was least preferred by both boys and girls. While boys preferred gardening girls preferred sewing. P.N. Kaul (1970) used a self-standardized Likert-type attitude scale to measure the attitudes of 159 final year students of Punjab Agricultural University towards various stages of extension education. The SES of students rather than age and academic achievement was significantly associated with attitudes towards extension education. Centrality in the communication network was welcomed at early stages of extension education while it was disliked at later stages.

Treating age, socio-economic status and marital status as intervening variables, Ved Kakkar (1983) studied the impact of vocational attitudes, interests and work values on the job satisfaction of 800 women belonging to teaching, mechanical, clerical and medical occupations in BHEL, Bhopal. In addition, the occupational aspirations of these women were compared with those of 113 higher secondary girl students in vocational streams. Age, educational level, vocational attitudes and work values turned out to have positive and significant relationships with job satisfaction. Significant differences were observed between job satisfaction as well as work attitudes and vocational interests of women in different occupations. Age and SES had a significant relation with vocational interests and occupational aspirations of girl students.

S. Gupta (1978) conducted an experimental study of the impact of vocational training on behaviour of adolescents in terms of attitudes towards work and improved work performance. Three groups of 40 IX standard male students each of a school from Kota, Rajasthan, were formed. While one of them was kept under control, the other two were treated with vocational training. One of the experimental groups was given reinforcement in addition to training. The investigator prepared his own tools. The results showed that, while training alone led to positive improvements, the impact was higher when reinforcement was coupled with training. However, the impact was more pronounced in the case of punctuality and completion than in the case of precision and concentration.

Vocational Needs

Though an understanding of the vocational needs of students is of value in planning vocational education and guidance programmes, it is observed that only one study has been completed on this topic. A.V.R. Reddy (1972) studied vocational needs in relation to the occupational choices of 3600 IX, X andXI grade students. He observed that, while social and economic status of students were significantly related to their vocational needs, occupational choices had significant relationship with their social status only.

Aptitude and Achievement

S. Chatterji and others (1972) studied the achievement levels of 52 class X and 33 class XI technical stream students of Calcutta in relation to their aptitudes and biographical factors. They found a high degree of correlation among the three variables.

Educational and Vocational Problems

M.N. Mowji (1983) studied the vocational and educational problems of 1800 XI and XII standard arts, science and commerce students of Greater Bombay. Some of the problems reported by the researcher are: absence of guidance for choice of courses, lack of coordination between schools and colleges, paucity of trained teachers, uninteresting syllabi and books, defective admissions, large classes and inadequate facilities, dissatisfaction among teachers regarding low wages and heavy work-load.

Economics of Vocational and Technical Education

Very few studies have been completed on the economics of vocational and technical education. One of these studies, by J.N. Singh (1965), examined the potential of workers' education schemes to create a climate healthy enough to boost industrial productivity. He observed that, though the schemes had such potential inherent in them, their implementation left much to be desired. Improper selection of teachers, theory-oriented teaching, and lack of motivation for workers for participation were some of the defects in implementation.

P.K.Bose and S.P. Mukherji (1978) carried out a techno-economic survey of the needs for local skills in four blocks of West Bengal so as to work out guidelines for the organization of the +2 stage of vocational education. The study highlighted the need for diversified courses and general education content in technical and vocational education. From a similar study in another area of West Bengal, A.K.Gayen (1978) identified agriculture, industries, trade and commerce, health and public services as major areas for introducing vocational and technical courses at the +2 stage. In one of its studies in Mathura district of Uttar Pradesh, the work-experience and vocationalization Unit of the NCERT (1976) identified the following courses for vocationalization: dairying, sugarcane technology, animal husbandry, inland fisheries, cooperative farming, agricultural extension, food preservation and processing, veterinary services, small-scale industrial services, nursing and midwifery, pre-school education. Many of these courses were observed to have potential for creating self-employment.

S.P. Jain and L. Kurulkar (1980) made an assessment of on-going training programmes in relation to the vocational needs of women in Anantpur district of Andhra Pradesh and Kanyakumari district of Tamil Nadu. They discovered that, though the needs of women were highly diversified and fell into nine categories, the bulk of the on-going training programmes revolved round tailoring, embroidery and agriculture.

N.S. Davar (1977) examined the facilities available for commerce, business and management education in India with respect to their relevance for the needs of the Indian economy. The survey covered both formal and non-formal education programmes in universities, management institutions, professional organizations, etc. In addition, facilities for management training and their utilization in 109 small, medium and large, private and public sector organizations in Bombay were also examined. He concluded that, though rapid growth of industrialization in the country justified the proliferation of part-time, short-term and full-time diploma and degree programmes offered by a variety of agencies in management, they created a problem of accreditation.

Sociology of Vocational and Technical Education

Education is the chief instrument of social mobility and social change. This is particularly true of vocational and technical education in the context of the modernizing and developing, but highly stratified Indian society. Studies in this direction are wanting.

O.P. Bhatnagar (1971) studied the role expectations, role performance and training needs of subject matter

specialists (SMS) of the JNU and the State Departments of Agriculture. Seventy-four SMS, 100 supervisors and 145 village-level workers were covered in the study. Insufficient incentives and recognition, inadequate empirical research support, lack of facilities for transport and training, lack of motivation among farmers, etc. affected the role performance of subject specialists.

Sunderrajan (1977) studied the change in values, attitudes and career commitment of 564 boys and 203 girls exposed to courses at the Institute of Hotel Management, Catering Technology and Applied Nutrition. Appreciable changes were observed in the attitudes of students. Sex differences did not exist in such changes except with regard to 'empathy', in which the girls fared better.

Curriculum Studies

Research in curriculum, by its very nature, requires an interdisciplinary perspective. Curricula in vocational and technical education should be examined in regard to their ability to reflect the following aspects; the specific objectives of programmes, the general aims of the sub-system of education in the context of goals of national life, the vocational needs, interests and aspirations of children relevance to social life, compatibility with vocational maturity patterns, as well as variety, richness, flexibility, economy of execution. This requires, on the part of a researcher, a broad perspective from philosophy, psychology, sociology, economics, management, etc. Though a few studies relating to curricula of vocational and technical education have been completed, they do not appear to reflect any breadth of perspective.

With a view to providing insights for vocationalization of education at all levels, R.B. Devasthalee (1978) examined the secondary education (standards V to X) curriculum of Maharashtra state. He emphasised the need for vocationalization from standard V, establishment of central vocational schools to serve neighbourhood schools, and vocational guidance.

With a coverage of 242 parents, 520 pupils, 282 teachers and 120 heads of institutions, C.M. Lahi (1981) critically examined the work experience programme in secondary schools of Kerala. It was observed that the syllabus was not properly graded and relevant to social needs. The researcher's 'impressions' were that work experience activities led to favourable attitudes towards work and basic practical knowledge. Group work was commonly relied upon. M.L. Deshmukhya (1984) also examined the secondary school curriculum, but in Assam, in the light of needs for vocationalization. S.M. Pany (1981) studied the programmes of work education in 2013 secondary schools of Orissa state. It was found to respond to local economic needs. Negative attitudes of students, teachers and parents, inadequacy of facilities, pressure of other school subjects, lack of funds, raw materials, tools and equipment, were the problems faced in the organization of work education activities.

S.S. Panjawani (1973) attempted to devise a framework, concepts and methodology of job analysis in Indian Cable Co., Jamshedpur, so as to develop programmes of education and training of technicians. He suggested a diversification of conventional engineering fields into different technician specialities.

The commerce curriculum was examined by A. Ahmed (1983) and K.C.S. Jain (1977) at the higher secondary stage in Orissa state and at the undergraduate level (B.Com) of Rajasthan University respectively. A. Ahmed developed a model syllabus suggesting the basic concepts and skills to be developed. K.C.S. Jain studied the job performance of commerce graduates who studied this curriculum and non-commerce graduates, both groups of whom were working in banks.

The existing curriculum was observed to develop 11 of the expected 34 banking skills. He used this observation to explain the insignificant differences in the observed overall job performance of commerce and non-commerce graduates.

C.B. Shitole (1976) developed, through an experimental study, programmed learning material (PLM) for agricultural subjects in the Marathi medium for secondary schools. PLM consumed less time and proved superior to the traditional approach among both sexes.

Organisational and Administrative Issues

One of the traditional concerns in education is the way school programmes are organized and administered. Problems and issues connected with the provision of work experiences in schools are classified under vocational aspects of education. One of the earliest studies in the area was made by D.S. Khanolkar (1960) who examined the organization of multi-purpose secondary schools. He had concluded that the imperfect adaptation of western models in organizing multi-purpose schools did not suit the social structure of India. A.S.R. Sindhe (1985) investigated problems associated with

the selection, planning and preparation of programmes of socially useful productive work (SUPW). Some of the problems discovered were: motivation of personnel, inadequacy of resources, high costs, absence of guidelines and know how, large class size, difficulties in integrating SUPW with school subjects, negative attitudes to SUPW, considering it as child labour and as affecting schools achievement, community apathy, absence of objective evaluation techniques and absence of weightage in promotion, etc. However, children's natural love for activities and group work, enthusiasm for social service, etc. acted as incentives for organization of programmes of SUPW.

C.K. Patel (1980) critically examined the organization of vocational education in the higher secondary schools of Gujarat state. The absence of clear guidelines, lack of orientation of teachers, the blind rush to the commerce stream, absence of diversification due to inadequacy of grants, were some of the findings of the study.

S.S. Munjal (1972) studied the problem of dropouts from pre-vocational training centres in Haryana. Twenty-five to 37 per cent of the pupils dropped out in the three institutions studied. Parental indifference, improper attitudes to labour, unsuitable curriculum and unattractive trades, poverty and social maladjustment among pupils, the employment of teaching staff on a temporary basis, etc. were found to be the causes of the dropout phenomenon.

B.G. Barki and R.N. Bhatt (1981) surveyed library use in 11 polytechnics and followed it with an action research project to study the impact of a better organization and utilization of library resources on student achievement. In contrast to the prevailing practices, the library method of teaching was found to be more effective than the traditional method.

N.S. Potdar (1986) conducted a critical study of procedures followed for admission of candidates for nursing courses (B.Sc) in 17 colleges of nursing in India. The major finding of the study was that entrance examination marks and qualifying examination marks showed better predictive value than interview marks in regard to performance of students.

V.C. Kudesia (1986) demonstrated through an experimental study that the discussion method is superior to the lecture method in teaching technical English to first year students of polytechnics at Bhopal.

Non-formal education

Only two studies have been reported which can be classified under non-formal vocational education. In an experimental study, K.Karunakaran (1980) attempted to identify the factors that need to be regulated to make effective a programme of non-formal education and training of farmers. Two groups each of trained and untrained farmers in Trivandrum district were chosen as experimental and control groups. A questionnaire was used to collect data. Lack of financial support as well as superstitious beliefs about timing of agricultural practices interfered with education and training programmes. As the level of education of subjects increased, superstitious and customs decreased.

Working in India, C.Thongplece (1985) studied non-formal vocational education programmes in Thailand. Administrators were trained graduates with a certificate in vocationalization. About fifty per cent of the instructors also had such certificates. Learners, most of whom were in the 15 to 35 age group and were women, undertook courses in agriculture, business, home economics and industry. Along with teachers and administrators, they also felt that the courses were relevant to their needs. It appears that everything went on well with vocationalization in Thailand, except that successful non-formal graduates remained unemployed.

Evaluation in Vocational and Technical Education

It is not necessary to stress the value of evaluation studies in education. It is enough to say that, for boosting the efficiency and effectiveness of programmes, to apply mid-course refinements, to get feedbacks from an operating system as a technique of planning human resource development, the place of evaluation studies in vocational and technical education is quite distinct. It is quite popular also, as evidenced by the number of such studies reported. Usually, the scope of such studies and their implications are quite wide and the techniques employed are relatively simple. Sometimes the studies are 'successfully' conducted without any theoretical framework or methodological rigour.

The studies reported in this volume fall into the following groups: 1. Studies regarding regional imbalance in technical education. (There are 12 studies in this group completed by the Swami Ramanand Teerth Research Institute, Aurangabad, within a single but flexible framework of evaluation.) 2. Evaluations of vocationalization at the +2 stage of education in different states/regions of the country (six studies). 3. Evaluation of work-education or vocationalization at the secondary school stage (four studies). 4. Studies in

agricultural education (six). 5. Studies in junior technical and technical education (three). 6. Miscellaneous studies on workers' education, artisan training, craft education, health education, commerce education and typewriting training.

1. Studies on regional imbalances

These studies share a common title element along with a mention of the specific type of education studied. The common element is 'A study of regional imbalances in vocational education and manpower planning in Marathwada'. The types of education covered are: technical education at the diploma and degree level, medical education, agriculture and allied education, veterinary and animal science education, food technology education, teacher education, legal education, commerce education, management education, vocational and craft training, job-oriented and restructured courses at degree level, and vocational courses at the +2 level of education.

By and large, the studies have a common research framework with objectives which are also more or less common to all of them. By and large, they also follow a common methodology. The questionnaire is the main technique and tool of research used. This is either followed by interviews of the same sample or supplemented by interviews of related samples. Depending upon the demands of the study, document analysis is also undertaken of government documents or college records and, in a few cases, of both these types of documents.

D.S. Kulkarni (1985) observes that facilities for technical education in the Marathwada region got on par with such facilities in other parts of the state after the government of Maharashtra sanctioned the opening technical colleges without any aid from the government. However, the new instructions did not fulfil the necessary conditions for ensuring effective teaching in regard to staff and equipment. M.B.Gharpure (1985) observed, on the basis of several indicators, that there were regional imbalances in the provision of facilities for medical education for the Marathwada region as compared to the availability of such facilities in the Vidarbha and Western Maharashtra regions of the state.

N.L. Bhale (1985) concluded that the facilities available for agricultural education in the Marathwada region was indequate as compared to their provision in other regions of Maharashtra.

D.R. Paragaonkar (1985) discovered that the Marathwada region did not enjoy as much animal health cover and care and veterinary and animal husbandry education as other regions of the state did.

M.V. Joglekar and others (1985) concluded that Marathwada was the most backward region in Maharashtra state in terms of food technology education. There was great demand for food technology graduates for positions of production supervisors and quality control officers in factories. Government also required them for extension service work, food inspection, supervision of warehouses and management of community canteens in family welfare programmes.

S.B. Gogate (1985) came out with several observations indicating that everything was wrong with teacher education in the region. Non-availability of good books in Marathi, which was the medium of instruction, lack of adequate cooperation from practising schools, lack of good library and laboratory facilities, poor quality of curricular activities due to lack resources, inadequate staff resulting in on excessive work-load for teachers, absence of library and laboratory assistants, inadequate space, non-availability of competent teachers in certain subjects like music and drawing, costly textbooks etc. were the variety of problems identified by the researcher that affected teacher education in the region. Marathwada lagged behind other regions of the state in regard to availability of trained teachers at the primary school level while it was on par with other regions at the secondary school level.

S. Wakade and P. Deshmukh (1985) observe that legal education was not seriously pursued in the region. It was organized either during morning or evening hours. People who were already employed or persons who had failed to gain admission to certain other professional courses joined the law courses. Hardly a few had the ultimate aim of joining the legal profession or the judiciary. Low attendance was recorded in the law colleges. Library and other facilities were poor. None of the colleges was aided by the government.

L.J. Ahirwadkar and J. Desai (1985) observed that commerce education in the Marathwada region was beset with a number of problems. There were inter-district imbalances in the provision of these facilities within the region. Products of the commerce courses fell short of the expectations of employers. Prospects for employment were quite bleak.

N.G. Bapat (1985) forecast a continuing imbalance in the near future in the supply and demand position of senior managers (those with an M.B.A. degree) in the state, on the basis of the ratio of managers to industrial

workers. Supply falls very much short of the demand. The employment position for managers is bright. Waiting time for employment is very short.

V.K. Dhamankar (1985) found a great demand for vocational and craft training in the Marathwada region after analysing the enrolment trends in Industrial Training Institutes (ITIs). Successful students from the ITIs found the course very useful whether in getting jobs in factories, industries, motor-garages, workshops, airports, etc., or in self-employment. An imbalance was observed between the obsolescent equipment used for training and the modern machinery used in the employment market. Even the courses needed to be modernized.

In the regular degree colleges offering general education, the Marathwada University did some restructuring of courses and introduced certain applied subjects as job-oriented courses along with traditional subjects. Electronics and microbiology are examples of such courses which are offered along with physics, botany or chemistry in the regular science courses leading to a general degree like B.Sc. K.S. Deshpande (1985) discovered that these courses did not create potential for paid or self-employment. Facilities for laboratory and field work were inadequate. Though the attempt at restructuring has been welcomed, much is still left to be desired in its implementation.

S.B. Advant (1985) discovered intra-ragional imbalances in the introduction of vocational courses at the +2 stage in the Marathwada region. There was an imbalance in the choice of courses with the larger number of colleges offering 'secretarial practice' while need was felt for courses in animal and crop sciences, small-scale and ancillary industries, mechanical repairs, etc. Shortage of human resources (trained, skilled and experienced vocational teachers) was one of the major problems faced by institutions offering vocational courses.

2. *Studies in vocationalization of the higher secondary education*

Two evaluation studies under this head have been completed in Tamil Nadu by J.K. Pillai and S.Thangaswamy (1981) and S. Soundarvalli (1984); one study in Karnataka by G. Thimmaiah and others (1981); one inter-state comparative study of Karnataka, Gujarat and Maharashtra by CASE, Baroda (1985); one by H.V. Gokhale in Maharashtra (1984); and one by M.H. Singh and others (1981) in Haryana.

Both the studies in Tamil Nadu highlighted the need for the vocationalization of graduate education for providing upward mobility. In the absence of this, a large number of students rejoined the general education stream after successful completion of the +2 stage of vocational education. However, keeping in view the problems they faced at the +2 stage, the majority of heads of institutions offering vocational courses at the +2 stage in Karnataka did not favour vocationalization of graduated education.

The mismatch between supply and demand for vocational skills, difficulties in getting teachers for vocational courses, inadequacy of facilities, non-availibility of instructional materials and equipment, lack of cooperation from employment agencies, lack of potential of vocational courses to lead to self-employment, were some of the commonly observed problems from these studies across certain parts of the country.

3. *Studies in work-education and vocationalization of secondary education*

One of the unresolved issues in the area of vocational and technical education is the stage at which vocationalization should begin. The age of maturity of children, the vocational needs of society, the quantum of essential general knowledge to be imparted to students, the balance between knowledge and skills in the curriculum, are some of the considerations that figure in a discussion of this issue. Socially useful productive work, work-experience, and work-education have been provided for in normal secondary schools where vocationalization has not been introduced. A few studies have been completed in this area. Some of the findings that are common to these studies completed by V.R. Reddy (1984) in Andhra Pradesh, A. Mishra (1985) in Assam, Vijaivargiya in Rajasthan (1969) and V.Z. Sali (1978) in Maharashtra are as follow: Non-availability of trained, specialist teachers, inadequacy of physical and other infrastructure facilities, problems in the marketing of finished products, lack of integration of programmes with local resources, students' needs, and individual differences. There were still a few schools which had not provided for any type of work-experience programme.

4. *Studies in agricultural education*

India is essentially an agricultural country; 70 per cent of the labour force is in agriculture, 44 per cent of the contribution to the GNP at constant prices is from agri-

culture; still agricultural education is the most neglected aspect of our general and vocational education programmes. There are three methods of agricultural education: agriculture as a medium of education, agriculture as one of the subjects of study in the curriculum, agriculture as a subject integrated with other school subjects. All three methods have been used at certain points of time and in some regions in India. The subject is relatively more popular in rural and tribal education programmes.

In a survey of the status of agricultural education in the secondary schools of the Union territory of Delhi, D.K. Gupta (1979) reported that quite a few rural schools offered agriculture as a subject of study; every alternate teacher was not professionally qualified for the job; facilities for practical work, library and storage were very poor; only half of the successful students finally took to farming. The Education Survey Unit of the NCERT conducted a status survey (1968) of agricultural education in schools. Similar conclusions were arrived at by this survey also. In a status survey of higher secondary schools in West Bengal which offered agriculture as a stream, G. Chatterji (1971) observed that facilities for agricultural education were good. The schools were not using community resources.

K.A. Jalihal (1970) examined the role of agricultural universities in India through a survey of opinions of agricultural educationists, scientists, administrators, teachers and students. The general opinion was the agricultural universities should substitute and not just supplement the agricultural extension work of the State Department of Agriculture. M.P. Gupta (1973) conducted a study of systems of agricultural education. Trimester and semester systems at Udaipur were compared with the traditional system at Amritsar. The former two appeared to be more effective and favoured by students. However, the percentage of passes was more under the traditional system.

V.K. Makhija (1976) evaluated the adequacy of training of agricultural graduates of the Haryana Agricultural University in the light of practical requirements. Most of the students, studied irrespective of their background, were moderately confident about the value of their training.

5. Survey of junior technical and technical schools

Junior technical schools have been the subject of surveys by the Planning Commission (1964) and the Educational Survey Unit of the NCERT (1967). They had increased from 43 institutions spread over only seven Indian states in 1964 to 105 in 1967. While 72 per cent of the schools in 1964 functioned independently of polytechnics, their percentage was 65 in 1967. The others were attached to polytechnics which enjoyed better facilities. While the Planning Commission observed that mostly average and below-average performance students were attracted to these schools, the NCERT study observed that they came mostly from low and middle income groups. Both the studies observed that successful students hardly went in for general higher education. Those who wanted to continue their education preferred to go to polytechnics.

The Educational Survey Unit of the NCERT (1968) conducted a status survey of the technical stream (engineering) of high/higher secondary and multipurpose schools (433 out of 444 in the country were covered). Variety was observed in the organization and curriculum of technical coureses across the country. Hardly five per cent of the total collections in school libraries were textbooks on technical subjects.

6. Miscellaneous studies

A. Mahar (1978) completed a critical study of workers' education schemes in India with special reference to such education for the 1810 employees of the Government of India Press. The schemes have been well-received as being non-political and pro-productive. But schemes in general are mostly offered by governmental agencies.

K. Puttaswamaiah, and B.C. Srikantiah (1974) evaluated the artisan training institutes of Karnataka. Defective programmes, inadequacy of facilities, low levels of demand, non-availability of teachers, were the problems discovered in the case study of some of these institutions.

L. Singha (1967) conducted a survey of craft-education in higher secondary schools and teachers' colleges of West Bengal. Craft was being taught in most of the 400 surveyed schools from class VI to IX. Absence of properly trained teachers, low salary, overcrowded classes, inadequate facilities led the investigator to observe that craft education in West Bengal was far from satisfactory.

B.N. Sinha (1970) conducted a survey of the provisions for environmental sanitation, health promotion and health education as well as health of students in secondary schools of Bihar. Only five per cent of the surveyed 222 schools (15.4 per cent of the total number of

schools) had teachers trained in physical and health education. Facilities for health education were very poor. A small percentage of students smoked cigarettes and chewed betel-leaves. Dysentry was more common among urban than rural children and hawkers of foodstuff were seen more near urban schools. One out of every two urban and every alternate rural student did not wear footwear.

S.D. Bahuguna (1973) conducted an evaluation of commerce eduction at the higher secondary level in Rajasthan. He concluded that it was not organized on a scientific basis. The syllabus was not related to the needs of the employment market.

P. Raizada (1972) studied the patterns and problems of typewriting education in secondary schools of Madhya Pradesh. It was considered to be far from satisfactory. Time-allotment was inadequate and teachers did not have any practical experience.

Concluding observations

Research in vocational and technical education in India suffers from three types of shortcomings. Considering the nature and variety of unresolved issues and problems in the field (which have been discussed in the opening pages of this trend report), and keeping in view the significance of this area of education for national development, it is obvious that the volume of research carried out in the country in this area is *grossly inadequate*. Whatever research there has been in this area has been quite slow and unsteady. It picked up momentum only after 1977 when a decision was taken at the national level to introduce vocationalization at the higher secondary stage.

The second type of shortcoming observed in this area is the observed *imbalance* in coverage of areas. Most of the studies, nearly two-thirds, fall under educational psychology or evaluation. Not a single study has been reported which is philosophical, analytical, critical in nature. Sociology of vocational education, comparative studies, the historical roots of contemporary problems, the economics of the field, issues in manpower planning, management aspects, curriculum-analysis, organizational and administrative issues, have received little attention. In fact, a question of considerable interest has been: Who should study the curriculum of vocational and technical education?— a subject expert who may be an engineer, a skilled technician or a skilled craftsman or an education-expert? Methodological aspects and value-analysis related with curriculum research may be ignored by a subject-expert; an educational specialist may not be competent to examine substantive issues. Another type of imbalance observed is regarding the concentration of research interest in only a few regions of the country though the nature of the subject also demands nation-wide, and sub-regional examination of issues and problems.

The third and significant shortcoming of the studies in the area is that almost all of them lack theoretical perspective. We need a theoretical framework for the development of human resources. Much as we read about theories of vocational or occupational choice and vocational development from educational thinkers of the West and the East, we are yet to come across similar theoretical development and foundations for vocational education in our country. Similarly, theories of the labour market, of financing vocational and technical education in relation to social rates of return, of manpower planning have not been the basis for any research studies in vocational or technical education in the country. To illustrate, is Foster's 'Vocational School Fallacy' true for Indian conditions? Will a diversified secondary or higher secondary school curriculum be more profitable than a general curriculum? In this sense, the quality of completed research in vocational and technical education needs to be stepped up significantly. There is also a need to develop indigenous techniques and tools for measuring a variety of variables in this area of education. It would be desirable to provide the institutes and departments of education with interdisciplinary research teams which will work on manpower analysis, social rates of return for specific vocational programmes, financing, psychological aspects, role analysis, cost-effectiveness of programmes, non-formal approaches, curriculum analysis, etc. in the area of vocational and technical education. They should conduct research studies as well as collect data on a continuing basis about the dynamics of the labour market and the educational and training systems and feed it back to policy-makers, planners, employers, consumers of education and educational institutions.

ABSTRACTS: 1482-1505

1482. ADVANT, S.B., *An Evaluation of Vocational Courses Introduced at the +2 Level in Marathwada—A Case Study.* Report Prepared for the Project, 'A Study of Regional Imbalance in Vocational Education and Man-Power Planning in Marathwada', Swami Ramanand Teertha Reserch Institute, Aurangabad, 1985

The major objectives of the enquiry were (i) to study whether adequate facilities were available for vocational education at the +2 stage in Marathwada, (ii) to study the administrative, financial and academic difficulties faced by institutions in conducting vocational education at the +2 level, (iii) to record reactions of students, teachers and parents undergoing vocational education, (iv) to study whether the vocational courses introduced at +2 stage were relevant to the needs of the locality, and (v) to study the needs of the Marathwada region in relation to vocational education at the +2 level up to 1995.

Out of the 75 arts, science and commerce colleges in Marathwada, vocational subjects were introduced in 38 colleges. All these colleges formed the sample. Questionnaire and interviews of teachers and heads of institutions were the tools of investigation.

The conclusions drawn from the information collected through visits, questionnaires and interviews were: 1. The maximum number of institutions which introduced vocational education were in Aurangabad district. Latur and Nanded were second and third in order. The number of such institutions was lowest in Jalna and Osmanabad. Similarly there were not many such institutions in Parbhani and Beed districts. 2. Though Marathwada was basically agricultural, only five schools had introduced animal science while only three had introduced crop science. Marathwada was developing very fast in industry. Still only seven institutions had introduced courses in small-scale industries and ancilliary industries. Only three institutions had introduced banking. Though two-wheelers were widely used for communication, only four institutions had introduced scooter repairs. A comparatively a large number of colleges, (eight) had introduced secretarial practice. Nine colleges had introduced salesmanship. Four had introduced electronics while only one women's college had introduced home science. 3. Teacher teaching vocational subjects needed orientation. The government did some orientation in collaboration with the NCERT during the first years. However, neither long-term nor short-term training was subsequently given. Out of 43 teachers, only 16 and out of 41 assistants only 10 had attended orientation courses. 4. By and large, colleges reported that there was no dearth of teachers. However, during 1978-79, when the whole scheme was introduced, enough teachers were not available. In subsequent years the Maharashtra government prescribed minimum qualifications and experience for teachers and assistants following which junior colleges could appoint such personnel. The government also prescribed the number of teachers and assistants to be appointed. However, there was some difficulty about confirmation of this staff. In the case of assistants there was a special difficulty. It was prescribed that they should not be confirmed unless they were trained in the Training Institute at Bhopal. But the Bhopal institute did not admit these assistants for training.

1483. AHIRWADKAR, L.J., and JEEVAN DESAI, *Commerce Education at the Diploma Level and Certificate Courses in Marathwada*—A Case Study for the Project, 'A Study of Regional Imbalance in Vocational Education and Man-Power Planning in Marathwada', Swami Ramanand Teerth Research Institute, Aurangabad, 1985

The objectives of the enquiry were (i) to study the facilities available at diploma level and certificate courses in commerce education in Marathwada, (ii) to study whether the content of these courses was in conformity with the needs of the Marathwada region, (iii) to study the academic, administrative and financial difficulties faced by institutions conducting diploma and certificate courses in commerce, and (v) to study the regional imbalances in commerce education at diploma and certificate levels in Maharashtra.

A questionnaire, sent to all institutions conducting diploma and certificate level commerce education courses in Marathwada, was the main tools of investigation. Interviews with government and non-government employers were also undertaken. Wherever necessary, information from government and college records was used.

The major findings and observations were: 1. Three types of certificate courses were conducted in Marathwada. They were (a) Government Commercial Certificate (GCC) (b) University Level Certificate

Course, and (c) courses conducted by the Institute of Management, Training and Research, Aurangabad. 2. The number of approved training institutes conducting the GCC course was 130; however only 118 were actually functioning. Aurangabad and Nanded districts had the maximum number of institutes out of these. Other districts lagged behind. Almost all the institutes were established after independence. During 1984-85, 5809 students had enrolled for English typing, 2187 for Marathi typing, 318 for Hindi typing, while the number for stenography was 772, 130 and 50 for these subjects respectively. Around 50 per cent of the students got through in typing while 35 per cent got through in stenography. 3. Employers made the following complaints: (i) There was a vast difference between the speed shown in the government certificates and the actual speed at which the candidates worked, (ii) many had speed but on accuracy, (iii) bad and incorrect English, (iv) no knowledge of office practices, and as such the ability of such candidates got reduced. 4. The problems of proprietors conducting these institutes were paucity of space, shortage of funds due to lack of government grants, non-availability of skilled supervisors, apathetic governmental attitude, and students' weak English. 5. In 1978-79 Marathwada University introduced part-time courses in entpreneurship, salesmanship, store-keeping, insurance, etc., each of six months duration. H.S.C. (class XII) was the minimum qualification for admission. A few colleges tried to introduce these courses. Their attempts failed due to reasons like: the courses were purely theoretical, some were already covered in class XII, good teachers were not available, the fees prescribed by the university were not sufficient to meet the expenditure on the course, and the university did not make any effort to motivate colleges to take up these courses. 6. Since 1980-81, the Institute of Management, Training and Research, Aurangabad, introduced certificate courses in time-keeping, store-keeping, computer programming and central excise procedures. These courses are in greater demand. The institute adjusted its courses to the needs of industries. As a result, the industries around deputed their personnel to these courses. 7. One year GCD course of the state government and the two-year ICWA course of the central government were also available in Marathwada. However, these were conducted at Aurangabad only. Both these were part-time courses. The results of the state-level examination were generally around 25 per cent while those of the ICWA were around 20 per cent in Marathwada, these percentages were much lower. 8. Regarding availability of jobs, candidates having the GCD were not preferred by industrialists. Those having the ICWA certificate did get jobs. The syllabus of the ICWA examination was frequently revised. The GCD syllabus was absolutely outdated. Regarding placement of persons having certificate and diplomas in commerce in private and public sectors, the percentages of total placements to total registrations in 1977-78 1978-79, 1979-80 and 1980-81 were 5.26, 4.97, 4.60 and 4.95 respectively.

1484. BAPAT, N.G., *Management Education in Marathwada—A Case Study*. Report Prepared for the Project, 'A Study of Regional Imbalance in Vocational Education and Man-power Planning in Marathwada', Swami Ramanand Teerth Research Institute, Aurangabad, 1985

The objectives of the investigation were (i) to study the facilities available in management education in Marathwada, (ii) to study whether the content of management education was in conformity with the needs of the Marathwada region, (iii) to study the academic, administrative and financial difficulties faced by management institutes in Marathwada, and (iv) to study the regional imbalance in management education in Maharashtra.

Questionnaires to students who had already passed the management course as also to their employers and interviews of teachers, old students and employers were the main tools of investigation. Forty students drawn on a random basis, 20 employers and some teachers of the management course formed the sample.

Some of the findings were: 1. In 1985, Aurangabad had 15,000 industrial workers; this number would cross 25,000 within ten years. Thus Aurangabad alone would require 1000 managers. The rest of Marathwada would similarly require a large number of managers. In 1985, the MBA course was conducted at only two centres, viz., Aurangabad and Nanded, with an admission capacity of about 35 each. As such, to meet the future needs of Marathwada, the region would require one more centre conducting an MBA course with a capacity of 30-35 students. 2. The content of the MBA course conducted in Marathwada was comparable with that of courses conducted in other universities in Maharashtra. However, there was paucity of staff. 3. Admissions to the MBA course were regulated by an initial test followed by group discussion and personal interview. A test which could be administered to students of all the faculties

had been developed. However, the test had been criticized for one reason or another. Admissions were also given facultywise to avoid injustice to arts, science and commerce students as, initially, engineering graduates used to top the list. 4. The course consisted of a foundation course, specialized courses in management, field work and practical training for a period of six weeks. The total duration of the course was five semesters or two and half years. 5. Almost all MBAs got employment. About 62.5 per cent were employed in Marathwada, 15 per cent in other parts of Maharashtra, 15 per cent in metropolitan cities of India and 7.5 per cent in the rest of India. No one had been employed abroad. Their average monthly income in 1984-85 was Rs 1646. About 62.5 per cent got jobs within 30 days of declaration of examination results, 20 per cent had to wait for six months, while 2.5 per cent had to wait up to twelve months. The rest were already employed or were self-employed. 6. Students opined that entrance to the MBA course should be exclusively on the basis of the admission test. There should be more emphasis on case-study discussions. Similarly, practical training and project work should be given better weightage in evaluation. Communication skills and human relations should be taught in management training. 7. Students opined that the MBA degree had increased their employability, status and effectiveness. There should be more opportunities during the MBA course to work in groups and with groups. The MBA course was good for prospective managers. However, it was not effective for a person wanting to become an entrepreneur.

1485. BAROOAH, T.N., *Development of Polytechnic Education in Assam and its Impact on Socio-Economic Growth*, Ph.D. Edu., Gau. U., 1986

The major objectives of the study were (i) to examine the development of technician education in Assam before and after independence, (ii) to identify the causes of the comparatively slow growth of polytechnic education in Assam, (iii) to review the selection procedure for admission of students, their perception of joining the courses and the employment opportunities of pass-outs, (iv) to ascertain the level of job satisfaction of polytechnic teachers, (v) to assess the administrative behaviour of the departmental and institutional heads, and (vi) to evaluate the impact of polytechnic education in the society in general and its impact on socio-economic growth of the pass-outs in particular. The hypotheses were: (1) Development and expansion of polytechnic education in Assam is not need-based but depended on the convenience of the department. (2) The courses and curriculum are outdated, static and not moulded to the changing circumstances. (3) Job-satisfaction of the teachers in general is absent and there is a negative correlation between the different groups of teachers in respect of their job satisfaction. (4) Administrative incompetence, lack of foresight and absence of a positive attitude of the department are the contributing factors towards stagnation or, rahter, retardation in the development of polytechnic education in Assam.

Six, out of seven, polytechnics in Assam were covered. The Teacher's Job-satisfaction Inventory, questionnaires for principals, pass-outs, employers, and students undergoing studies, etc. and the Socio-Economic Status Scale for parents and pass-outs were used. The reliability and validity of the various tools were tested. Data were collected from various sources. Personal contacts, unstructured interviews, discussions, and observations were also used. The study covered the period from 1948 to 1978.

Some of the major conclusions were: 1. There was some development of polytechnic education, quantitative and qualitative expansion, but the performance dimension of the system was not up to the mark. 2. Polytechnics in Assam were not successful in the context of their social relevance; neither could they create an impact on the urban population, nor was their impact on socio-economic growth perceptible. 3. The working of the polytechnic system failed to tell a success story. But with all the blemishes like defective selection procedure, unsatisfed teachers, outmoded syllabus, students with rural background, poor administration, inept handling of examinations, the polytechnics were successful in providing a steady flow of middle-level technical manpower to the state's industries. 4. The rate of growth of polytechnics was far below the demand of the region. 5. There was no correlation between industry and polytechnics, resulting in a huge wastage. 6. Not much attention was given to student welfare activities. 7. Proper utilization of physical facilities, which were adequate in most polytechnics, was grossly inadequate. 8. Barring a short spell, the employment position of pass-outs was quite encouraging. 9. Most students' parental SES was low. There was no appreciable growth in SES of the emplyed pass-outs, compared to their parents at the time they came for study.

1486. BHALE, N.L., *Agriculture and Allied Education in Marathwada—A Study of Regional Imbalance in Vocational Education and Man-Power Planning in Marathwada—A Case Study,* Swami Ramanand Teerth Research Institute, Aurangabad, 1985

The major objectives of the study were (i) to study the facilities available in institutes imparting agricultural education in Marathwada, (ii) to study whether the content of agricultural education was in conformity with the needs of the Marathwada region, (iii) to study the academic, administrative and financial difficulties of institutions imparting agricultural education, (iv) to study the regional imbalance in agricultural education in Maharashtra, and (v) to make recommendations to improve agricultural education in Marathwada.

The Agriculture College, Parbhani, its staff, present students and past students formed the sample. Questionnaires and interviews were the tools of research.

The major findings were: 1. Marathwada is predominantly agricultural as compared to other regions of the state. The future prosperity of this region depended on agricultural development of the region. 2. The cropped area of the region in 76.9 per cent of the total as compared to 60.65 per cent for all Maharashtra. 3. Cereals, pulses, cotton, oil seeds, rice, wheat, jowar, bajra, gram and tur are the main crops of the region. Due to availability of irrigation facilities, sugarcane is also grown in the area. 4. The region has only one agricultural college, at Parbhani, having an admission capacity of 210. It conducts courses in B Sc. (Agriculture) and also provides instructions for M.Sc. and Ph.D. in agriculture. As compared to other regions of Maharashtra, Marathwada was poorly provided with this facility which was inadequate for its needs. 5. A majority of students believed it was necessary to change the existing system of agricultural education and that it should be based on the needs of farmers in Marathwada and also on its specific soil and climatic conditions. 6. Teachers felt that the prevailing course content fulfilled the purpose for which it was designed. 7. Cultivators felt that agricultural graduates were not adequately equipped with a capacity to solve the felt problem. Students lacked practical knowledege. 8. Agricultural education was not based on the needs of the cultivators.

1487. CASE, *A Study of Vocationalisation of Education at the Higher Secondary Stage,* MSU, 1985 (Planning Commission financed)

The study aimed at (i) exploring the facts about organization and functioning of vocationalization of education at the higher secondary stage in Maharashtra, Karnataka and Gujarat, with special reference to institutional facilities, background of students' aspirations, teachers' background, principals' background, admission procedures, nature of courses, academic and job perspectives, syllabi and textbooks, teachers' training background, methods of teaching, practical experiences, evaluation system, and finance, and (ii) to study the reaction of students, teachers and principals towards the functioning of vocationalization of education.

The sample of 140 higher secondary schools was chosen from Maharashtra, Karnataka and Gujarat States. The sample also consisted of 133 principals' 392 teachers and 3405 students of vocational streams of the sample institutions. The instruments used for the study were a general information sheet, principals' questionnaire, teachers' questionnaire and students' questionnaire. The tools were used by the field investigators for data collection. Data were analysed in percentage form and interpreted qualitatively.

The study revealed: 1. Karnataka had offered 31 trades, Maharashtra 24 trades, and Gujarat 21 trades. The common trades were agriculture and farm management, automobile servicing, and electricals. 2. The institutions were mostly situated in urban localities. 3. Being a part of formal institutions like higher secondary schools and colleges, the vocationalization stream did not get adequate facilities. 4. Most of the students were male. In Karnataka and Gujarat, most of them belonged to backward communities. The students of Maharashtra and Gujarat were from high and middle-class families, whereas in Karnataka most of them belonged to poor families. 5. Most of the principals had no technical education, hence they could not pay proper attention to the functioning of the system. 6. Most of the teachers had technical education qualifications. However, because of lack of job security and low salary, highly qualified and experienced teachers could not be attracted. 7. Admission was on a merit basis. No rush for admission was noted. 8. Except in a few cases, the courses did not match the local needs of employment as perceived by the principals and teachers. 9. In spite of the declaration of flexible entry points, Karnataka did not give recognition to the products of vocational streams for enrolment in professional courses. 10. The syllabi were very lengthy and could not be completed in time. 11. Practical experience could not be provided to the students appropriately because of lack of funds, lack of transportation and lack of cooperation from teachers.

1488. DESHAMUKHYA, M.L., *Vocationalization of Secondary Curriculum in Assam,* Ph.D. Edu., Gau. U., 1984

The major objectives of the study were (i) to devise means to give the student such education and training as would make it possible for him to play the role of a useful citizen, (ii) to work out methods to provide comprehensive scope in vocational and technological studies which would ultimately fit the candidate to various professions, and (iii) to study the problem of educated unemployment in Assam in particular and the needs of the society. While developing curriculum in secondary level (with reference to Assam in particular and the N.E. region in general), the study would go through the existing curriculum at the primary and middle stages and suggest necessary changes required to match the newly organized secondary pattern.

Documentary analysis was undertaken and the related literature was consulted. Unstructured interviews and informal discussions with officers of the departments of education, educational administrators and policy makers of various states and union territories in general and Assam in particular were carried out. A questionnaire was used mainly to determine the attitude of parents, administrators, social workers, teachers, etc. towards vocationalization of secondary curriculum in Assam. Personal visits of factories, farms, industries, etc. of different states was made to study the level of educational qualifications of teachers required to run them.

The major conclusions of the study were: 1. The declared national pattern (10+2+3) should be accepted with minor modifications, taking into consideration the peculiar problems of the region or locality. 2. The design or types of vocational streams in particular cannot be the same everywhere. On the other hand, in view of the objectives of the secondary curriculum, vocational streams should be developed on the basis of the raw materials available in the locality and their future potentialities leading to some vocations. 3. The secondary curriculum should prepare the pupils to become individually competent. After middle-school level, 80 per cent of the stress should be on vocational/technical education depending on the aptitude of the pupils of the state/country. However, this may create accommodation and financial problems for the school authority/government. This should be reduced step by step by providing theoretical coaching in the school compound and practical work in local farms, factories, industries, workshops, etc., depending on local resources and aptitudes of the pupils at the initial stage. Subsequently, schools may be developed by setting up laboratories, workshops, etc. 4. Phase-wise teachers if not found locally, may be recruited from outside the state/region and provided with necessary orientation to suit the new curriculum.

1489. DESHPANDE, K.S., *Job-oriented and Reconstructed Courses at the Degree Level in Marathwada University—A Case Study,* Report prepared for the Project, 'A Study of Regional Imbalance in Vocational Education and Man-Power Planning in Marathwada', Swami Ramanand Teerth Research Institute, Aurangabad, 1985

Some of the objectives of the study were (i) to study availability of teaching and laboratory facilities, (ii) to find out the nature of field experience, (iii) to inquire into the relevance of the courses to the needs of the region and the locality, and (iv) to survey the reactions of all (students, teachers, parents, etc.) towards these courses and to suggest measure for more meaningful and effective implementation of these courses.

Some of the important findings were: 1. There was a feeling among all concerned that the courses had been introduced without adequate preparation. 2. No orientation was given to teachers teaching these courses, with the result that the effectiveness of the teaching was lost when courses entered the third (advance level) year. 3. Training in applied courses was different and, in many cases, superior to teaching of traditional subjects. 4. Lack of equipment and inadequate expertise did not allow teachers to do full justice to applied courses. 5. Students who passed the B.Sc. with applied subjects could neither get jobs nor become self-employed. They had no choice but to join post graduate courses in traditional subjects. 6. The motivation of students selecting applied courses was to secure jobs. 7. Students expected better in-plant training in certain subjects. 8. Microbiology students did not find the course interesting. 9. In most of the subjects the content of the course was considered sufficient for employment. 10. The combination of subjects was not meaningful. 11. Almost everywhere, students complained about lack of adequate facilities like laboratory and field work. 12. Students opined that applied courses should not be discontinued, but should be remodelled and made relevant to the situ-

ation around, and better teaching facilities should be provided.

1490. DHAMANKAR, V.K., *Vocational and Craft Training in Marathwada—A Case study.* Report prepared for the Project, 'A Study of Regional Imbalance in Vocational Education and Man-Power Planning in Marathwada', Swami Ramanand Teerth Research Institute, Aurangabad, 1985

The objectives of the study were (i) to survey existing facilities and related infrastructure available in ITIs, (ii) to identify training needs and trades/areas in which training was needed, (iii) to suggest the nature of new courses to be started, (iv) to identify growth centres where such training could be developed, and (v) to identify institutions where training facilities needed to be reinforced.

Questionnaires to elicit information from heads, faculty, trainees, employees, etc., were the main tools. Semi-government officials and industrialists were interviewed.

Some of the major findings were: 1. During the year 1982-83, 2524 seats were available in ITIs for which 52127 applications were received. The number of students admitted during that year was 2552 and the number of stipend holders was 1768. 2. Twenty-six out of 64 (40 per cent) of the trainees responded that qualifying for employment was their reason for seeking admission to ITIs, 22 sought admission for self-employment, three for the sake of gaining knowledge, 12 were not sure of their aim, while one wanted to improve his own agriculture. 3. The main employment markets according to the trainees were factories, industries, motor garages, workshops, ITIs, air-ports, etc. 4. Thirty-seven out of 64 responded that the training they received was enough for self-employment. 5. The trainees reported that the equipment in the ITIs was old. ITIs should accept job-work from outside in some trades (turning, fitting, welding). Training should be given in all allied fields. Training should be in keeping with the requirements of the industry. 6. Ten out of 27 ex-students reported that they found the courses very useful in securing jobs, five reported that the courses were useful for self-employment though other problems like finance were there; seven found the training very useful for all time to come. 7. Sixteen out of 27 reported that the training was adequate; four, however, categorically said that it was inadequate; two felt that the training was inadequate as far as some organizations like State Transport were concerned. 8. Persons trained in ITIs faced serious difficulties in handling modern machinery and equipment in industries as they were trained on old equipment. Some felt that, during ITI training, trainees be attached to factories at least for one day a week. 9. Though technical skills given in the ITIs were enough for self-employment, such an endeavour required additional human skills which were not provided in ITIs. 10. The shortcomings mentioned by the trainees were dearth of experienced instructors, inadequate practical work, outmoded syllabus and shortage of modern equipment. 11. Respondents felt that, in view of the industrial growth in the region, new trades, viz., sugar technology, electronics, dairying, electric welding, motor and transformer winding, fabrication, casting and moulding, and spinning and weaving should be introduced. 12. Thirty-three teachers out of 35 felt that ITI courses had to be modernized urgently. Similarly, training in allied fields should be included in each course and that the component of practical work be improved. 13. According to teachers, the minimum level of education for entrance to ITIs should be SSC. 14. Industrialists suggested that training at ITIs should be improved, the minimum qualification for admission should be SSC, admissions should be on merit, and there should be more ITIs in the region.

1491. GHARPURE, M.B., *Medical Education in Marathwada—A Study of Regional Imbalance in Vocational Education and Man Power Planning in Marathwada—A Case Study,* Swami Ramanand Teerth Research Institute, Aurangabad, 1985

The major objective of the study were (i) to study the facilities available in medical colleges in Marathwada, (ii) to study whether the content of medical education was in conformity with the needs of the Marathwada region, (iii) to study the academic, administrative and financial difficulties faced by medical colleges in Marathwada, and (iv) to study the regional imbalance in medical education in Maharashtra.

Questionnaires, visits to institutions, interviews of deans and teachers were the main tools of investigation. Wherever necessary, information from government and college records was used.

Some of the findings were: 1. In 1985, there were two

medical colleges in Marathwada, one at Aurangabad and the other at Ambajogai, as against three in Vidarbha and six in Western Maharashtra. Thus there was one medical college seat for 65,000 population in Marathwada as against 55,000 in Vidarbha and 40,000 in Western Maharashtra. 2. Taking into consideration the number of students who passed their MBBS in one particular year (October '81 and April '82 examinations) the ratio of doctors turned out in 1981-1982 was one per 55,000 population in Marathwada while this ratio was one per 33,000 for Western Maharashtra. 3. Aurangabad College admitted 100 students every year while Ambajogai College admitted 100 students every year while Ambajogai collage admitted 50. These two colleges together had 1430 hospital beds which was much more than the norm (700 for Aurangabad and 350 for Ambajogai) laid down by the Medical Council of India. 4. Medical colleges in Marathwada had full-time staff as against full-time and part-time honorary staff in Pune and Bombay. Marathwada colleges were deficient in the teaching staff prescribed by the Medical Council of India. The college at Ambajogai was always understaffed. 5. The internship training programme in Marathwada was not successful. 6. The quality of students at Aurangabad was better than that at Ambajogai. Students of Marathwada University were comparable with those of Nagpur and Shivaji universities but not with those of Poona and Bombay. At postgraduate level, students of Aurangabad were comparable with students of any other university. That was not the case with students from Ambajogai. 7. Out of those who passed out from the medical college at Aurangabad, five to ten per cent went abroad and about two per cent went outside the state. Out of the remaining, 75 per cent were in Marathwada while 25 per cent were outside the region. Of those who were in the region, 80 per cent were engaged in service while only 20 per cent did private practice. 8. In many respects, the Marathwada colleges compared very well with colleges in other regions of the state. Actually, in some respects, they were ahead of other colleges (e.g., availability of M.D./M.S. and M.Sc. courses in non-clinical subjects). 9. On the basis of population, Marathwada had less seats in medical colleges as compared to other regions. Marathwada needed more seats. 10. One area which required immediate attention was the need to have independent departments for all minor disciplines. Postgraduate courses in those disciplines were needed.

***1492.** GOGATE S.B., *A Study of Vocationalisation of Education at Higher Secondary Stage in Andhra Pradesh, Tamil Nadu and West Bengal*, IIE, Pune, 1987 (Planning Commission financed)

The objectives were (i) to study the criteria of selection of vocational courses and to study the selection of institutions where these courses were located, (ii) to study the relevance of vocational courses to the needs and aspirations of the people in these states as also the relevance of these courses in terms of their content, linkage with other academic courses, methods of training and evaluation, (iii) to study the types of students who opted for vocational courses in terms of their socio-economic status, academic achievement and attitudes towards vocational courses, (iv) to study the adequacy of physical and other facilities available in institutions in which vocational courses were located, (v) to identify academic, administrative and financial difficulties faced by teachers and institutions in conducting vocational courses, (vi) to study the absorption of vocationally trained students either in employment or in self-employment and to study the difficulties experienced by students in this regard, (vii) to study the manpower requirement of the states in various vocationas during the next ten years and the relevance of vocational courses at +2 level to this requirement, and (vii) to make recommendations for the improvement of vocational education at +2 level in the states under study.

During the year 1984-85 in Andhra Pradesh, there were 124 schools imparting vocational education at +2 level. Out of these, information from 68 schools (54.84) per cent was collected. Twenty-two of these were located in urban areas while 46 were from rural areas. Information was supplied by 26 heads of institutions in interviews, 87 teachers of vocational subjects through questionnaires, 272 students through questionnaires and by 80 past students who were interviewed by the researcher. In Tamil Nadu out of the 969 schools imparting vocational education at +2 level, 208 schools (21.47 per cent)—65 urban and 143 rural—were contacted either by post or through visits. Similar information was collected from 57 heads of institutions, 211 teachers of vocational subjects, 605 present students and 158 past students. In West Bengal, the number of schools offering vocational education at +2 level was 57. However, five of them reported that they had not been teaching vocational subjects

during the year 1984-85. Out of 52 schools imparting vocational education at +2 level, 45 institutions sent their information. Similar information was collected from heads of 24 institutions, 89 teachers of vocational subjects, 317 present students and 52 past students. Questionnaires and interview schedules were used as tools of study. These included a questionnaire for institutions, interview schedule for heads of institutions, questionnaires for teachers, questionnaires for students studying vocational subjects and interview schedule for past students. In addition, state government reports and statistics in relation to education at +2 level in general and vocational education in particular, as also reports published by NCERT were the important sources of data.

Some of important findings were:

Andhra Pradesh

1. Andhra Pradesh and Karnataka were the only two states in the country where +2 classes were either attached to schools or to colleges or were allowed to develop as independent junior colleges. 2. Vocational education at the +2 stage existed only in +2 classes attached to government schools. Almost all schools which had a multi-purpose stream prior to 1970 were converted into vocational higher secondary schools to avoid wastage of infrastructure which already existed. Private managements wanted to introduce vocational courses but were not able to do so in the absence of financial help from the state government. 3. Most schools teaching agricultural and technical subjects had collaborative arrangements with some other government institutions for the conduct of vocational education. But these collaborating institutions often looked down upon vocationalization at the +2 stage. This arrangement did not work satisfactorily. The collaborating institutions were far away from the higher secondary schools and, when students went there, they were almost lost to their parent institutions. Contact with students became difficult. This prepetual dependence on collaborating institutions was not considered healthy. Coordination between these institutions was often difficult. In one case it so happened that those who framed the timetable in these institutions had done it in such a way that students who offered vocational subjects had to miss teaching of core subjects. State government had accepted this arrangement to avoid extra expenditure on laboratories, workshops, and agricultural farms. 4. Vocational education had been introduced in all the five areas, namely, agriculture, engineering, health, commerce and home science. However, vocationalization had been introduced in only 108 institutions out of 752 imparting education at +2 level. 5. Most of the institutions imparting vocational education being governmental, they had no financial difficulties. In practice, the heads were unable to spend these funds owing to various reasons. 6. There existed a few institutions which taught vocational education on a no-grant basis. Unless the managements of these institutions raised sufficient funds, vocational education in them suffered. 7. The pharmacy course taught at the +2 level in the state had a special problem as the course was not approved by the Pharmacy Council of India (PCI). However, the state government had approved it. 8. In Andhra Pradesh, English was the only medium allowed for vocational subjects. Students found this medium very difficult. 9. Staff engaged in teaching vocational subjects was either inadequate or untrained. In Andhra Pradesh, regular teachers were sent on deputation to vocational stream. These teachers had no heart in vocational education. 10 In the twin cities of Hyderabad-Secunderabad it was very difficult to get admission even to +2 classes in the general stream. Students, therefore, got admission through vocational courses where admission was available and switched to traditional courses after standard XII. Teachers felt that, because of this phenomenon, unwanted elements got admitted to vocational courses. 11. It was very peculiar that in Andhra Pradesh, students did not want to go in for vocational education. Students and parents had lost faith in it as students found it very difficult to get jobs or get admitted to further courses. At some places, teaching of vocational subjects had to be discontinued for want of students. 12. The NCERT reviewed Vocational Education in Andhra Pradesh in 1981. The state government had also appointed a committee to review the position. A need was felt for the state government to take immediate steps to accept the recommendations of these committees and expand vocational education in the state in the right direction. 13. It was praiseworthy on the part of the state government to issue instructions to employers identifying positions which could be filled by students of class XII (Vocational).

Tamil Nadu

14. In Tamil Nadu +2 classes were attached to schools only. Similary, almost all the multipurpose schools which were established as a result of the recommendations of the Mudliar Commission were converted into higher secondary schools imparting vocational educa-

tion. 15. Tamil Nadu was the only state that had introduced vocational education on such a large scale. Vocational courses existed in about 950 schools in all the six vocational areas (agriculture, engineering, commerce, home science, health and miscellaneous) and in as many as 67 subjects. 16. Vocational education was introduced in government as well as in private schools in the state. Private schools had to raise their own funds for non-recurring expenditure and meet recurring expenditure from fees collected from students. These funds were often inadequate and ultimately vocational education sufferred. 17. Most of the teachers had to work as part-time teachers. This was a big problem in the state. For taking twelve periods a week they were paid Rs. 300/- p.m. Some teachers put in double part-time work in the same school and earned Rs. 600/- p.m. only. Teachers were much frustrated about this as they got even less than the class IV employees in the same school. The salary being meagre, there was a quick turnover of teachers. They were often busy searching for jobs elsewhere. This led to the possibility of new entrants being inducted who were not properly trained in the subject nor in the art of teaching. 18. As vocational education was very rapidly introduced in the state on a very large scale at the +2 level, it resulted in oversupply and unemployment of skilled workers on a very large scale. Only 10 per cent of ex-students who were contacted, were employed. Children from poor families and from lower strata of society who joined vocational education with the hope that they would get jobs were very much frustrated. 19. The Tamil Nadu government had taken a very good step in evaluating vocational education at the +2 stage through a committee. 20. Teachers and students demanded that weightage given to vocational subjects be increased.

West Bengal

21. As compared to states like Maharashtra, Karnataka, Andhra Pradesh and, particularly, Tamil Nadu, the West Bengal state government introduced vocational education in only a small number of institutions—45 as compared to 950 in Tamil Nadu. 22. It was reported that the state government did not give any encouragement to the introduction of vocational education at the +2 stage. 23. Though +2 classes were attached both to schools and colleges in the state, the vocational stream was introduced only in classes attached to schools. Infrastructure for vocationalization was available in these schools. 24. West Bengal had introduced vocationalization in three areas only, viz., agriculture, engineering and commerce. They had introduced some courses in paramedical sciences, but these had been discontinued. The state did not have courses in home science at +2 level. 25. The state government did not pay any special grant for vocational education. Institutions had to raise their own money for non-recurring items and had to meet the recurring expenditure from fees received from students. This money was often inadequate and hence vocational education suffered. 26. Some Junior Technical Diploma Institutions had been allowed to conduct XI and XII (Technical) classes. The heads of these institutions were unable to handle the problems of classes XI and XII and there appeared to exist some hidden tension in such institutions. 27. No districtwise manpower-need surveys had been undertaken. Old multipurpose schools and Junior Technical Institutes were allowed to conduct vocational education at +2 level. This resulted in students of class XII remaining unemployed. They did not even get priority in admission to polytechnics. There appeared to be a lot of frustration among students about unemployment. 28. Many teachers of vocational subjects had to teach these subjects as extra work. They were otherwise fully employed in the same institutions or in a nearby institution. The extra salary (or allowance) these teachers received was not commensurate with the extra work they had to put in. 29. As compared to other states in the country, West Bengal had introduced quite a small number of courses in vocational areas. More diversified courses, based on local needs, were needed. 30. In West Bengal, a student offering vocational education at the +2 stage had to take core subjects worth 500 marks and vocational subjects worth 500 marks. In core subjects, 200 marks were allotted to two languages (English and Bengali) and the student had to take three core subjects worth 100 marks each. Students and teachers had expressed the view that, at +2 level, particularly in the case of vocational students, one language should be considered enough and students be required to study the relevant core subjects worth 400 marks only. 31. As in the rest of the country, students and teachers demanded that all their needs must be met from government funds. They needed hostel facilities, industrial visits and tours, at government cost. 32. Paramedical courses, where they were introduced, were extremely popular. However, as these courses were not recognized by the relevant Medical/Pharmacy Council at the all-India level, the courses had been discontinued. 33. Statistics in relation to the number of students at +2 level (general) and +2 level (vocational) clearly showed that only around one

per cent of students at this level could offer vocational subjects.

1493. GOGATE, S.B., *Teacher-education in Marathwada*—A Case Study, prepared for the project, 'A Study of Regional Imbalance in Vocational Education and Man-Power Planning in Marathwada, Swami Ramanand Teerth Research Institute, Aurangabad, 1985

(SEE ABSTRACT 1067)

1494. GOKHALE, H.V., *A Study of Vocationalization at +2 Stage (Commerce Stream)*, G.S. College of Commerce and Economics, Nagpur, (SIE, Maharashtra financed) 1984

The study was conducted with the objectives of (i) appraising the status of vocational education as perceived by the students, and, (ii) identifying problems in instructional aspects of vocationalization of education.

The sample of the study included two colleges of Nagpur city. A questionnaire survey of 40 students of the +2 stage and observation of laboratory practices were used for data collection purposes. The questionnaire and observation guides were prepared by the investigator. Descriptive and qualitative approaches were used for data analysis.

The findings of the study were: 1. The presently run vocational courses were useful as compared to general courses, but failed to prepare a student for any job or self-employment venture. 2. The government was not providing any job or financial assistance to the students passing out with vocational courses. 3. The practical training imparted by visits to different institutions and by arranging guest lectures was not sufficient. 4. Teachers needed to be trained on all practical aspects in their respective subjects. 5. The service conditions of teachers teaching vocational subjects were such that they kept good teachers away from these subjects. 6. The grants provided by government were insufficient for imparting practical training.

***1495.** GOKHALE, H.V., *A Study of Vocationalization of Education at +2 and +3 Stages in Commerce Stream (Maharashtra State)*, G.S. College of Commerce & Economics, Nagpur, 1985

This study was undertaken with a view to evaluating the existing system of vocational education in the commerce stream at the +2 as well as the +3 stage.

For this purpose primary data collection was undertaken in Maharashtra state. The data were collected from students, teachers and employers of Nagpur, Aurangabad, Pune and Thana districts. The sample was chosen from urban and rural areas of the respective districts. In addition to this, experts from the field of education and employers were interviewed on the basis of a proposed scheme of vocationalization.

The major findings were: 1. The students in general were of the opinion that these vocational courses were very useful as compared to general education. Visits and guest lectures were also useful, but there was a need of some changes in the present system. The presently run vocational courses at the +2 stage would not prepare the student for a job or a self-employment venture. Most of them favoured the proposed specialized vocational courses at the +3 stage. They were for the faculty-wise classification of roles and linking of jobs with education. They were of the view that more weightage should be given to the practical aspect of vocations. 2. The teachers in urban and rural areas were of the view that the presently run courses could hardly prepare a student for a job or a self-employment venture. They accepted the usefulness of vocational courses and appreciated the scheme of specialized vocationalization at the +3 stage. 3. Opinions, concerning classifying jobs by employers according to faculty were favourable. The response to the establishment of faculty-wise recruitment boards and linkage of jobs with education through these boards was favourable. 4. Employers had a favourable attitude towards imparting practical training in the educational institution itself in order to get properly trained candidates. They also favoured the view that specialized vocationalization at the +2 and +3 stages in the commerce stream would not only save training costs but would help in saving man-hours. A majority of the employers were in favour of linkage of jobs with education through faculty-wise recruitment boards. 5. Experts were in favour of the proposed changes in the system of vocational courses and specialized vocational courses at the +3 stage. They welcomed the idea of classification of jobs according to faculty and linkage of jobs with education through faculty-wise recruitment boards.

1496. JOGLEKAR, M.V., KULKARNI, D.H., and INGALE, V.M., *Food Technology Education in Marathwada—A Study of Regional Imbalance in Vocational Education and Man-Power Planning in Marathwada—A Case Study*, Swami Ramanand Teerth Research Institute, Aurangabad, 1985

The major objectives of the inquiry were (i) to study the facilities available in food-technology education in Marathwada, (ii) to study whether the content of food-technology education was in conformity with the needs of the Marathwada region, (iii) to study the academic, administrative and financial difficulties of institutions imparting food-technology education, and (iv) to study the regional imbalance in food-technology education in Maharashtra.

The information for this study was collected in relation to educational institutes and food industries separately. Separate questionnaires were used. Besides, interviews of important agencies engaged in the development of agro-food industries were taken. Information was collected from the Regional Industries' officer, Auranganad, as also from district industries' officers.

Some of the findings were: 1. There were seven institutes in Marathwada which imparted food-technology education, the most prominent being the College of Agriculture Technology, Parbhani. The College of Home Science affiliated to the university conducted courses leading to the B.Sc., M.Sc., and Ph.D. in home science. In addition, a few colleges affiliated to Marathwada University conducted courses in home science leading to B.A. and M.A. degrees. 2. Over 100 students had graduated in food technology and 22 students had got a master's degree in the same subject. Similarly, 100 lady students had graduated in home science and 15 students had got a post-graduate degree from the same college. 3. Many academic lines were open for both B. Tech. and M. Tech. candidates who could continue further education and undertake research. Academic jobs were available in agricultural universities as also in government. 4. Food-technology graduates were in great demand for positions like production supervisor, quality control officers, etc., in industry they were also wanted in extension services, for jobs as food inspectors, supervisors in warehouses, etc. 5. The first place for home science graduates was in family welfare programmes. They got jobs as managers in community canteens, company refreshment rooms and other cafeterias. 6. Marathwada was found to be the most backward region in Maharashtra state in terms of food-technology education.

***1497.** MANGAT, D., *Relationship of Vocational Maturity with Intelligence, Socio-economic Status and Academic Achivement*, Ph.D Edu., Pan. U., 1988

The objectives of the study were (i) to ascertain the factors contributing to vocational maturity, (ii) to study the relationship between vocational maturity and measures of intelligence, socio-economic status and academic achievements, (iii) to identify the best set of independent variables predicting vocational maturity.

The sample of the study consisted of 525 students studying in B.A./B.Sc. (final year) in the colleges of Punjab. They were administered the following tools: (i) Raven's Progressive Matrices, (ii) The Sharma Social Class Scale, (iii) The locally developed Vocational Maturity Inventory having eight areas, viz., self-appraisal, occupational information, goal selection, planning, problem-solving, total competence, attitude and total maturity, (iv) the academic achievement scores of students taken from the office record of the colleges concerned. The data so collected were analysed with the help of step-wise multiple regression.

The findings of the study were: 1. Intelligence was significantly related to various areas of vocational maturity, viz., self-appraisal, occuational information, goal selection, planning, total competence and total maturity. 2. Socio-economic status exhibited a significant relationship with all the areas of vocational maturity barring self-appraisal and problem solving. 3. Academic achievement was significantly releted to occupational information, planning, total competence and total maturity. 4. The measure of total competence depended significantly on intelligence, SES and academic achievement. 5. Attitude was not dependent upon independent measures of intelligence, SES and academic achievement. 6. Total vocational maturity depended on intelligence, SES and academic achievement and these three independent variables contributed to total vocational maturity. 7. SES was found to be the best predictor of total vocational maturity.

1498. MOHANTY, G., *A Survey of Vocational Education in the State of Orissa since Independence (1974-1981)*, Ph.D. Edu., Ran. U., 1986

The major objectives of the study were (i) to make a status survey of vocational education in the state from 1947 to 1981, (ii) to list the types of training-cum-activities being conducted under vocational and technical education schemes and programmes, (iii) to know the views of the heads of the vocational institutions regarding the efficacy of such programmes, including the follow-up activities, and (iv) to suggest ways and means for further improvement.

An inventory was developed and sent to 113 vocational and technical schools. An information list was developed. Thirty heads of institutions and a number of officials were interviwed. Percentages were calculated to analyse data.

The major findings were: 1. Very few schools imparted vocational and technical education in 1947. By 1971 the total number rose to 106 and 124 in 1981. 2. More men were attracted towards technical and vocational courses than women. 3. Typewriting, music, dance and drama, and tailoring had attracted women. 4. There was shortage of skilled personnel and an unemployment problem from 1961 to 1981. No follow-up programme was undertaken. There was no feedback between training institutions and fields of work. There was no placement service wing. Courses in various institutions were not need-based. Since the employment prospect was bleak, many dropped out. 5. Students coming out successful were technically unsuitable on jobs for want of adequate practical experience.

1499. MUNJAL, S.S., *Study of the Problems of Dropouts from Prevocational Training Centres in Haryana*, SIE, Haryana, 1972

The objectives of the study were (i) to find out the frequency and causes of dropouts, and (ii) to suggest action programmes for the elimination of this wastage due to dropouts.

All three pre-vocational centres at Government Higher Secondary School (Boys), Nilokheri, Government Higher Secondary School (Boys), Narnaul and Government Girls Higher Secondary School, Gurgaon, were covered under the study. A questionnaire and an information schedule were used for collecting data. Personal interviews were also taken.

The major findings were: 1. Average dropout percentages for Government Higher Secondary School (Boys), Nilokheri, Government Higher Secondary School (Boys) Narnaul, and Government Girls Higher Secondary School, Gurgaon, were 29, 37 and 25 respectively. 2. The causes of the dropouts were indifferent attitude of the parents, unsuitable environment, lack of dignity of labour, irregular attendance, social maladjustment of pupils, poverty, faulty curriculum/syllabi, no utilitarian gain, transfer of parents and non-availability of centres at new places, non-payment of training charges/stipends in due time, staff of P.V.T.C. (mostly on temporary basis), vocation/trade unattractive and low IQ of trainees. 3. The action programmes for eliminating this wastage due to dropouts were suggested as under: (i) Articles manufactured should be sold in the market. (ii) Appointment of permanent staff. (iii) Revision of syllabus in consultation with the concerned heads. (iv) Requisite equipment and books should be supplied. (v) Reorientation of the staff. (vi) Increase in the amount of stipend. (vii) Repair of the buildings. (viii) Provision for the grant of sports and other material for improving physical, mental and hygienic conditions. (ix) Visits to various centres and provision of grant for the same.

1500. PARGAONKAR, D.R., *Veterinary and Animal Science Education in Marathwada—A Study of Regional Imbalance in Vocational Education and Man-Power Planning in Marathwada—A Case Study*, Swami Ramanand Teerth Research Institute, Aurangabad, 1985

The objectives of the study were (i) to study the facilities available in the College of Veterinary Sciences at Parbhani, (ii) to study whether the content of veterinary education was in conformity with the needs of the Marathwada region, (iii) to study the socio-economic status, educational progress and attitude towards veterinary education of students taking that education, (iv) to study the academic, administrative and financial difficulties faced by the institutions, and (v) to study the regional imbalance in veterinary education in Maharashtra.

The Veterinary and Animal Science College, Parbhani, its staff, present students and past students formed they sample. Scanning the available data and statistical studies, questionnaires for government officials, employers, field veterinarians, personal interviews with officials at state and regional levels as also with employers from quasi-government and private sectors were the tools of data collection.

Some of the findings were: 1. Prior to 1948 no veteri-

nary education was available in the region and veterinary activities were limited. 2. The Deoni breed of cattle of the Marathwada region and goats from Osmanabad are known internationally. During the period 1948-56, a cattle breeding farm was established at Udgir to improve the Deoni breed. The stud farm at Hingoli was strengthened. 3. A veterinary college was established at Parbhani on 18 May 1972. This college provided facilities for veterinary education, research and extension. The polyclinic attached to this college was one of the best in the country. The college conducted graduate and post-graduate education leading to the Ph.D. in veterinary science. 4. Since 1980, a one-year veterinary certificate course had been introduced at Parbhani. 5. Researches on protozon diseases, snake bite in animals and poultry viral diseases were completed and found a place in foreign research journals. 6. Veterinary graduates of the Parbhani college were absorbed in the public and private sectors and the break-up was 90:10. 7. The Government of Maharashtra decided that by 1990 there should be one veterinary graduate for every 10,000 cattle units. Thus Marathwada would require 4100 veterinary graduates and 4100 para-veterinarians by A.D. 2000. 8. Veterinary and animal husbandry facilities in Marathwada were inadequate. The ratio of veterinary graduates to cattle units was 1:24,000 at the time of study. 9. The college at Parbhani could turn out 50-60 graduates per year. 10. The product turned out by the college at Parbhani was found to be good by employers. However, they recommended that courses in animal management, livestock economics and extension be taught in the degree course. Outgoing students responded that facilities at the Parbhani college were excellent. 11. To wipe out the regional imbalance in health cover and care for animals, at least 100 more veterinary centres needed to be started in Marathwada on a priority basis.

1501. REDDY, V.R., and OTHERS, *Survey of Existing Vocationalisation of School Education in Andhra Pradesh—A Report,* SCERT, Andhra Pradesh, 1984 (Govt. of Andhra Pradesh sponsored)

The objectives of the study were to go into the existing syllabus and scheme of instruction being provided to high school students with reference to the vocationalization programme.

The study was conducted through a comprehensive survey of the available infrastructural facilities in all schools of the state. A survey was also conducted of the records available with the Directorate of School Education. The records of the directorate concerning various vocationalization programmes in schools were consulted.

The major findings of the study were: 1. Nearly fifty per cent of students dropped out at various stages between the sixth and tenth classes. The chances of introducing vocationalization were only possible from classes VIII to X. 2. The state-wide percentage of passes at the SSC public examination in 1983 was around 50. 3. Socially useful productive work was conceived in schools as work-oriented educational activity contributing towards the total development of the learner's personality. 4. The revised curriculum had been introduced in all schools in the state in a phased manner from the session 1979-80 onwards. The revised curriculum comprised broadly three parts, viz., languages, non-language, subjects and activity areas. Socially useful productive work was introduced in the school curriculum as one of the activity area subjects with a view to acquainting children with the world of work and service to the community. 5. Socially useful productive work was given a weightage of 15 per cent for classes VI and VII and eight per cent for classes VIII to X in terms of time. 6. In the implementation of the socially useful productive work programme in schools the problems encountered included non-availability of specialized teachers, inadequate physical and infrastructural facilities, non-supply of copies of syllabus, non-availability of funds and absence of guidelines for the disposal of finished products produced in the socially useful productive work programme.

1502. SINGH, B.M., *A Study of Education and Some Job-related Factors of Clerical Workers,* Ph.D. Psy., Mag. U., 1984

The major objectives of the study were to find out (i) in what way general higher education and job aspirations were related, (ii) in what way general higher education and clerical job satisfaction were related, (iii) in what way general higher education and clerical efficiency were related, (iv) in what way pre-job job aspirations and clerical job satisfaction were related, (v) in what way pre-job job aspirations and clerical efficiency were related, (vi) in what way clerical job satisfaction and clerical efficiency were related, (vii) in what way clerical efficiency was related to duration of education and

length of service, and (viii) in what way clerical job satisfaction was related to duration of education and length of service. Eleven hypotheses were examined.

A sample of 641 clerical workers (571 males and 70 females) with varying levels of educational attainment were selected from the LIC of India, by adopting a stratified random sampling technique. The Personnel Data Blank, the Job Aspiration Inventory, Job Satisfaction Questionnaire and the Job Efficiency Tool were used. The job efficiency was rated by the subject's immediate losses. Mean, S.D., correlation technique, etc. were used.

The major findings were: 1. Job aspirations escalated with levels of education. 2. Educated persons generally were less inclined towards occupations involving physical work and did not seem to have any inclination towards the non-salaried self-employing occupations. 3. Only 12 per cent of clerical workers ever thought of becoming clerks at the various stages of attaining education. 4. Levels of education had a progressively negative association with job satisfaction. 5. The length of schooling had a significantly positive correlation with the measures of job efficiency. 6. The relationship between the levels of pre-job job aspirations and levels of job satisfaction, and job efficiency was negative and not significant. 7. The correlation between the measures of job satisfaction and job efficiency was not significant. 8. Length of service was a better predictor of clerical efficiency than the duration of schooling. 9. Education was a more potent predictor of clerical satisfaction than the length of service.

1503. SINGH, M.H., SINGH, S.P., and others, *Vocational Survey of +2 stage 1978-80 (districtwise) in collaboration with Vocational Educational Unit of NCERT*, New Delhi, SCERT, Haryana, 1981

The main objective of the study was to identify the educational institutions where vocational courses could be started and the names of the courses which could be run in the identified institutions, keeping in view, (a) the students' strength and their vocational needs, (b) availability of physical and other facilities with minimum financial outlay, (c) absorption and utility of the trained students in the employment market, (d) recommended occupations offering reasonably good prospects of self-employment.

Almost all the important concerned agencies and resources at the district, sub-divisional, block level, panchayat level were covered in this survey. A sample set of 34 statements, five schedules, three pro-formas prepared by the Vocational Educational Unit, NCERT, New Delhi, were used for collecting data and conducting interviews at different levels of administration. Statements 1 to 34 required information from different departments pertaining to the areas of population, industrial activity, occupational capacity, land utilization and holdings, area and production of different crops, agricultural implements and equipment, sources of irrigation, consumption of fertilizers, insecticides, pesticides, livestock, forest products, general education facilities, professional/technical and vocational education facilities. Schedules 1 to 5 pertained to information as identification of non-farm establishments, emerging occupations and areas of self-employment, survey of occupational needs of plan schemes, survey of current farm establishments. The reports and documents concerning the All India Educational Survey, Technical and Vocational Education and Training in Haryana, 1975, Census Report 1971, District Development Plans, Statistical Abstract, Haryana, 1978-79, were also consulted. The conclusions were drawn on the basis of responses received through statements, schedules and pro-formas.

The major findings were: 1. On the basis of reports of Ambala, Bhiwani, Gurgaon, Kurukshetra, Mahendragarh, Rohtak, Sirsa and Sonepat districts, 73 educational institutions of high and higher secondary level were identified. 2. The courses recommended in the identified institutions were boiler attendant for two institutions, Steno-typist for eight, stenographer for six, food and fruit preservation for six, poultry farming for nine, building construction technology for three, repairing agricultural implements for 14, leather technology for three, nursing for eight, cutting and tailoring for 15, electronics for 14, brick-making for two, electrician for 16, fishing for 12, librarian for six, interior decoration for five, secretarial practice for seven, radio assembling for three, accountancy for nine, diploma in textiles for six, cookery and nutrition for five, painting technology for four, weaving-master for four, embroidery for seven, draftsman for three, plumber for two, caning for two, repair to household gadgets for four, plastic technology for three, textile dyeing and printing for five, salesmanship for ten, and automobile technology for three institutions.

1504. SOUNDARAVALLI, S., *A Critical Study of the Functioning of the Vocational Education Stream in Higher Secondary Schools in Tamil Nadu* Ph.D. Edu., Kar. U., 1984

The objectives of the study were (i) to identify the administrative policies regarding the selection of schools and vocational subjects, (ii) to assess the availability of instructional materials provided in relation to curriculum, (iii) to find out the qualifications, training and experience of teachers who were handling vocational subjects in the various higher secondary schools, (iv) to identify some of major characteristics of the students who opted for vocational subjects such as vocational aspiration, academic motivation, self-identity, self-esteem, self-concept, and attitude towards vocational education, and (v) to assess the degree of acceptance of the new system as revealed by the attitudes of teachers and parents towards vocational education.

The higher secondary schools in Salem district were selected for the Study. All the higher secondary schools where vocational courses were taught were involved in the study. For studying some selected personality, socio-economic and personological variables of the vocational and academic stream students a random sample of 1000 students from all over Tamil Nadu was selected. Four schools, two where vocational courses had been introduced successfully and were functioning well and two where the functioning was not successful, were selected for case study. An Information Blank was designed and used for collecting and functioning of the vocational data and information regarding the introduction and functioning of the vocational courses. To measure the characteristics of students a battery of tests was used. In order to find out the attitude of parents, teachers and students towards vocational education, a vocational attitude scale was prepared by the investigator.

The major findings of the study: 1.Nearly 90 per cent of the schools were upgraded as higher secondary schools with academic and vocational streams in the year 1978. Some 21 different vocational subjects were offered in theses schools. 2. About 90 per cent of the schools functioned well and were able to produce 90 per cent results in the public examination. 3. The students were admitted in the vocational education stream without any aptitude test. 4. As a result of the introduction of a vocational stream in higher secondary schools, many teachers were appointed to teach the vocational subjects to the students, but only 20 per cent of the teachers were full-time teachers, and 80 per cent of them were part-time teachers with a fixed remuneration of Rs 300/- per month. 5. For certain vocational subjects, such as accountancy and auditing, there was no external examination in practicals as was done for other vocational subjects. 6. Adequate cooperation from industrialists and factory owners was not available. 7. The instructional materials pertaining to curriculum was not adequate in 50 per cent of the schools. Only 30 per cent of the schools were fully equipped. 8. Though the aim of introducing vocational education was to reduce unemployment and pressure on colleges, yet nearly 37 per cent of the vocational group students went in for higher studies only. 9. The vocational group students, the teachers teaching vocational subjects, and the parents of vocational group students showed a favourable attitude towards vocational education.

1505. WAKADE, S. and DESHMUKH, P., *Legal Education in Marathwada—A Case Study prepared for the Project, "A Study of Regional Imbalance in Vocational Education and Man-Power Planning in Marathwada"*, Swamy Ramanand Teertha Institute, Aurangabad, 1985

The major objectives of the study were (i) to assess the nature of law courses and assess facilities available in law colleges in Marathwada, and (ii) to assess the needs of the region in the next decade, taking into consideration the social, economic and industrial needs.

All law colleges in the Marathwada region formed the sample of the study. Questionnaire and interview were the tools used to collect data.

The observations and conclusions were: 1. The general standard of legal education in Marathwada was at par with that in Shivaji and Nagpur universities. However, the standard of education in Bombay and Pune Universities was comparatively better. 2. Generally, it was found that very few students joined law colleges with the ultimate aim of joining the legal profession or the judiciary. Most of the students took admission to law courses just to have an additional certificate to get better employment or to get better chances of promotion where they were already employed. 3. Students who failed to get admission to good courses like engineering and medicine joined law courses as the last alternative. This resulted in the lowering of the standard of legal education. 4. Almost all law colleges worked either in the evening or in the morning. Attendance was

comparatively poor. Education was examination-oriented and, as such, students were interested only in studying 'important' questions and notes from the point of view of examinations. 5. The libraries were poor. There was lack of academic atmosphere in almost all the law colleges. The main reason appeared to be that students and teachers did not have sufficient time at their disposal to spend for academic activities. 6. Remuneration to teachers was also very meagre as grants-in-aid were not available to colleges. Most of the colleges were facing financial difficulties. Except the college at Nanded, all the other law colleges were in deficit. 7. Only two law colleges had their own separate building.

ALSO SEE

1585. BHATNAGAR, HARMOHAN, *A Study of Occupational Choices of Adolescent Girls and Factors Influencing Them*, Ph.D. Edu., HPU, 1983
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1590. Kakar, Ved, *A Study of Job Satisfaction in relation to Attitude, Job Values and Vocational Interests of Women*, Ph.D. Edu., Bhopal U., 1983
727. KUDESIA, U.C., *A Study of the Teaching Aspect viewed by the Polytechnic Teachers of Induction Programme (12.11.85 to 13.12.85)*, TTTI Bhopal, 1986
1548. KULKARNI, D.S., *Diploma and Degree Level Technical Education in Marathwada—A Study of Regional Imbalance in Vocational Education and Man Power Planning in Marthwada—A Case Study*, Swami Ramanand Teertha Research Institute, Aurangabad, 1985
597. MARY JOHN, *Future Time Perspective, Self-Concept and Vocational Interest of Adolescents*. Ph.D. Psy., Madras U., 1981
672. MISHRA, A., *An Evaluation of Work Experience in the Secondary Schools of Assam*, Ph.D. Edu., Gau. U., 1985
601. MOWJI,M.N., *An Investigation into the Educational and Vocational Problems of Higher Secondary Students of Greater Bombay (1975-1977) English Medium*, Ph. D. Edu., Bom. U., 1983
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685. SINDHE,A.S.R., *An Investigation into the Problems associated with the Implementation of Socially Useful Productive Work*, Ph.D. Edu., Mys. U., 1985
280. THONGPLEA, C., *A Study of Nonformal Vocational Education Programme in the Educational Region 5 of Thailand*, Ph.D. Edu., MSU, 1985
281. THRASIA, E.C., *A Comparative Study of the National School System of the USA, UK and India with a view to Suggest Measures in Promoting a Better Pattern of Vocation Based Common System of Public Education to suit the Needs and Aspirations of Indian Society*, Ph.D. Edu., Osm. U., 1983
608. TOMAR, J.P.S., *A Study of Occupational Interests Trends of Adolescents and Their Relation with Prevalent Job Trends of Employment in Eastern Uttar Pradesh*, Ph.D. Edu., Avadh U., 1985
611. TULSI, P.K., *Differential Effect of Career Guidance Strategies on Vocational Maturity Patterns in relation to Sex, Intelligence and Need Achievement*, Ph.D. Edu., Pan. U., 1983
692. VIJAIVARGIYA, D.P., *A Survey of Work Experience Activity in the Schools of Rajasthan*, SIERT, Rajasthan, 1969