



GOVERNMENT OF INDIA

LEARNING TO DO

TOWARDS A LEARNING AND WORKING SOCIETY

REPORT OF
THE NATIONAL REVIEW COMMITTEE
ON
HIGHER SECONDARY EDUCATION WITH SPECIAL
REFERENCE TO VOCATIONALISATION

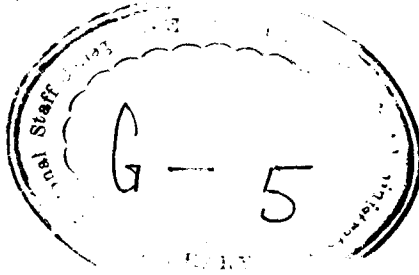
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LETTER OF TRANSMITTAL

Malcolm S. Adiseshiah,
Chairman,
National Review Committee
for Plus Two Curriculum
of School Education.

My dear Minister,

Subject : Transmittal of Plus 2 Review Committee Report.

It is with pleasure that I transmit to you the report of the National Review Committee on Higher Secondary Education, with the appropriate title—'LEARNING TO DO'.

The central finding of the Committee is that learning must be based also on work; either through what the Ishwarbhai Patel Committee calls socially useful productive work which has been woven into the General Education course proposed in the report (we have because of its reverse connotations eschewed the term Academic Course) ; or through the vocationalised courses that we have recommended.

A second contribution that the Committee has made is to spell out in terms of curriculum, syllabus outline and evaluation the socially useful productive work component of the General Education courses, and a similar explication of the curriculum and syllabus outline of general foundation courses which all those entering the vocationalised stream must offer.

A third finding of the Committee is that for the immediate future, that is for the Sixth Plan, the vocationalised courses to be offered at the higher secondary level should be in agricultural and related rural occupational areas and in managerial, commercial, health and para-medical vocations, and not through opening vocational courses at this level in the manufacturing industrial and engineering occupations. The motivation for this recommendation was first pragmatic. Given the large scale unemployment of the products of the I.T.I.'s and to a lesser extent of the Polytechnics and Engineering Colleges as set forth in official reports, these offerings at the plus 2 stage are not needed. There was also the need for this stage of education to conform to the national priority to agriculture, rural development and adult literacy that have been sadly neglected to-date by the formal school system. In fact we recommend opening or locating of Higher Secondary Schools in rural areas with vocational courses in agriculture and related occupations partly to make up for this lacunae.

A fourth and final consideration that I would like to bring to your attention is our plea for careful preparation to ensure that the many facets of the reform of Higher Secondary Education are thought through, planned for, and provided against as the country's stakes in this educational stage are high. One problem here is that almost all States as well the central agencies have already launched on the plus 2 stage. Hence for most agencies the recommendations in this report will have to be used as guideposts and lead points to review what has been embarked upon, and make such corrections and changes in the future as they may deem necessary and appropriate. In fact such a system of continuous evaluation should be built into our entire educational system, and for this stage could be undertaken by the Central and State Boards and the National and State Vocational Councils of Education that have been recommended. To err may be human, but to persist in it is inhuman.

It has been a pleasure for the Committee to work together on an aspect of the country's educational life which is so near and dear to all of us. I would like to take

(iv)

this occasion to express the gratitude of the Committee to its hard-working Member-Secretary, Dr. R. P. Singhal, and to the Chairmen and Secretaries of the four sub-Committees without whose leadership and service, we could not have completed the task that you entrusted to us. For me, it has been once more a valuable learning experience.

I remain at your service to provide you with any further information you may require on this report.

Accept, Mr. Minister, my cordial considerations and grateful thanks.

Yours sincerely,

University of Madras
February 28, 1978

Malcolm S. Adiseshiah

The Hon'ble Dr. P. C. Chunder
Minister of Education & Social Welfare
and President of N. C. E. R. T.
Government of India
New Delhi.

CHAPTER I THE MANDATE

The Need for Review

1.1 There is general agreement that there is an urgent need for the transformation of education so as to make it socially relevant and purposeful. In this context, the National Council of Educational Research and Training had published a document on 'Higher Secondary Education and its Vocationalization' as a result of wide ranging consultations culminating in a National Conference in September, 1976. The document contained many important and forward looking features such as flexibility in the choice of vocations, determining vocations with reference to a district or a group of districts, need for district-wise survey of economic activities and potentialities and consequent opportunities of work, micro-planning at the district level and assessment of manpower needs, special attention to be given to raising the facilities and quality of life in the rural areas, provision for guidance and counselling for careers and courses to the students, etc. Its proposals also raised questions on such matters as the nature and scope of vocationalisation, the rigid streaming of courses, the semester and credit system, admission requirements to vocational courses, lack of adequate vertical mobility to the students who pursued vocational courses, extent of time allocation for core and elective subjects and teacher training.

1.2 In addition to the need to face these issues, the NCERT document also needed to be reviewed in the light of the Report of the Ishwarbhai Patel Committee on 10-year school curriculum. That Committee's recommendations on the introduction of Socially Useful Productive Work as an essential component in Classes I through X, the lessening of the curriculum load for the students, limiting the number of subjects for the public examination at the end of Class X, increasing the time allocation for Socially Useful Productive Work to about 20 per cent of the total time, provision of alternative courses in each of Mathematics and Sciences, and the provision for at least one elective subject for Secondary Classes—the consequence of these recommendations had to be reflected in the curriculum for Classes XI & XII.

1.3 Moreover, the national goals and priorities that have been formulated for the country's development for the coming Sixth Plan had to be taken into account in this exercise relating to the higher secondary stage of education.

Terms of Reference and Membership

1.4 Accordingly, in October 1977 the Union Education Minister, Dr. P. C. Chunder, in his capacity as President of the NCERT, appointed a National Review Committee under the Chairmanship of Dr. Malcolm S. Adiseshiaiah, Vice-Chancellor, University of Madras, to review the curriculum of the +2 stage of school education with special reference to vocationalization of education. (vide Ministry of Education's communication No. F. 17-18/77-School-3, dated 10th October, 1977.)

1.5 The terms of reference of the National Review Committee for the Plus two Curriculum were as follows :—

- (i) To review the NCERT's document "Higher Secondary Education and its Vocationalization" and to suggest modifications therein, if any.
- (ii) To study the syllabi and courses of the CBSE and a few State Boards with special reference to a few selected vocations and to recommend appropriate syllabi.
- (iii) To recommend a plan of action for introduction of vocationalization at the secondary/higher secondary stage.

1.6 It was further desired that the Committee in formulating its recommendations may also keep in mind the need for providing vertical mobility to students completing the +2 stage with vocational courses and recommend ways and means for promoting such mobility.

1.7 The Committee was asked to submit its Report within three months.

1.8 The National Review Committee consisted of the following members :—

- | | |
|--|------------------------|
| (1) Dr. Malcolm S. Adisheshaiah
Vice-Chancellor
Madras University
Madras. | <i>Chairman</i> |
| (2) Dr. R.P. Singhal
Chairman
Central Board of Secondary Education
17-B, Indraprastha Estate
New Delhi-110002. | <i>Member-Convener</i> |
| (3) Dr. Ishwarbhai J. Patel
Vice-Chancellor
Gujarat University
Ahmedabad. | <i>Member</i> |
| (4) Prof. A. N. Bose
Dean (Co-ordination)
National Council of Educational
Research and Training
Sri Aurobindo Margh
New Delhi-110016. | <i>Member</i> |
| (5) Dr. Shiv Mangal Singh 'Suman'
Vice-Chancellor
Vikram University
Ujjain (M.P). | <i>Member</i> |
| (6) Dr. Amrik Singh
Vice-Chancellor
Punjabi University
Patiala. | <i>Member</i> |
| (7) Shri P.R. Nayak,
Commissioner and Secretary to the Govt. of Karnataka
Deptt. of Youth Service & Education
Bangalore. | <i>Member</i> |
| (8) Shri M.V. Rajagopal
Vice-Chancellor
Jawaharlal Nehru Technological University
Andhra Pradesh,
Hyderabad. | <i>Member</i> |
| (9) Shri V. R. Reddy
Director
Commonwealth Asia-Pacific Youth Development Centre
Chandigarh. | <i>Member</i> |
| (10) Shri D. M. Sukthankar
Secretary to the Govt. of Maharashtra Education & Youth
Services Department
Bombay. | <i>Member</i> |
| (11) Prof. U. N. Singh
Pro-Vice-Chancellor
University of Delhi
Delhi-110007. | <i>Member</i> |

- (12) Shri B. K. Singh *Member*
 Education Secretary
 Delhi Administration
 Delhi-110007.
- (13) Shri Y. Saran *Member*
 Principal
 Technical Teacher Training Institute
 Bhopal-2 (M.P.)
- (14) Shri A.E.T. Barrow, M.P. *Member*
 Secretary
 Council for Indian School Certificate Examinations
 Pragati House, 47-48, Nehru Place
 New Delhi.
- (15) Prof. C.V. Govinda Rao *Member*
 National Council of Educational Research
 and Training
 Sri Aurobindo Marg
 New Delhi.
- (16) Smt. Santha *Member*
 PGT
 Asan Memorial Hr. Sec. School
 Madras.
- (17) Shri A.T. Balraj *Member*
 Principal
 Bishop Cotton Boys School
 Bangalore-560 001
- (18) Dr. O.P. Gautam *Member*
 Deputy Director General (Edn.)
 Indian Council of Agricultural Research
 Krishi Bhawan Dr. Rajendra Prasad Road,
 New Delhi-110 001.
- (19) Shri Manubhai Pancholi *Member*
 Lok Bharati
 Sanosara
 Distt. Bhavnagar (Gujarat).
- (20) Dr. (Smt.) Rajammal P. Devadas *Member*
 Principal
 Avinashilingam Home Science College for Women
 Coimbatore (Tamil Nadu)
- (21) Dr. V.G. Bhide *Member*
 Deputy Director
 National Physical Laboratory
 New Delhi.
- (22) Smt. K.S. Bhatia *Member*
 Deputy Director
 Central Health Education Bureau
 Kotla Lane
 New Delhi
- (23) Shri K. Vaidyaraman *Member*
 Deputy Director of Training
 Office of the Director General of Employment and
 Training
 Shram Shakti Bhavan, Rafi Marg
 New Delhi-110 001.

- (24) Shri L. *Member*
 Headmast
 Lawrence o
 Lovedale (nilgiris).
- (25) Shri M.P. Chhaya *Member*
 Principal
 Bharati Vidya Bhavan
 Kasturba Gandhi Marg
 New Delhi.
- (26) Shri S.K. Lahiri *Member*
 Principal
 Technical Higher Sec. School
 Kashmere Gate
 Delhi-110 006.
- (27) Shri D.K. Gupta *Member*
 PGT in Agriculture
 Govt. Boys Higher Sec. School
 Bawana
 Delhi.

Work Schedule

1.9 The Committee met four times on 3rd November, 1977, 13th January, 14th February, and 28th February, 1978. In the first meeting it reviewed its mandate and in the light of this first discussion, established four Working Groups as under :—

Group No. I — To review the NCERT's document on "Higher Secondary Education and its Vocationalisation".

Group No. II — To study Vocational Courses for Agriculture and other related areas with particular reference to syllabuses of the CBSE, Tamil Nadu, Maharashtra, Karnataka and West Bengal.

Group No. III — To study Vocational Courses in Non-Agricultural areas.

Group No. IV — To suggest plan of action for implementation of the Vocational Courses.

1.10 The membership of the above Groups is given in Annexure I to this Report. The Committee had considered all suggestions made to it and associated in its deliberations teachers, particularly those specialised in Vocational Courses.

1.11 In the second meeting of the Review Committee, the Reports of the four Working Groups were considered at length and approved with such modifications as necessary in order to form the basis for the draft report. In the meeting of the Committee held on 14th February, 1978, the Committee considered the draft reported and after suitable revision, it adopted on 28th February, 1978 the report for submission to the Union Education Minister.

CHAPTER II

HIGHER SECONDARY EDUCATION : ITS IMPORTANCE AND SCOPE

2.1 Introduction

2.1.1. The two-year higher secondary stage of education has an importance, meaning, nature and scope which need a brief overview and recall.

2.2. Importance of Higher Secondary

The Terminal

2.2.1. This two-year education stage is important because for about half of those entering it, it represents the terminal point of formal schooling, not the terminal point of education because learning is a life long process, and the formal, non-formal and informal learning systems must be geared to facilitate that process. But quantitatively the numbers involved who will not be continuing continuously their schooling after this higher secondary stage is large and impressive : They number around 800,000. For this substantial group, the large and impressive : They number around 800,000. For this substantial group, the for their living gainful lives.

The Bridge

2.2.2. A second facet of the importance of this stage is that it is the bridge between the general information of the mind and personality which school education is and the higher learning specializations which the college and university represent. This stage is on the one hand as strong or as weak as the school stage is and is simultaneously a test of the soundness of the learning culture developed at the school. The higher secondary is in relation to the school both a mirror and a reflector. On the other hand the foundations for higher learning are laid at this stage. In that sense the university and the college can only build on the material formed at the higher secondary stage. This stage is thus both a judge of the school system and the forecaster of the learning futures of the university.

The Transition

2.2.3. The higher secondary stage also derives its uniqueness in human terms because it is dealing with the human person at a period of transition from childhood to youth, from infancy to teenage. This is the adolescent period of one's life when the personality and its components are growing, clashing, watching, imitating, demanding, giving, receiving, and sharing. Perhaps more than any other period in life, it is at this period that character begins to be formed, character as a multifaceted expression of the affective, the slow setting of the volitional, and the boundless vistas opened up by the spiritual and intellectual. It is these many facets of the human personality at its formative stage that the higher secondary stage must subserve.

2.3 Principles Governing Scope of Higher Secondary

Principle of Continuity

2.3.1 The development of the higher secondary stage will be governed by the principle of continuity. This principle has a double connotation. First there is the basic continuity of the newly formed higher secondary stage with the past educational system. After all the impediments have been lopped off, the errors corrected and the twists and turns all

straightened out, allowing for all the innovations and responses to new, emerging, changing national and local needs, there is a carry over in terms of knowledge and information, trained teachers, buildings, books, and equipment from the past into the new structure which the +2 stage represents. There is need to be conscious of this continuity, to accept it and regulate it. The other aspect of the continuity element is in the fact that the higher secondary stage is part of a total educational and learning system and must conform to its own internal laws of consistency and conformity. This form of its continuity means that it must constantly look over its shoulders at the school from which it originates and look out to the university and the college of which it is a systems part.

Principle of International Sharing

2.3.2 A second principle which helps in the growth and flowering of the higher secondary stage is that like all learning, it also functions under the principle of the international storehouse which both enriches and widens educational systems everywhere. Higher secondary schooling is new to the country, but it is also one area which has no national boundaries, where there is an international community represented by UNESCO and various regional and sub-regional organisations through whom the secrets of success and the reasons for failures are known. In this sense there is no area of isolation and lonely pioneering in this rich international landscape : Gandhi learning from Tolstoy for his first educational effort : the Hungarian higher secondary school in lake Balaton drawing upon Tagore : Ho Chi Minh's schooling in the commune driving from Mao Tse Tung, and so on. But this international storehouse is for the higher secondary planner not only a source of inspiration and information ; it is also a yardstick for evaluation of the national and local effort.

Principle of Conforming to National Goals

2.3.3 Above all, higher secondary education must be integrated with the goals of national development in the sense that it must serve them and be judged by the extent to which it is helping in their realisation. At this particular point of time, before the presentation to and approval by the National Development Council of the Sixth Five-Year Plan, it is somewhat hazardous to define very precisely the goals of national development. Subject to these being reviewed and revised when the National Plan is approved, there are four facets of national development which are by consensus emerging as the overall time bound targets and it is to these that the higher secondary system needs to be linked both in its general and vocationalised sector.

Removal of Unemployment

2.3.3.1 A first national target is to remove unemployment and under-employment within the next 10 years. This is a hard and somewhat ambitious task. NSS estimates that there are at present 19 million man years of unemployment and that 70 million persons have to be provided work in the next decade. This means creating something like 200,000 employment units a week, which cannot be wage employment (no known economy can create employment at this rate), but various forms of self-employment. Further the manufacturing sector is not able to absorb the currently trained personnel. The Madras Institute of Development studies in its 1975 study, the Status of unemployed craftsman in Tamil Nadu, reports that 20,000 I.T.I. completers are unemployed (that State's Directorate of Employment and Training reports that as at December 1977, 30,000 are unemployed). For the country as a whole, the number of unemployed I.T.I. craftsmen is even more disquieting as is the number of polytechnician and university engineers. The employment profile of the country in capsule form is : of 260 million workers, 20 million are employed in the organised sector and 5.7 million in factories, the organised sector itself being able to absorb annually only 500,000 workers per year. Thus the implications of self-employment and the importance of the non-manufacturing sector for the plus 2 stage need to be borne in mind.

Removal of Destitution

2.3.3.2 The second agreed national aim is to remove destitution also within the next 10 years. Destitution refers to the worst form of poverty, that is, of the 50 per cent of our people living below the poverty line, the bottom two deciles constitute the destitutes. While the removal of unemployment and under-employment is a necessary condition for the removal of destitution, it is not a sufficient condition, because first poverty covers about 5 to 6 times more families than unemployment or under-employment, but even more because employment and poverty or even destitution co-exist in the country. The higher secondary stage must, like the rest of the education system, make its contribution to the removal of poverty through its openness and capacity to hold within itself an increasing mass of first generation learners, and through making productive work one of the fountain sources of learning the other being books. In that way it will contribute to increasing productivity.

Rural Development

2.3.3.3 The third emerging objective is rural development, village uplift and encouragement to tiny, cottage and small industries. It is recognised that India lives in her villages and the processes of national development must reflect this reality. The Integrated Rural Development Programme, along with the programmes of Small and Marginal Farmers Development, Integrated Tribal Development, Drought Prone Area Development, Community Area Development, and Whole Area Development, with their emphasis on optimum utilisation of the local human, biological and natural resources and appropriate inputs of science and technology will be covering 50 per cent of the blocks of the country during the Sixth Plan. The educational system must form part of this micro-level planning and the higher secondary stage must be geared to the strategies for rural development and village uplift. There is also the problem of the +2 completer (not infrequently urged also by the parents) not wanting to follow the low-paying rural parental occupation, and not wishing to continue living in the low quality of life village structure. At this point, it is important to remind oneself that it is wise not to exaggerate the possibilities of education being a solution to all the problems of society. That way lies the certainty of education not being able to attain even the limited goals which are within its universe of discourse. It must be admitted that education does arouse the desire to better oneself and the rural exodus—the rural-urban brain drain—has many complex pull and push factors behind it, to which education has only a marginal relationship. In so far as higher secondary education is set within the frame of integrated rural development and is linked to its crucial features of agricultural modernisation and the development of rural crafts and industries, it can make a marginal contribution. This contribution though marginal can be decisive, if there is a revival and development of the rural economy, and if the +2 stage prepares its pupils to play their full part in the growth of the agricultural as well as tiny, cottage and small-scale sectors.

Adult Literacy

2.3.3.4 There is one more important national purpose, that is, the universalisation of primary education and removal of adult illiteracy to be attained within a five-year period, that the formal school system must serve. Universalisation of primary education involves increasing the holding power of the primary schools as against the 50 per cent of pupils presently left-out, pushed-out or who drop-out and providing the infrastructure for this large expansion, along with the realisation that the problem is only partly pedagogic. On the other purpose, of the 230 million adult illiterates, the national programme sets itself in a first phase to educate and make self-reliant 100 million persons in the age-group 15-35 in the next 5 years. To fulfil these mass mandates the school must serve as an important instrument, and in particular the students under the guidance of teachers in the higher secondary school should organise and run functional literacy programmes in the villages or urban slums of their neighbourhood.

2.4 Scope

2.4.1 *The Higher Secondary Stage should be planned as comprising two broad learning components which may be termed the General Education Spectrum and the Vocationalised Spectrum, with many crossover points during and after this particular stage.*

2.4.2 *The General Education Spectrum of the Higher Secondary School is for the general formation of the person and personality through learning centred around languages socially useful productive work and a combination of the starting phases of some 4 natural social or human sciences disciplines. Its aim is essentially to prepare the student for university education in the arts or sciences or for professional studies. This is the bridge facet of the plus 2 stage referred to earlier in paragraph 2.2.2. This is also the phase of the educational systems in which there is a built-in continuity with the past, the main innovation being learning acquired from socially useful productive work.*

2.4.2.1 The concept and objectives of socially useful productive work which form part of the General Education Spectrum have been defined by the Ishwarbhai Patel Committee for the curriculum of the ten-year school and are continued at this plus 2 stage of learning with minor adaptations :

“Socially Useful Productive Work may be described as purposive, meaningful, manual work resulting in either goods or services which are useful to the community. Purposive, productive work and services related to the needs of the (student) and the community will prove meaningful to the learner. Such work must not be performed mechanically, but must include planning, analysis and detailed preparation, at every stage, so that it is educational in essence. Adoption of improved tools and material, where available and the adoption of modern techniques will lead to an appreciation of the needs of a progressive society, based on technology.”

The objectives of this part of learning are to :—

- (i) prepare (students) to practise and perform manual work individually and collectively ;
- (ii) acquaint (students) with the world of work and services to the community and develop in them a sense of respect for manual workers ;
- (iii) develop a desire to be useful members of society and contribute their best to the common good ;
- (iv) indicate positive attitudes of team work and socially desirable values like self-reliance, dignity of labour, tolerance, co-operation, sympathy and helpfulness ;
- (v) help in understanding the principles involved in the various forms of work; and
- (vi) lead (students) to participate increasingly in productive work as they go from one stage of education to another and, thereby, enable them to earn while they learn.”

2.4.3 *The Vocationalised Spectrum of the Higher Secondary School is learning of a skill or a range of skills through study of technologies, related sciences, and farm or other practical work. This vocationalised learning must be distinguished from technical/vocational education imparted in the I.T.Is, technical high schools, agricultural or industrial polytechnics, where a certain level of skill as craftsman or technician or extension agent is aimed at and attained. The vocationalisation spectrum that is referred to embraces in the UNESCO language “these aspects of the educational process involving, in addition to general education, the study of technologies and related sciences and the acquisition of practical skills, aptitudes, understanding and knowledge relating to occupations in the various sectors of*

economic and social life. Such an education would be an integral part of general education and a means of preparing for an occupational field and an aspect of continuing education." This spectrum refers back to the terminal character of formal schooling that it represents for over 50 per cent of its entrants as referred to in paragraph 2.2.1 *Given the unemployment levels of I.T.I. craftsmen and polytechnicians referred to earlier, expansion of technical/professional education institutions of this nature is not recommended.* The recommendation about the Vocationalised Spectrum of the plus 2 stage rests, however, on the truth that while education cannot produce jobs, vocationalised education makes it more likely for an individual to get a job or to be his own master by either starting a new productive activity or a service which may satisfy a felt-need of the community. By broadening the educational horizons for the individual, it enables him to reach higher levels of achievement through self-learning. Since the content and scope of vocationalisation must be in conformity with national goals and the specific needs of the local community at every given point of time, *the vocationalisation of higher secondary education recommended here aims for the next five years at increasing the employment potential of the people through education for self-employment, with emphasis on agricultural and related occupations including tiny, small, cottage and agro-industries and through preparation for specific competencies in different vocations.*

2.5 Futures

2.5.1 This report is quite deliberately dated. It is meant to guide higher secondary education planning for the next five to ten years. Taking a longer view there are at least two issues that demand future attention. One is related to the rather restricted concept of vocationalisation of secondary education as distinguished sharply from vocational and technical education. As the economy picks up and moves out of its stagnant 3 to 3.5 per cent compound growth rate over the past three decades to something nearer the doubling at 7 per cent being considered for the future plans, the increased demand for technician, agrarian and managerial skills will call for planning for vocational/technical education as well as vocationalisation of general education.

2.5.2 A second issue that was considered was whether the free and compulsory primary school should be an 8-year school as envisaged in the Constitution, whether there should be a public examination at this stage to mark it off and give it status, and whether vocationalisation could then be pushed down to Classes IX and X of the 10-year school. There was general agreement that within the 10-year school, the first phase should be to get all children into the five-year elementary cycle followed by the 2 or 3 years middle school cycle, with an educational and extra educational effort to increase the holding power of the two cycles. It was also agreed that it is not desirable to recommend a public examination at this stage because when this phase of getting all children into the 7 or 8 year primary school is met, there should be an uninterrupted transition to getting all children into the next stage of the 2 or 3 year secondary school. Pushing down vocationalised education to Class IX has the advantage of providing a 4-year integrated course which could surpass the polytechnic level. But at present, more polytechnicians, as noted earlier, are not needed. Moreover, if there is a possible dilemma in the student choosing intelligently at the end of 10-year of schooling between the General Education and Vocationalised Spectrums, it would be even more puzzling for the 12-14 year old to make such a choice at Class VIII. Work education, Socially Useful Productive Work from which each student in Class IX and X will be garnering knowledge spending on it 20 per cent of the school time—yes. Vocationalised education which means starting on a technology training at Class IX—No.

CHAPTER III

THE COURSE PATTERN : THE GENERAL EDUCATION COURSE

3.1 The Pattern

It is recommended that the pattern of the course and the distribution of time for teaching the General Education Spectrum should be :—

<i>Course</i>	<i>Time distribution</i>
1. Language(s)	15 per cent
2. Socially Useful Productive Work	15 per cent
3. Electives	70 per cent

It is recognised that this general scheme must be applied with a certain amount of flexibility, allowing individual States and territories and even individual schools to adapt the courses and the distribution of time to local conditions and pedagogic perceptions.

3.2 Language(s)

In the general pattern put forward, *the implication of the distribution of time for language-learning is that only one language can be learnt.* That language will be the one of students' choice depending on the offerings available at the school and for the vast majority of the higher secondary schools run or supported by the States or territories it is likely to be the regional language. The need for learning a second, preferably an international, language can be met by resorting to the study of an elective and the operation of the credit system to be referred to later.

3.3 Socially Useful Productive Work

The same time-distribution, viz., 15 per cent of the working week, is applied to learning through Socially Useful Productive Work. *The objectives, sample plan of work and the mode of operations of the part of the curriculum (SUPW) to be executed by the teachers and the students are briefly set forth in the following paragraphs.*

3.3.1 Socially useful productive work (SUPW) which is of a practical nature and undertaken under appropriate supervision and planning, will help achieve, inter alia, the following objectives :—

- (a) Inculcation of positive attitudes to work in the students ;
- (b) Identifying themselves with the community by rendering Social and Community Service ;
- (c) Development of the habit of co-operative work ;
- (d) Making the community conscious of scientific advancements and help it develop a scientific outlook ;
- (e) Learning to apply one's classroom and vocationalised knowledge to solve day-to-day problems of the community ;
- (f) Participation in nation building activities ; and
- (g) Realization of the goals of the State and national development.

3.3.2 To develop the proper attitude towards rural development and community service, the pupils at the higher secondary educational level must be provided motivation and training opportunities. They should be given orientation training for 4-5 days in social

service understand its meaning, method and outcomes, and the means of developing rapport with the local community. The concerned people, in the fields in which the pupils are interested, can be brought to the school campus to address and motivate the pupils. The Heads of the higher secondary schools can be trained in different areas and they can train their teachers in their own schools in motivating the pupils, planning the programmes, carrying out and devaluating them. The teachers should be 'all purpose' guides for the effective participation of pupils in the programme.

3.3.3 The Project areas for SUPW can be selected according to the convenience of each school, its location, rural or urban, its background and experiences. More particularly the selection of the area will depend on :—

- (a) Nearness of the area to the school ;
- (b) Co-operation of the selected community ; and
- (c) Understanding the locally available programme

While selecting the area, the teachers should understand the extent of co-operation of the community and its interest in the welfare programmes. The project area should be one where resources for the activities can be easily mobilized, because the school and pupils cannot spend on transport or expensive programmes. Simple projects can be taken up by the pupils with the available resources and which are within the capacity of the pupils involved. The participation of the local people in all stages of the programme, is a must for the success of the programme.

3.3.4 In planning a programme, the following decisions are important : What is to be done, who will do it, for what it is, when and how it will be done. If the planning is to be successful, all the following components must be considered :—

- A. Baseline survey and locating needs and resources.
- B. Giving priorities to the needs.
- C. Outlining the programme.
- D. Conducting the programme
- E. Conducting the programme.

A simple survey should be conducted by the pupils in their selected project areas, to help them to understand the needs of the people, the resources available in the area, and decide what could be done by them. With the help of all the teachers in the school, and based on the needs of the people, programmes can be outlined for the specified period of work (two years) in the community. Annual work plans can be prepared by the teachers as a guide post for both teachers and students. A sample plan on a savings campaign could be :

A Sample Plan of Work (Saving Campaign)

Week	Purpose	Methods to be adopted	Persons involved	Place
1	2	3	4	5
I	Contacting the village leaders and people	Home visits	Pupils, teachers and local leaders	Individual houses.
II	Baseline-survey to learn the income and expenditure and savings pattern in the area	Interview Home visit	Homemakers, teachers and pupils	Individual houses.
III	—do—	—do—	—do—	—do—

1	2	3	4	5
IV	Introduce the need and methods of savings	Group meeting, charts, posters, exhibits	People, District Savings Officer, Pupils and teachers	Community hall or school
V	Explaining various methods of savings	Home visits Group discussion with charts and pamphlets	Pupils and teachers, Gram Sevikas & Gram Sevaks	Individual houses
VI	Helping them to reach the Post Office	Field visit, Discussion, Demonstration	Postmaster, leaders in the community, pupils and teachers	Post office
VII	Educating the people of Bank Saving	Lecture-cum-Discussion	Representative from nearby bank, pupils and teachers	School
VIII	Helping people to go to the Bank and open Savings accounts	Field Visit, Discussion	Interested people, Bank Manager, pupils and teachers	Bank
IX	Educating the people in economic improvement programmes	Lecture-cum-Discussion	Small Scale Industries Officer, Pupils and teachers	Community Hall
X	Starting simple income generating programmes	Demonstration	Pupils, teachers, concerned people	Community Hall and individual houses
XI	Follow-up (continued)	All methods and techniques	Concerned people	Appropriate places

3.3.5 Utilisation of available infrastructure for the planning, execution and evaluation of the programmes is important in order also to minimise the expenditure and effort. The teachers should know the infrastructure available and be aware as to how to make use of them for the success of the programme. The infrastructure available for the welfare of the community are :

1. District Collectorate
2. Panchayat Union
3. Village Panchayat
4. Elementary School
5. Primary Health Centre
6. Municipality
7. Small Savings Organisation
8. Field Publicity Office
9. Sarvodaya Sangh
10. Local Organisation such as Parent Teachers Association and Service Clubs—such as, Rotary, Lion's and Jaycees and others.

To get the assistance and co-operation of those who make up this infrastructure, they should be apprised and involved at all the stages of the programme development—from the planning, through execution, to evaluation.

3.3.6 The programme selected must be suitable to the age level and competencies of the pupils and the needs of the community. Both general types of productive service programmes and specific productive projects related to the subject matter of each student

can be undertaken. The following general programmes can be undertaken by all the pupils irrespective of their subjects (electives) of study :—

- (a) Fact finding
- (b) Tree Planting
- (c) Cleanliness and Sanitation
- (d) Leepening ponds, construction of contour-bunds, community halls, road laying.
- (e) Small Savings Drive
- (f) Health and Nutrition Education
- (g) Celebration of national days and festivals
- (h) Organising film shows
- (i) Organising libraries/book banks and mobile laboratories.
- (j) Hospital work
- (k) Conducting programmes in balwari (games and music)
- (l) Coaching children
- (m) Adult literacy
- (n) Camps in the adopted area

Students who are pursuing language studies should take up Adult Education under Socially Useful Productive Work.

3.3.7 The socially useful productive work should, as far as possible, be allied to the electives chosen by the students, allowing also for any other kind of work depending upon the facilities available in the neighbourhood. The students who are studying Home Science may, for instance, work with the community for improvement of the nutritional status of the population, utilising the local products for developing cheap and wholesome diets. The students of Chemistry may undertake useful work of soil fertilisers and water, removal of pollution, utilisation of wastes, etc. Those of Physics may similarly work on rural electrification, improvement of small and cottage industries etc. Biology students may serve in primary health centres and promote other health measures or help farmers, horticulturists etc. for improving productivity. Political Science students may work with Panchayat Administration, local bodies etc. for purpose of improving various services to the community.

The above are illustrations of the kind of Socially Useful Productive Work which the students, pursuing academic studies, may undertake. Obviously, there are many more areas which can be tackled in one's own environment. A list of some subject-matter related activities is set forth :—

(1) *Indian Languages*

- (i) Writing short stories and skits
- (ii) Developing leadership qualities through elocution, debates
- (iii) Developing artistic tendency—painting, drawing and other fine arts
- (iv) Promoting national integration
- (v) Encouraging them to read newspapers—knowledge about current affairs
- (vi) Adult literacy and adult education
- (vii) Coaching school children

(2) History

- (i) Dramatisation Programmes
- (ii) Screening of historical films
- (iii) Publication of Historical Leaflets and Booklets
- (iv) Organisation of Exhibitions of Historical value
- (v) Debates and Oratorical competitions as regards the political set up of the country
- (vi) Discussions and utilisation, of local resources
- (vii) Encouraging the pupils to adopt such hobbies of educational value

(3) Geography

- (i) Radio broadcasts on weather conditions
- (ii) Making the villagers understand the radio broadcasts
- (iii) Working models of volcanoes and earthquakes
- (iv) Survey work of the lands and roads
- (v) Attending the Panchayat Union Meetings and discussions.

(4) Mathematics

- (i) Encouraging the pupils to learn mathematics by pointing out its use in the world at present
- (ii) Helping the adults and unemployed to run a co-operative store selling goods at controlled price
- (iii) Teaching them to make toys with simple models like triangles, spheres etc.
- (iv) Helping them to discriminate between British units and metric system
- (v) Helping them to be aware of the units and measurements so that they cannot be cheated in shops. This can be done by actually showing the weights, scales and meter-scale

(5) Physics

- (i) Giving the basic knowledge about how to prevent electric shock accidents
- (ii) Giving the knowledge about how lightening and thunder occurs and what are the use of lightening and thunder and the thunder arrester
- (iii) Teaching how we receive the sound from the radio which is relayed from the Radio Station
- (iv) Preparing hot water with the help of solar heat or energy
- (v) Giving the knowledge about how to produce artificial rain
- (vi) Teaching how to get electricity from the water and steam
- (vii) Giving the basic knowledge about how to operate the machines like washing machine, grinding machine, electric cookers etc.
- (viii) Giving the knowledge about how the sound is produced from various sound instruments.

(6) Chemistry

- (i) Preparation of soap and washing soda
- (ii) Explaining the uses of Dettol and Phenyl for cleanliness
- (iii) Preparation of tincture and simple ointments for wounds
- (iv) Preparation of Dyes
- (v) Explaining the preparation of Bleaching powder
- (vi) Explaining the equipping technique and use of gobar plant in the houses making use of animal waste
- (vii) Explaining the uses and preparation of ammonium nitrate
- (viii) Explaining the fixation of Nitrogen
- (ix) Explaining the uses of insecticides.
- (x) Demonstrating the method of purifying water

(7) Biology

- (i) Helping the farmers to get rid of the insect pest
- (ii) Learning methods of vegetative propagation
- (iii) Introducing modern techniques of incubation in poultry
- (iv) Practising the way of getting uniform fruiting and blossoming through simple techniques using chemicals (Hormones)
- (v) Leathering of economically important animals
- (vi) Making them aware of economic Zoology
- (vii) Provide them the knowledge of crop rotation
- (viii) Helping them to know about the various sources of Nitrogen manure in the form of Nitrogen yielding plants (Legumes) and easily available cultures to increase the yield
- (ix) Making them aware of contamination

(8) Home Science

- (i) Raising kitchen garden
- (ii) Helping the rural people to have poultry units and bee-keeping
- (iii) Organising rural balwari
- (iv) Low-cost nutritious foods-demonstration
- (v) Improving arts and crafts
- (vi) Make use of compost pits
- (vii) Pest control measures
- (viii) Nutrition education through various games

3.3.8 Fifteen per cent of the working time is to be spent for socially useful productive work. It amounts to about 150 hours a year. The 150 hours can be distributed throughout the year according to the convenience of schools. Sometimes, if it is impossible to give them every week, a stretch of several hours could be given during the year, for a camp. But continuity should be assured in the work. Many adjustments have to be made in the school time table to give the students and teachers free time to go to the workspot. The timings suitable for the students must also fit in with the timings of the people in the programme area. After the two years' programme, even when a particular batch of students completes its courses and leaves, the school should plan for follow-up of the programmes in the areas, by subsequent batches of students.

3.3.9 The programme calls for co-ordination at various levels.

A. State

At the state level, the Director of School Education in collaboration with the SCERT or SIE can be in charge of co-ordinating the socially useful productive

work scheme in the various schools. The SCERT or SIE may be requested to be in charge of conducting orientation for the Heads of Institutions of the various schools, area-wise and also in monitoring and evaluating the total programme. A state level co-ordinator can appoint to serve as liaison officer.

B. *District*

At the district level, the District Education Officers with some additional assistance will be co-ordinating the programme. They will support the Heads of the institutions in carrying out the programmes successfully. The teachers-in-charge of the socially useful productive work programme should be given orientation training area-wise, for which the District Education Officers would be responsible.

C. *Schools*

At the school level, the Heads of the Institutions should nominate a senior lecturer to be in charge and co-ordinate the entire programme for the school and guide the teacher-in-charge. All the teachers in the school would be guiding the students of their own class in all the aspects of the programme—planning, execution and evaluation. The Heads of the Institutions should scrutinize the records and registers maintained by the students, teachers and teacher-in-charge (co-ordinator) of the programme. The work co-ordinator at the school level should be counted in the work-load of the teacher.

3.3.10 Evaluation is an important aspect of planning and execution of the SUPW programmes in the schools. From the beginning of the programme, each step needs evaluation. For the evaluation of each student socially useful productive work internally, the following criteria and marks are suggested as an illustrative guide :—

Criteria	Weightage %
1. Personal qualities such as interest, initiative, commitment and dependability	20
2. Attendance and punctuality	10
3. Human relations—Ability to create rapport and to identify and work with the community and team.	10
4. Skills and competences ; ability in communication ; organisational abilities	20
5. Achievements (results outcome)	10
6. Report on work done	30
	100

The marks awarded for SUPW must become part of evaluation of the pupil's learning attainments. The impact of the programme on the pupils, teachers, teacher-in-charge, Head of the Institution and the community is to be studied to evaluate the programme in a real sense. The impact can be judged in terms of the knowledge, problems, needs of the community met, and skills obtained in the techniques of interviewing and working with people. The impact of the programme on the community can be in terms of material achievements and behavioural changes in the people. The material assets for the welfare of the community for example may include repair of the road, plantation of trees and temple renovation. The behavioural changes in the community can be assessed by interviewing the local leaders and getting the opinion of selected local people. The students also can be requested to list their achievements in their selected project areas. These types of evaluation will help in further development of the programme.

3.4 Electives

The third component of the General Education Spectrum is the electives. *With the 70 per cent of the time allocated to it, each student will be able to offer a minimum of three*

electives. There should also be some flexibility to students wishing to offer four electives, the fourth one being considered an addition to meet regional requirements, language needs, or the requirements of university education. A further element of flexibility is in the choice of electives by the student. In the interest of making a beginning in inter and multi-disciplinary which real life demands and in enabling the student to choose different combination of subjects, the electives are set forth in a common list without the traditional classification into the Science group, the Arts group or Commerce group.

3.4.1 *The list of electives for the General Education Course comprises the following subjects :—*

1. Language(s) other than the one offered as a compulsory language.
2. Mathematics
3. Economics
4. Chemistry
5. Political Science
6. Geography
7. Biology
8. Sociology
9. Philosophy
10. History
11. Fine Arts
12. Physical Education
13. Commerce and Accountancy
14. Psychology
15. Physics
16. Home Science

N.B.

- (i) The Sociology syllabus of CBSE might be subject to a further review by a group of Sociologists, particularly those who have framed questions on the present syllabus.
- (ii) The above list is only suggestive and more subjects may be added by the States depending upon their local needs. For instance Agriculture and Engineering Drawing could be offered as General subjects with their implications for SUPW carefully and fully worked out.
- (iii) While a minimum of 3 electives is considered essential for every student, the candidates may also offer, if they so wish, an additional subject from the given list.

3.4.2 The terms of reference required the Committee to recommend appropriate syllabi on the basis of a study of the syllabi of the Central Board of Secondary Education and a few State Boards. The syllabi of the Central Board and those of Gujarat, Karnataka (all three set forth in Annexure I, II & III of this Report) as well as others such as Tamilnadu and Maharashtra in the framing of which some members of the Committee were involved were received and studied. On the basis of this review, the broad guidelines with regard to courses, course content, time allocation, and some general pre-conditions have been arrived at and recommended. However, given the varying needs of the different regions and people of the country, it was felt that it would be against true pedagogic tradition to lay down syllabi from a central point. Equally it was felt that the Committee could not serve any one and few authorities such as the Central Board or two or three State Boards. Rather *it is recommended that in the light of the general guidelines set forth in this Report each authority, Central State and local prepare its own syllabi in response to the accepted principles of learning, national and state goals, and local resources and needs : human, physical and natural.*

CHAPTER IV

THE COURSE PATTERN : THE VOCATIONALISED COURSE

4.1 The Pattern

It is recommended that the pattern of the course and the allocation of time for the vocationalised spectrum be :

<i>Course</i>	<i>Time allocation</i>
1. Language(s)	15 per cent
2. General Foundation Courses	15 per cent
3. Elective subjects	70 per cent

4.2 Language(s)

Within the allocation of 15 per cent of the hours of instruction per week, learning of only one language will be possible depending on the facilities available in each school for teaching the language. Some thought should be given with regard to the content of the language course in relation to the content of the vocationalised courses chosen and/or offered.

4.3 General Foundation Courses

In order to provide a more rounded course to those who chose vocationalised electives, a general foundation course which provides a broad background area of knowledge of life and history is recommended. Such a course will equip the student with the minimum knowledge which will broaden his outlook and provide him with essential information about various inter-related matters which are helpful for successfully pursuing any work on his own. Vocationalised knowledge and the development of related skills are *per se* not enough to enable a person to enter life and set up his own establishment, however, small it may be. The general foundation courses will fill in this gap, giving general information on the history of science and technology on the development of Indian culture or on the elements which are common to different vocational elective subjects. With regard to the latter, for example, the courses could include units on marketing of produce, entrepreneurship, co-operatives, credit facilities, management of small farms, small cottage industries and small establishments, adaptability to changing situations and general exposure to world trends. Special emphasis should be laid in the general foundation courses with regard to the requirements for rural vocations.

4.3.1 A specimen syllabus of this general foundation course based on the inter-related concepts of education, work and development related to productivity in different vocations is given in the following paragraphs which will need to be adapted to each set of local circumstances by State Boards. The course is meant to be taught for 2 years, 4 to 5 hours per week. Part 'A' of the course is common to all vocations. From Part 'B', the unit most related to the particular vocations may be chosen.

4.3.2 The objectives of the course are to enable the student to :

- (a) Become aware of the need for rural development and self-employment.
- (b) Understand the place of agriculture in the national economy ;
- (c) Develop skills and managerial abilities to run small-scale and cottage industries;
and
- (d) Gain insight into the problems of unemployment, under-employment, under-development and economic backwardness of India.

4.3.3 The course content will comprise Part 'A' and Part 'B' :

PART 'A'

(1) Gandhian Concept of Education

- Education, work and development.
- Education rooted in the culture and life of people.
 - Education through vocation—self-supporting education.
- Education to impart self-reliance, self-financing, respect for manual labour and promotion of the all round development of the pupil.
- Rural and urban vocations.
- Developing and promoting rural vocations.

(2) Agriculture in the National economy

- Agricultural productivity and productivity trends.
- Causes for low productivity in agriculture.
- Factors which will step up agricultural productivity.

(3) Rural Development

- Need for rural development and village uplift.
- Definition of under-development. Characteristics of under-development.
- Poverty malnutrition, illiteracy, population pressure, inadequate housing.
- Causes of economic backwardness in India.
- Structure of India's rural society.
- Characteristics of rural life in India—family and community life, religions and castes.
- Rural problems and solutions—cultural and social aspects.
- Provision to improve rural home living, health, child care, education, income, conditions of work, recreation and cultural activities.
- Efforts to improve the economic conditions of rural families—better living and fuller life.

(4) Problems of Urban Slums—measures to overcome them.

(5) Health, Hygiene and Sanitation

- Health—A national resource. Determinants of health, Indicators of health.
- Personal and community hygiene—Environmental sanitation, safe water supply—excreta disposal—proper drainage, good housing and clean air.
- Communicable diseases—preventive measures. Increasing facilities for treatment of communicable diseases.
- Vital link between nutrition and health, concept of adequate food. Ill effects of poor diets—nutritional deficiency diseases. Methods of control and prevention.
- Basic health services for the community—Provision of medical care, Improvement of environmental sanitation—Control of communicable diseases. Mother and child health services—School health services.
- Health education at various levels.

PART 'B'

(Choose any one of the following 9 sections as appropriate)

(1) Small-Scale and Cottage Industries

- Definition and history of development.
- Role of small enterprises in Indian economy.

- Cottage and small-scale industries in the Five-Year Plans.
 - Financing small-scale and medium sized industries.
 - Policies and programmes to encourage small-scale and cottage industries.
- (2) **Entrepreneurship**
- Meaning.
 - Personal qualities needed.
 - Knowledge about employment opportunities.
 - Scope of various small business production.
 - Marketing, managerial, financial aspects.
 - Office management.
 - Financing agencies.
 - Financial facilities, how and where to get procedural details in starting a new industry.
 - Investment decisions, market study, production, planning and scheduling, budgeting and man-power planning.
- (3) **Co-operatives and Credit Facilities**
- Rural indebtedness, co-operative movement.
 - Short-term and long-term co-operative credit.
 - Achievements of co-operation in India.
- (4) **Marketing**
- Marketing-concept and its significance in developing economy.
 - Markets and prices.
 - Marketing functions.
 - Types of markets and market services—Regulated markets, co-operative marketing and Government and Agricultural marketing.
- (5) **Sales Promotion**
- Sales promotion through advertising.
 - Discipline, personal appearance, punctuality, administrative control.
 - Maximum information about own and competitor's product.
 - Understanding consumer behaviour and psychological techniques in selling.
- (6) **Unemployment, Under-employment and Man-Power Utilization in India**
- Kinds and extent of unemployment.
 - Causes for unemployment.
 - Disguised unemployment.
 - Educated unemployment.
 - Rural unemployment.
 - Remedial measures for unemployment in India.
- (7) **Human Relations**—need for maintaining harmonious human relationships. Learning about facts and situations which promote sound human relationship.
- (8) **General Exposure to World Trends and Changes**—Changes in education, social attitudes, values and economic sphere.
- (9) **Environmental Protection and Development**
- Need for a safe environment for health. Impact of environment on man.

- Air pollution—Impact of Petrochemical industries—Problem of air pollution in India.
- Water pollution—Status of water pollution in India. Water pollution due to Industrial wastes. Organic pollution in Lakes.
- Noise pollution—Harmful effects of noise on health and well being of living organisms.
- Approaches to solve environmental pollution. Recycling of wastes and environmental hygiene.

4.4 Vocational Electives

70 per cent of the weekly hours of instruction is allocated to the teaching of vocational elective subjects—about 50 per cent of these hours should be spent on practical work, with a certain margin of flexibility varying from vocation to vocation. Special attention has to be given to the self-employment factor. Vocational education at this level should, as far as possible, not duplicate what the ITIs, or Technical Higher Secondary Schools are at present offering. As the main thrust of the proposed vocationalisation is on rural, agricultural and related vocations, the question of spending a minimum of 2,000 hours, as is done in the case of technical vocations at present, should not normally arise. It should suffice if the desired competency can be acquired in the given time in the particular vocation. The course in vocational areas should be drawn up in such a way that the employability of the students will be enhanced. The duration of a vocational course should normally be two years in so far as the instruction in the schools in the formal system is concerned. The courses requiring lesser duration than two years, may be pursued through non-formal systems, such as part-time and evening courses, correspondence courses, etc., and the institutions should be free to offer such courses through non-formal channels.

4.5 Agriculture and Related Vocations

Education for farming and rural living is an important aspect of the total educational programme in India. Vocational education in agriculture can fill a conspicuous gap in the education of farm boys and girls. Vocational agriculture is directed towards strengthening the farm and the farm family in its role of producing food, educating youth, contributing to the personal development of individuals, and helping them to become competent farmers and responsible rural citizens. It is proposed that those students who offer vocational course in agriculture study one course on fundamental principles of agriculture relating to crops, horticulture, animal science and allied developmental work done in the field of agriculture. Formal education in agriculture given by agricultural schools, colleges and universities has trained men predominantly for jobs and only a small proportion of those trained have gone back to their farms. Therefore, it is essential to provide a series of courses for the future farmers so that they can select vocational subjects according to their own choice and need, which will be useful to them in their practical life.

4.5.1 The following courses already exist in the syllabii of the Central Board of Secondary Education and may be retained :—

- (i) Inland fisheries.
- (ii) Basic programme in fruit and vegetables.
- (iii) Agriculture.
- (iv) Farm Mechanics and Engineering.

Besides the courses mentioned on previous page, the following additional vocational courses are recommended :—

(i) Soil and Water Conservation

Soil survey and land development ; drainage, soil erosion and its Control, methods of soil conservation, viz., bunding contouring, strip cropping, methods of water conservation and methods of water harvesting.

(ii) **Repairing and Maintenance of Farm Machines**, such as tractors, power tillers, pump sets, plant protection equipment, threshers, etc.

(iii) **Post-harvest Technology**

Introduction and importance of post-harvest technology, maturity and ripening processes, factors responsible for deterioration of harvested food materials, fruit and vegetable preservation, storage techniques, insecticides used for food storage; seed-treating and mixing equipment ; conventional flour milling, rice milling and dal milling equipment; different grinding equipment used in food processing industries; milk processing equipments.

(iv) **Agri-based and Agro-based Industries**

The production and distribution of fertilizers, seeds, pesticides and farm machinery, marketing, processing and transport and use of product, by product and waste-product of the agricultural commodities in their industries.

(v) **Agricultural Chemicals**

Nitrogenous, phosphatic & potassic fertilizers, methods of manufacturing & properties; gypsum, pyrites, sulphur and lime as soil amendments; calcium, magnesium, sulphur, iron, manganese, zinc, copper, boron, molybdenum—their carriers & role in plant nutrition; characteristics of insecticides, acaricides and rodenticides—formulation, emulsion and solution of various insecticides, their strength & doses; characteristics of fungicides & nematocides and their formulations & use; classification & characteristics of herbicides; fertilizer mixtures & fertilizer pesticides mixtures.

(vi) **Animal Management-based course**—including—

(a) *Dairy Husbandry* : Importance of live-stock, dairy buildings, breed of cows buffaloes, artificial insemination, care and rearing of calves, heifers ; care of cows & buffaloes during pregnancy & parturition ; feeding schedules, use of agricultural by-products ; importance of milk, milk products in human nutrition ; milk processing ; elementary knowledge of important live-stock diseases, elementary principles of treatment & care of sick animals ; importance of fodder & pasture crops ; natural grasslands of India ; technology of fodder production ; establishment of pastures & their management.

(b) *Sheep and Goat Production* : Different breeds of sheep & goat, housing & use of different equipment ; handling of sheep & goat, care & management ; feeding & fattening, feeding rams & bucks used for breeding purposes ; different diseases & their diagnosis ; breeding & improvement in sheep & goat, records and their use ; preparation & processing of sheep & goat products for domestic use.

(c) *Poultry Farming* : Poultry keeping & economics of poultry production, poultry house construction, poultry house equipment, management of laying stocks, diseases of poultry birds and their control ; important breeds of poultry, incubation & hatching management, computation of feeds for chicks, growers, layers & broilers, farm records ; poultry products and their preparation.

(d) *Pig Husbandry* : Importance of pig husbandry, survey of local demands for pork products ; general principles of pig management ; pig breeding, management of sow & litter ; artificial insemination ; Principles of swine nutrition ; nutritional needs of pigs & hogs of various ages & productivity ; Diseases & parasites of pigs ; pork & pork products ; swine records.

(e) Veterinary aids, health and care of farm animals.

(vii) **Horticulture-based courses**—including—

(a) *Nursery management* : Propagation techniques in various fruits, root-stock for raising different fruit crops ; nursery raising ; training and pruning of fruit trees.

- (b) *Vegetable and Fruits* (Olericulture & Pomology) : Principles of vegetable production, classification of vegetables ; kitchen gardening, school gardening and truck gardening ; cultivation of summer and winter vegetables ; propagation techniques, root stocks and nursery ; training and pruning of fruit trees ; visits to orchards cultivation of fruit crops ; fruit and vegetable preservation.
- (c) *Floriculture and Medicinal Plants* : Importance of gardening, types of garden lawns, study of shade trees, ornamental trees, green house, glass house, pot mixture, cultivation of summer, rainy and winter season flowers ; annual, biennial & perennial flowers, crotons, shrubs, edge and hedge plants, green house plants, water garden plants, bulb plants, creepers' and climbers ; medicinal plants, their identification, use and cultivation.
- (d) *Fruit and Vegetable Preservation* : Need for fruit and vegetable preservation causes for spoilage of fruits and vegetable products, methods of preservation ; short term preservation of fresh fruits and vegetables ; preparation and preservation of fruit juice, squash, cordial, nector, etc ; preparation and preservation of jam, jelly, marmalade, chutneys, sauces and pickles, microbiology and bio-chemistry involved in preservation.
- (viii) **Soil, Water Testing and Management**
- Soils of India, soil survey, soil classification, methods of analysis for nitrogen, phosphorus, potassium, sulphur, zinc, manganese, copper etc. gypsum and lime requirement of soils, water analysis for $\text{CO}_3=$, HCO_3^- , Cl^- , BO_3 , $\text{SO}_4=$, CA^{++} , Mg^{++} , Na^+ etc.; Crop requirement and plant analysis ; Interpretation of data and recommendation of fertilizer requirement and soil amendment, soil management, fertility maintenance ; crop rotation ; erosion control ; land levelling ; soil organic matter its role in land improvements.
- (ix) **Co-operative Marketing/Agricultural Produce Marketing**
- (x) **Small Farm Management and Rural Construction Technology**
- (xi) **The following small courses are also recommended**
- (a) *Fuel and Energy*, i.e., Gobar Gas Plants, etc.
- (b) *Bee Keeping (Agriculture)* : Introduction, significance and scope; bee keeping as a cottage industry ; economics of bee keeping ; problems of bee keeping ; identification and selection of bees; bee pasturage; feeding of bees and seasonal management ; honey production, diseases and enemies of bees, their control.
- (c) *Sericulture* : Silk worms and their economic importance ; mulberry cultivation ; pests and diseases of mulberry and their control ; rearing of mulberry silk worm ; methods of harvesting and assessment of cocoons, reeling of raw silk ; weaving of cloth, by-products of silk ; morphology of larva, pupa and moth ; hygienic conditions ; protozoan diseases of silk worm and methods of control ; bacterial, fungal and viral diseases of silk worm.
- (d) *Forestry and Forest Products*
- (e) *Commercial Crops*
- (f) *Agricultural Economics*
- (xii) **Related Subjects** : Related subjects may be taught to strengthen the vocational courses. These subjects may be agricultural physics, agricultural chemistry, anthropology, plant pathology, human and animal nutrition etc., instead of physics, chemistry or biology.

4.5.2 The teaching of vocational agriculture is a many-sided occupation. It calls for first hand basic technical knowledge of farming as an occupation and/or business. It requires fundamental and specialized knowledge and skill in how to train others in the many jobs

which occur in the daily life and work of agricultural citizens. Such teaching calls for a high degree of leadership and public relations ability. Teaching of vocational agriculture can only be done successfully when approached from the practical point of view. This calls for first hand experience on the part of the learner and can be obtained only by actually working on and with the soil, the land laboratory or school farm, which offer an opportunity to provide or supplement such experiences. *So, it is suggested that only those schools having at least one hectare of land be given permission for starting this vocational course.* Rural schools can be a pioneer in opening of this vocation, as these schools generally have ample land and an agricultural background among its students.

4.6 Non-agricultural Vocational Courses

4.6.1 The following vocational courses have been identified and an outline of the course content has also been indicated against each. The trades being handled by the ITIs are not included and the list of vocations to be offered by ITIs is in addition to this list.

4.6.2 Business and Office Management

- (a) *Banking*—Theory of Banking—functions of various types of banks.
 Banker—Customer relationship, types of customers, customer service.
 Simple banking operations—types of deposit schemes, opening and operation of accounts.
 General utility services, transfer of funds, collection of cheques.
 Negotiable instruments, endorsement, crossings.
 Loans and advances—security, bill discounting, application for loan.
 New trends in banking—rural banking, social objectives.
 Job experience of different counters in a scheduled bank.
- (b) *Office Management and Secretarial Practice*
 Drafting of office correspondence; handling mail; despatching materials; filing and indexing; maintaining accounts; elements of public relations; and typewriting and duplicating.
- (c) *Stenography and Typewriting*
 Taking dictation and transcribing—speed 100 w.p.m., typewriting—speed 50 w.p.m. ; duplicating—cutting stencil, operation of machine ; assembly of papers, use of stapler—heavy and light ; filing—alphabetical, maintenance and handling of office files; assisting co-workers and visitors—preparation of appointment schedules ; using the telephone—answering courteously, recording of messages, making internal and external calls, use of directory ; office production techniques ; arranging work according to urgency, performing a variety of office tasks, drafting, use of labour saving devices ; and running a steno-typing institute
- (d) *Accounting and Auditing*
Accounting—Journal and its division, ledger, trial balance and final accounts ; adjustments and rectification of errors ; banking transactions and reconciliation statement ; Indian system of accounts—practices and procedures ; and job experience as MUNEEM, accounts clerk and cashier.
Auditing—Need, objects and definition of an audit, different kinds of audit ; internal check, detection of fraud, cash audit, continuous audit ; verification and valuation of assets ; appointment and duties of auditor—work experience as an audit clerk ; and audit programme—reporting.
- (e) *Telex and Telephone Operator*
- (f) *Office Machines Operator*

(g) *Marketing and Salesmanship*

Marketing—concept, organisation, information systems ; product planning and management, packing and packaging, pricing, channels of distribution, advertising, appeals and media choices, sales promotion schemes ; role of salesmanship, working as a salesman in a small business ; types of selling, the sales plan, techniques, analysis, process of selling ; and consumer behaviour and psychological techniques in selling, handling different types of customers, handling complaints.

(h) *Purchasing and Store Keeping***4.6.3 Para Medical**(a) *Multi-purpose Health Workers*

Training to work in rural areas to maintain the health of the rural community by attending to their personal hygiene, environmental sanitation, vaccination, inoculation; training for attending to patients suffering from minor ailments and for assessing patients required to be referred to medical officers ; training for undertaking maternity cases and child welfare work including nutrition and population control; knowledge of diseases, management of shock and wounded ; and prevention of spread of diseases.

(b) *Orthopaedic Technician*

Knowledge of human skeleton, different types of bone fractures and proper handling of such cases. Making of plaster of Paris bandages, cutting of plaster, etc.

(c) *Ophthalmic Technician*

Structure and function of different parts of eye and connected scientific knowledge. Training in eye ball exercises for squaint. Testing of vision and prescribing glasses, knowledge of general diseases of the eyes. Training in operation theatre work and work connected with survey of eye diseases and eye camps etc.

(d) *Laboratory Technician (Medical)*(e) *Dental Technician*

Training in assisting dental surgeon in making artificial dentures. Knowledge of oral anatomy, chemicals, instrument and apparatus used in making dentures, their use and proper maintenance.

(f) *Dental Hygiene Technician*

Training in dealing with oral hygiene and assisting dental surgeon in the treatment of gum and tooth diseases—training in the use of instruments, apparatus used by dental hygienists and drugs used by them. Applied knowledge of anatomy, pharmacology and chemicals used by dental Hygienist.

(g) *Radiology Technician*

Training in taking X-ray films and treatment of patients with X-ray (Radiotherapy). Knowledge of basic and connected vocational sciences, elementary knowledge of construction and working. General and special X-ray techniques, film development and X-ray therapy.

(h) *Physiotherapy Technician*

Knowledge and training in working of electronic and other specialised equipment used in management of some diseases of joints, muscles, etc. Massage and special exercises for muscular weakness and for stiff joints after fractures. Knowledge of human bones, muscles and joints. Condition causing disabilities.

(i) *E.C.G. and E.E.G. Technician*

Elementary knowledge of electro-cardiogram and electro-encephalogram and their working. Recording of electrical changes in a heart muscle and brain tissue for detecting abnormalities in diseases of the heart and brain tissues.

(j) *X-Ray Technician*(k) *Dietician Assistants*

Knowledge of nutritional science and its contribution in improving and maintaining health, knowledge of food values and cooking methods to preserve nutritive value of food. Importance of Hygienic practices in handling and in storage of foods. Adequate diets for infant children, adolescents, old age and different diseases. Improving the dietary habits of people.

(l) *Technician for Artificial Limbs*(m) *Health Extension Worker***4.6.4 Educational Services**(a) *Museum Keepers*

Museology—utility, meaning and scope ; types of museums—museums of medical colleges, archaeological museum, etc. ; museum arrangement and organisation—lighting, decoration, preservation ; lay-out and equipment—museum literature, accounts, files, building, special equipment ; and personnel organization—guides, receiving visitors, maintenance and storage.

(b) *Library Assistant*

Library Science—meaning and importance ; outline of general literature—various subjects and areas ; library organization—standard classification of books and journals—subjectwise and authorwise, cataloguing, reprography, reading room arrangement ; library layout and equipment storage facilities for books and newspapers, personnel organisation ; and documentation and reference section, filing and indexing.

(c) *Laboratory Assistant*

General : Care and use of Laboratory Equipment. *Microbiology* : Knowledge of micro organism responsible for causing infection and their identification. *General Pathology* : Knowledge of normal and abnormal findings in urine, stool, etc., and their detection. *Biochemistry and Serology* : Normal and abnormal chemicals in blood, cerebrospinal fluid. Antigen antibody reactions, various tests conducted in laboratory—qualitative and quantitative ; and examination of tissues like cancer, etc.

(d) *Audio-visual Technician*(e) *Teachers (Primary Classes)*

General professional courses—principles and problems of primary education, psychology of child development, school organisation, health education ; content and methodology courses—first language, mathematics, general science, social studies, work-experience, student field experiences—observation of lessons, preparation of teaching aids, seminar discussions ; and student teaching—internship.

(f) *Educational toys makers*

Concept of toys—importance and characteristics ; types of toys—traditional, modern and working of toys—block assembly, mechanism, soft toys, puppets, mobiles ; materials and techniques of toy making—clay and plaster cast, papier mache, card-board, plywood, softwire, stuffed ; and shaping, cutting, stitching, decorating of various parts of a toy.

- (g) *Preservation of Books and Manuscripts*
- (h) *Balwari Teachers*

Role of Balwari in developing children : Principles of child development, organisation and administration of Balwari methods of teaching children. The Balwari food problem and maintenance of records.

- (i) *Music and Drawing Teachers*

4.6.5 Local Body and Other Services

- (a) Village level worker—Woman Gram Sevika—role and functions in the community development block. Competencies required. Methods of working with people. Developing home improvement programmes. Maintenance records.
- (b) Development worker.
- (c) Extension worker—Development of Mukhiya Sevika Skills.
- (d) Block extension educator.

4.6.6 Journalism

- (a) Editorial assistants
 - (b) Newspaper reporters
- } Collection, compilation and subbing of material ; duties of editorial assistant ;
 { proof reading, editing and processing the material through the press.

4.6.7 Home Science Related Vocations

- (a) *Textile Design*

Types of textiles, their identification, qualities, shrinkage and care, texture ; textile selection—colour, lines, weave, weight, durability and special care required, and textile designs—sketching, still-life and free hand drawing, printing, block and silk screen, dyeing, tie and dye and woven designs, preparation of designs on different types of garments with embroidery.

- (b) *Hotel Reception and Management*

Qualities required of a receptionist and manager. Managerial skills in house keeping, food preparation and principles of dietetics, hygiene of food handling and running hotels and canteens.

- (c) *Interior Decoration*

Elements of design—types, characteristics, principles of design, colour harmony ; wall and floor finish ; selection, care and arrangement of furniture and furnishings ; home lighting—selection of lamp shades, curtains ; selection, care and use of accessories for the home pictures, plants, flowers and art objects, cushion covers, table cloth, etc. ; flower and kitchen garden ; and floor decorations, rangoli, floor carpets.

- (d) *Laundry*

Factors to be considered in laundring different fabrics and clothing items. Care to clothing. Establishing community laundry services.

- (e) *Food Processing and Preservation*

Composition of foods—Need to process and preserve foods—Different skills to preserve food—setting up and operating food process and preservation units.

- (f) *Dress-making and Designing*

Tailoring equipment—thread, needle sewing machine ; designing, cutting and making of garments—techniques of taking measurements, matching lines and plaits, types of seems, buttons, button-holes, pockets and collars fitting, decorative stitches and belts ; and organising and management of a small tailoring unit.

- (g) Also refer the vocations set forth above under Dietition assistants, educational toy makers, Balwari teachers, village level workers (women), extension workers (women).

4.6.8 Other General Services

(a) *Commercial Art*

Drawing from life, still life and nature outdoor sketching, study of techniques of illustration for specific purposes—pen and ink, line, wash, half-tone, colour transparent and opaque ; lettering and typography—Calligraphy, study of Roman and Devanagari Lettering, display types, brush lettering ; and making poster, layouts for press advertisement, folder.

(b) *Photography*

Its utility different types of cameras, lenses, films, filters, camera accessories, dark room and its layout ; importance of light exposure, flash and its use ; constituents processing of the film, faults in the negatives; and contact printing and enlarging papers, retouching and finishing.

(c) *Printing and Lithography*

(d) *Ceramics*

Chemistry of ceramics, physical properties, types of ceramic products, pottery shaping processes, manufacturing methods, marketing processes, etc.

(e) *Pottery*

(f) *Tourist Guides*

Tourism—meaning, importance and scope ; archaeology—antiquities and their characteristics, qualities and qualifications of archaeologist ; knowledge of historical places, museums, zoos, sight seeing places, picnic spots, hill stations and other beautiful places ; art of presentation—voice, tone, subject matter, relevant information ; and knowledge of mode of conveyance, stay arrangements and famous articles.

(g) *Barbery*

CHAPTER V

STRATEGIES FOR IMPLEMENTATION

5.1 Preparation

5.1.1 Probably more reforms and innovative educational plans have failed for lack of adequate preparation than for any inherent errors or defects in the plan. And in our society where planning and programming have reached quite high and sophisticated levels, the need for taking time and expending equal effort on preparation for executing the plan is urgent, and important. Most States and the Central Board of Secondary Education have already launched this plus two stage. *It is recommended that all authorities now pause in the further phases of the execution of the plus two stage and take time to review their programmes in the light of the guidelines set forth in this report before starting out on the next phase of the Higher Secondary stage.*

5.2 Flexible Streaming

5.2.1 One of the issues on which further thought might be given relates to the question of streaming of students into the General Education and the Vocationalised Education Spectrums. *It is recommended that there be no rigid streaming of courses into the General Education and Vocationalised Education Spectrums.* Each school should be allowed to offer such General Education and Vocational Courses in accordance with the facilities available and the demands in the region. The student on his side should be free to offer either the General Education or Vocationalised Courses or a mix of the two, particularly in relation to the vocational courses referred in Chapter IV, Paras 4.4 to 4.6.8. There should be in-built elasticity in the choice of the General Education or the Vocationalised subjects.

5.2.2 Reference was made in Chapter II, Paragraph 2.4.1, of the many possible cross-over points between the General Education and Vocationalised Education Spectrums, both during and after the higher secondary stage. This could be effectuated through several provisions. One would be for a student to be registered at his request in one Spectrum provisionally for one semester/term, at the end of which he may decide what he wants to learn, involving in some cases a switch over. A second provision could be a mid-way correction, that is at the end of XIth Class, involving in some cases taking additional credits or some remedial learning to make up the time and subjects lag. And then there are the opportunities of continuing education either in the formal educational system (coming back to the higher secondary stage for a course in the other Spectrum or switching at the tertiary stage to the other set of courses) and the various non-formal education and training programmes. These cross-over points will ensure that there will be no hard and fast rule about streaming, that no learner need be labelled all his life as 'a general education' man or 'vocational education' woman, but can learn what he or she wants within the limits of (a) his/her aptitudes, (b) employment demands and (c) constraints of social justice.

5.3 Models of Elective Subjects

5.3.1. The recommendation on streaming leads on logically to the elective models. *It is recommended that three models in the offering of selective subjects by schools be envisaged and implemented.*

- (i) Those offering only the General Education Spectrum and its elective subjects ;
- (ii) Those offering only the Vocationalised Education Spectrum and its elective subjects ; and
- (iii) Those offering both General Education and Vocationalised Education Courses and their elective subjects.

The third model, of schools offering both the spectrums, will be the generality for the schools in the rural areas where the offerings will include some of the courses under General Education and parts of Agriculture and courses in related subjects. For schools located in the urban area, which by and large offer General Education Courses, some vocationalised courses like stenography, accounting and auditing, business and office management, which are related to the General Education elective subjects, such as Commerce, Economics and Mathematics are relevant. *Both to adhere to the philosophy of the importance and validity of work based vocationalised learning and to avoid creating a new derogatory distinction between schools, the third model should be the generality at least for the Sixth Plan.* Thus, for instance, if good urban schools which are usually the pace setters of book based learning do not offer any vocational courses, despite their learning attainments under SUPW, vocationalisation may come to be classed as not being the hallmark of first rank schools.

5.4 Vocational Survey and Location of Schools

5.4.1 Vocationalised study requires careful prior or post-hoc preparation. It is recommended that with regard to the offering of vocationalised courses in rural or urban schools, a vocational survey of the area—metropolitan ~~taluk~~, taluk, district or state—be undertaken, such surveys being done, even in cases where ~~the vocational~~ vocational courses have been started. The aim of such surveys is to make reasonably accurate estimates of manpower requirements in the area, the range of available occupations, the trend of emerging vocations, the details of the levels of competencies needed, the approximate duration for which such competencies may be in demand, and the extent to which educational and training facilities are available in the neighbourhood to provide the required competencies. In a society such as ours facing serious resource constraints, it is the path of prudence for new vocationalised courses being started only when the survey data point to the need. In the case of courses that have already been started, there is always the possibility of mid-way correction, if needed. The survey-path would avoid the costly waste of persisting in an initial error.

5.4.2 Another subsidiary aim, certainly a spin off effect of the survey, would be to provide the data for the location of schools with vocationalised education courses which will depend on potential student demand, infrastructural facilities including land laboratory, demonstration-farm, or cattle shed, as well as libraries, and qualified teaching staff. Since most of the Higher Secondary schools are located in urban or semi-urban areas, good high schools in rural areas should be identified and additional facilities provided for them to offer the plus 2 course. *In the selection of schools, it is recommended that the location of schools in the rural sector be given priority.*

5.5 Use of Available Facilities and Futures

5.5.1 The third all-India Educational Survey reports that there are about 9,700 institutions in the country providing facilities for Higher Secondary general education, of which 4,100 are catering for the "rural needs" and the remaining 5,600 for "urban needs". The 4,100 institutions are located in district or taluk headquarters which are themselves urban or semi-urban centres. Of the total population of about 62 crores of the country, about 48 crores live in the villages and the remaining 14 crores in the urban centres. Yet, the rural population contributes only 6 lakhs of students to the higher secondary education, while the urban population of 14 crores contributes 9 lacs. For vocational courses, at this stage there are 327 polytechnics, 361 industrial training institutes, about 560 para-medical schools, 120 commerce schools, 22 veterinary schools and 3 mining schools. These will be able to absorb about 2.5 lakhs of students every year. This means that for about 3.5 lakhs of students the vocationalised spectrum recommended earlier must make provision, which is costly and difficult, unless phased over a period of 10 to 15 years.

5.5.2 As noted earlier, all the existing vocational institutions are equipped for a total enrolment of 2.5 lakhs. The polytechnics admit annually about 40,000 students in

courses, of which the majority are designed for instruction, for three years and some for two years of instruction. The ITIs/apprenticeship programmes offer training in 53/103 trades, of durations ranging from 6 months to 4 years, of which about 40 trades require a pass in the 10th Standard examination, and provide training to about 1 lakh students. Excluding a dozen courses or so, the rest are designed to cater to the need of industry and government services, especially in the Public Works and Electricity Departments. The para-medical and veterinary schools provide training for about 5,200 students. All others such as Commerce and Home Science schools may be assumed to provide for an additional enrolment capacity of about 50,000. To economise on the financial investment on infra-structural facilities, *it is recommended that the spare capacity in all these schools be used and the enrolment be increased through running double shifts wherever it is feasible and whenever further demands for technical skills and competencies arise in the neighbourhood, including as necessary adding new courses and strengthening the existing facilities.* By this strategy it is possible not only to put the available equipment to fuller use, but also to increase the capacity to train an additional 50,000 students—about 10,000 in Polytechnics, 20,000 in ITIs and 20,000 in other vocational schools.

5.5.3 Looking at the present and the immediate future, we need about 4,000 Higher Secondary Schools to provide a variety of vocational courses of various duration from among the 9,700 Higher Secondary Schools/Intermediate Colleges/Junior Colleges to supplement the Polytechnics, ITIs and Para-medical Schools, and to effectively provide vocationalised education for about 50 per cent of the students who pass out of High Schools if the present student enrolment continues to remain static. To make adequate provision for an anticipated increase of 25 per cent in the enrolment by 1988, an additional 1,500 schools for vocational courses will be needed, which means an addition of about 150 new schools each year commencing from 1978. *Since little or no vocationalised education facilities are really available for rural students, it is again recommended that all the new schools should be constructed in rural areas and should be adequately equipped.*

5.6 Counselling and Placement

5.6.1 With the development of the General Education and the Vocationalised Education Courses and their elective subjects, there is need to advise students and parents on the choice of course, and arrange for placement when the course is completed. As vocationalisation is extended, *it is recommended that Counselling and Placement Officers be appointed in clusters of 3 or 4 schools, particularly in rural areas to start with.* Their function will be to advise students with a rural or urban poverty background on the choice of elective subjects, organise for them remedial courses to make up deficiencies in interested areas, and help use available facilities to improve their performance. Their other function of placement requires that they have close liaison with employment agencies and agencies (banks) promoting self-employment and entrepreneurship. These required qualities have implications for the programmes where such counselling specialists are trained.

5.7 Teachers

5.7.1 With the introduction of socially useful productive work and community service as compulsory and integral part of education at the higher secondary stage for all students offering General Education and the launching of Vocationalised courses, there is need for reorganisation of teacher-education. Unless a teacher is prepared by way of pre-service and in-service education to take up these new challenges of education, the objective of the plus 2 reform will be a non-starter. The elective subjects under General Education (which bring down the first year undergraduate curriculum to Class XII), also necessitate a fresh look at the contents and methodology of teacher-education, and call for orientation of existing teachers through in-service courses. *It is recommended that both pre-service and in-service teacher education should be so organised as to bring about the proposed changes at this stage of education.* The universities which are responsible for pre-service

teacher education are requested to reorganise and reconstruct the teacher education curriculum for graduate and post-graduate classes, so that their products who join the teaching profession are truly and conceptually committed to socially useful productive work and community service. Such an attitudinal change in the future generation of teachers will facilitate a similar attitudinal change in the school going children. Similarly, the new emphasis on practical work and vocationalisation of education has also to be incorporated in the teacher education curriculum so that the availability of suitable teachers to teach vocational courses may be ensured for the future. For instance, a teacher teaching vocational agriculture must be able to meet the educational needs of farmers and must be equally, at home in the classroom, in the farm mechanic shops and in the farms of the community. *Besides pre-service education, in-service courses for existing teachers in schools will have to be organised on a mass scale.* The Universities, the Teachers' Training Colleges, State Councils of Educational Research and Training (SCERTs), State Institute of Education, State Institutes of Science Education, NCERT, Boards of Secondary Education, Agricultural Universities, institutions like ICAR, and all others who are engaged in the programme of orientation, of teachers should be actively involved in this task. New demands of education have posed new challenges for the teachers and it is only through in-service and refresher courses that the teachers can adequately meet the challenges of change. In this context *it is also recommended that at the start there should not be insistence on post-graduate qualification in respect of teachers of vocational courses. What is needed is means of developing the required skills and competencies in particular vocations and for this, services of persons who have had actual experience of on-the-job may be fruitfully utilised to teach vocational courses. Part-time teachers may also be appointed, wherever necessary.*

5.8 Curriculum and Textbooks

5.8.1 Reference was made earlier to the enriched curriculum for the Elective subjects under the General Education Course consequent on bringing the first year under-graduate curriculum into the plus 2 stage. On the vocationalised sector, as the data become available from the survey reports, experts drawn from the agricultural, self-employing and employing agencies in appropriate vocations for which the courses have to be designed and academics should be entrusted with the responsibility of developing suitable curricula, keeping in view the depth of knowledge, the levels of competencies expected and linkages to be established for further education and training. *The curricula should be so structured that the courses lend themselves to imparting instruction in terms of well connected modules to enable the students to choose and combine them according to their needs.* Evaluation should be continuous and grades or marks should be awarded on completion of every module. The minimum number of modules for the award of certificates or diploma should be clearly indicated.

5.8.2 Suitable books and teaching aids are important inputs for the success of both the groups of courses. At present suitable text-books for some general and vocational courses are not readily available. *In order to impart instruction in vocational courses, in agricultural and related subjects, it is recommended that the books be written on a priority basis to suit local conditions and made available to the schools.* In some general education and commercial subjects where text-books produced in other countries are available, these books may be adapted and translated in Indian languages.

5.9 Apprenticeship and Recruitment Policy

5.9.1 Apprenticeship facilities should be extended to all the students who complete education in vocational streams if they desire to benefit from such training. Suitable rebates of training should be worked out, taking into account the contents of the curricula, depth of knowledge and the levels of skill competence. This will have considerable influence on those who have joined the vocational streams at present, and are doubtful about the extension of this facility.

5.9.2 The largest proportion of the working force belongs to the middle level employment, whether it be in the agriculture/agro or other industries or in trade and business or

hospitals. An analysis of various advertisements for a variety of jobs (see Madras Institute of Development Studies publication, Educational Profile of Jobs in Tamil Nadu) indicates that about 80 per cent of them prescribe university degrees as essential qualifications, irrespective of the needs and requirements of the job. Most of these positions in fact do not need university degree skills. What is needed often is adequate skills and proficiency to perform duties efficiently and this required proficiency can be secured through suitable vocational training without a university education. *It is recommended that the recruitment policy of the Government as well as public sector organisations should be revised and job requirements should replace the university degrees as essential qualifications. Vocationally qualified persons should so be preferred to graduates, and be entitled to the pay scales available to the graduates as long as the jobs performed are the same or similar.* Also such persons should be eligible for the higher positions in the ladder, either on the basis of departmental tests or improvement of qualifications through correspondence or evening courses or blocktime training.

5.10 Vertical Mobility

5.10.1 The recommended apprenticeship and recruitment policy are *part of a Package recommended to improve the prospects of the majority of those who enter the plus 2 stage and terminate their formal schooling after acquiring some vocational skills* The vocational courses should not be a dead end in themselves. For those who wish to continue and improve their qualifications there should be a provision for allowing them admission to the 2nd year of the Agricultural Universities or the 3rd year of the polytechnics or of nursing colleges and other such institutions where admission requirements is a ten-year school pass. For admission to the related professional courses, it would encourage vocationalisation if at least there is a provision to enable the vocational class XII leavers to seek admission to the professional courses after the person has acquired actual job experience of three years or more. This is the practice already followed in some institutions, such as the Indian Institute of Management, and may be followed profitably by other professional institutions of higher learning. The curriculum and the structure of courses of the professional institutions—specially for the first year of the course—will have to be reformulated in such a way that there is a provision for special coaching of the students who come from the job experience, to make up the deficiency, if any. The universities should not close the doors for these students who wish to pursue further studies. The universities may prepare package pre-requisite courses to make up the deficiencies of students who have pursued vocational courses and wish to pursue higher courses of study. In Class XI also students who have completed their studies in vocational or Junior Technical Schools and ITIs should be accepted for admission. Package pre-requisite courses should be drawn up to counter the deficiencies of such students entering Class XI and XII.

5.10.2 *In relation to those taking vocational agricultural and related courses, some of the suggestions for making them attractive to students include :*

- (i) The product of vocational agricultural schools should be given preference in admissions in Agriculture Colleges/Universities, as noted earlier.
- (ii) The certificate awarded by the Board at the end of Class XII should be considered at par with the Agriculture diploma for instance given by the U.P. Government and other States.
- (iii) Only certificate holders of these schools should be given licence for starting Agricultural Services Clinic or Farmist Shop (similar to the eligibility of diploma/degree holders of Pharmacy for the Chemist Shop). In these clinics they can provide plant protection services, hire, purchase and repairing services of agricultural implements, consultancy, seed and fertilisers and manures, etc.
- (iv) The product of these schools should be given preference in the allotment of agencies of the National Seeds Corporation and Fertilisers Corporation of India and other bodies.

- (v) Banks and other financial agencies should grant loans to the products of these schools for self-employment.
- (vi) They should be considered qualified for the post of Field Assistant, Laboratory Assistant, V.L.W. and other equivalent posts.
- (vii) Vocational teachers of Agriculture may be given some extra remuneration besides their salary, because they have to work before or after school hours every day according to the needs of the farm.
- (viii) The State Department of Education may encourage setting up of the farm boys and girls organisations, such as the "Future Farmers of India". With the help of such organizations, agricultural leadership may develop among the students taking the vocational course in agriculture.
- (ix) A school having agriculture in IX and X Classes may be given preference for opening the Agriculture Vocational courses at the +2 level.
- (x) Necessary inputs in terms of funds and other facilities may be provided to these schools by the State Government and the Union Government.
- (xi) Wide publicity may be given through newspapers, radio, T.V. and other mass media regarding the scope and objectives of this vocational course. All parents who wish to get their wards admitted must be clear about the future prospects of this course.

5.11 Semester Pattern and Credit System

5.11.1 The NCERT document, 'Higher Secondary Education and its Vocationalisation' visualised that the courses for Classes XI and XII will be designed as semester courses in each subject, and that they should have a modular or add-on character. It recommended that the performance of a student be indicated by a grade awarded in each semester course and on completion of the requirements laid down for a course by the award of credits for the course, the number of credits depending on how much time is devoted to the course in a semester. It was, however, made clear that the change over to and adoption of the Semester-Credit System should not be a pre-condition for the vocationalisation of education, but a concomitant and parallel action to be undertaken. The question whether this stage of school education should use the semester-credit system has been discussed at length. The Central Board of Secondary Education found that the teachers are not familiar with it ; there was the fear that it would involve multiplicity of examinations ; the residential schools felt that their freedom to innovate programmes was hampered ; and the non-availability of the text-books in time for each semester as another important factor which disfavoured the introduction of the semester system. The semester system has, however, its own advantages. It provides for more flexibility in the choice of courses ; it helps to ensure regularity in studies ; the curriculum load is shed at the end of each semester, and in the content of vocational courses it facilitates horizontal and vertical mobility. The credit system is essential for those who wish to take more than one language and three elective subjects. Accordingly, *it is recommended that in those States where the universities have already adopted the semester system, the same may also be introduced in Classes XI and XII. The other States may study the experiences of the States which have already introduced the semester system and take suitable steps for the orientation of teachers, and preparation of modules of learning and text-books for adopting the semester pattern, at a later and appropriate time.*

5.12 Organisation and Evaluation

5.12.1 One of the most important pre-requisites for the successful implementation of the vocationalisation spectrum of the plus 2 stage is to bring about co-operation and co-ordination for the purposes of employment and recognition, among all agencies and departments of the government. Such co-ordination will also economise on our scarce financial resources by preventing replication of efforts in various departments offering vocational education, and making a well-planned effort possible to achieve the national goals more effectively and cheaply. At present different vocational courses are offered in different institutions,

controlled by different departments in the States and at the Centre. For instance, the Indian Council of Agricultural Research is responsible for agricultural education at university and polytechnic level : the All-India Council for Technical Education at the Centre and the State Boards of Technical Education in the States control Polytechnic education, while the Industrial Training Institutes are controlled by the Directorates of Employment and Training in the Ministries of Labour : all the para-medical schools are under the control of statutory councils, such as the Nursing Council, the Pharmacy Council and the Dental Council. Each of these organisations functions in isolation, though each is offering education and training for middle level jobs. The new entrants into this family will be the vocationalised courses of the plus 2 stage. These vocational courses, being of the same nature as the others referred to, call for some degree of co-ordination, co-operation and evaluation by a national apex body. The Central Advisory Board of Education recommended that such a national body should be called the *National Council of Vocational Education* and the Ministry of Education has agreed to set it up. *It is recommended that the Central Government may now take the necessary steps to implement this recommendation.* All the agencies such as the Indian Council of Agricultural Research, All-India Council for Technical Education, the Nursing Council, the Dental Council, the Pharmacy Council and the National Council for Training in Vocational Trades should be members of this apex body.

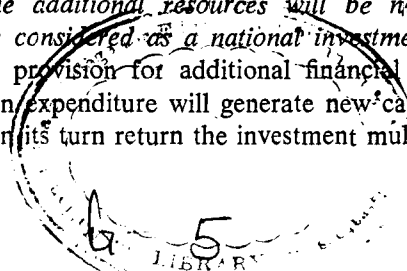
5.12.2 *At the State level, it is recommended that State Councils for Vocational Education be created to perform similar functions under the general guidance of the National Council of Vocational Education.* These Councils may perform the normal advisory role and be responsible for co-ordination, maintenance of standards and recognition of diplomas and certificates awarded by different Boards and other agencies.

5.12.3 The programme of vocationalisation of education requires constant support of the local community and other agencies. *It is recommended that agencies, such as Panchayat Unions, Agricultural and Rural Co-operatives, The Small Scale Industries Corporation, Khadi and Village Industry Commission, local branches of Nationalised and other banks, Financial Corporations, Krishi Vigyan Kendras, and various voluntary organisations, help in identification of vocations and in training of pupils and teachers of vocational courses, as also in training for entrepreneurship, provision of loans and credit facilities, marketing of product and services.*

5.12.4 It is not only adequate planning and preparation but also a continuous process of evaluation of the programme that is necessary for the success of the plus 2 stage and its vocationalisation sector. It is only through monitoring of the whole programme periodically at the District, State and Central level that corrective measures can be taken, and necessary improvements introduced from time to time. *It is recommended that the in-built machinery for such evaluation of the programme and follow-up action be the organisation at the national, state and local levels recommended in this section.*

5.13 Financial Resources

5.13.1 The need for the maximum utilisation of the available resources in implementing vocationalisation of secondary education has been emphasised. *It is recommended that no large scale or ambitious expenditure be incurred on equipment, unless it is ascertained that it will be needed for a long period and even so not in the area of manufacturing industrial or engineering skills which are left to existing vocational/technical education institutions. In fact with the short-term emphasis in this report on agriculture, managerial and health and para-medical vocations, attempts should first be made to identify and exploit local available resources. However, in view of the immense stakes in the programme of vocationalisation and in the interest of national economic development and social transformation, some additional resources will be needed. Any expenditure on vocationalisation should be considered as a national investment and an investment for the future. Where necessary provision for additional financial resources must, therefore, be made ungrudgingly. Such an expenditure will generate new capabilities in the human wealth of our country, which will in its turn return the investment multiplied over the years.*



CHAPTER VI

SUMMARY OF RECOMMENDATIONS

6.1 The Higher Secondary stage should comprise a General Education Spectrum and a Vocationalised Spectrum (Paras 2.4.1 to 2.4.3).

6.2 The course pattern for the General Education Spectrum would comprise : (Chapter III).

6.2.1 Language, with 15 per cent of time allocation involving study of one language (Para 3.2).

6.2.2. Socially useful productive work with 15 per cent time allocation, compulsory for all General Education students (Para 3.3), with defined objectives (Para 3.3.1), planning (para 3.3.2 to 3.3.5), involving general type of productive service programmes (Para 3.3.6) and programmes related to the subject being studied (Para 3.3.7). This programme should be co-ordinated at various levels (Para 3.3.9) and for its evaluation, a format is set forth (Para 3.3.10).

6.2.3 Electives—with a 70 per cent time allocation, an illustrative list of 16 electives is proposed for the general Education course with flexibility to suit local conditions (Paras 3.4 to 3.4.2).

6.3 The course pattern for the Vocational Spectrum comprises : (Chapter IV).

6.3.1 Language with 15 per cent of time allocation which will involve study of one language (Para 4.2).

6.3.2 General foundation courses—all students taking vocationalised courses having to spend 15 per cent of time on General foundation courses (Para 4.3) in accordance with the objectives set forth (Para 4.3.2) and comprising Part 'A' for all students and one unit of Part 'B' (Para 4.3.3).

6.3.3 Vocational Electives on which 70 per cent of the time is spent : Agricultural Electives will cover inter alia, inland fisheries, agriculture, farm mechanics and engineering, soil and water conservation, repairing and maintenance of farm machines, post-harvest technology, agri and agro industries, agricultural chemicals, animal husbandry, horticulture based courses, soil, water testing and management, co-operative marketing/agricultural produce marketing, small farm management, and rural construction technology, apiculture, sericulture, fuel and energy (Para 4.5.1) and non-agricultural vocational courses will comprise business and office management (Para 4.6.2), para-medical (Para 4.6.3), educational services (Para 4.6.4), local body and other service (Para 4.6.5), journalism (Para 4.6.6), home science related vocations (Para 4.6.7) and other general services (Para 4.6.8), (manufacturing industrial and engineering occupational skills are being more than adequately met by existing ITIs, Polytechnics and so are not included in this report).

6.4 Higher Secondary School authorities should pause and review their programmes in light of the guidelines set forth in this report (Para 5.1).

6.5 There should be no rigid streaming of courses into General Education Spectrum and Vocationalised Education Spectrum and there should be many cross-over points between the two (Paras 5.2.1 and 5.2.2).

6.6 There are three models in the offering of electives—

- (i) Those schools which offer only General Education Spectrum ;
- (ii) Those schools which offer only Vocationalised Education Spectrum ; and
- (iii) Those which offer both.

For the Sixth Plan, the generality should be the third model (Para 5.3.1).

6.7 Vocational surveys of areas should be undertaken before finalising the vocational courses even where they have been launched, and for the location of schools with vocational courses (paras 5.4.1 and 5.4.2).

6.8 The spare capacity of all existing vocational/technical schools should be used by running double shifts and adding further courses to the ITIs, polytechnics, industrial high schools etc., in accordance with demands for them (Paras 5.5.1 and 5.5.2).

6.9 As little or no vocational education facilities exist in rural areas, all new schools should be constructed in rural areas and should be adequately equipped (Para 5.5.3).

6.10 Counselling and Placement Officers should be appointed to clusters of 3 or 4 schools (Para 5.6.1).

6.11 Pre-service education for teachers for the plus 2 stage should be carefully planned by universities : massive in-service training programmes for teachers, particularly in vocational agriculture should also be organised : to start with, practical vocational experience rather than post-graduate qualifications is recommended for vocational teachers (para 5.7.1).

6.12 On curriculum and text-books, a special effort will have to be made by using expertise of practical working people as well as academics. On agriculture and related subjects, textbooks must be written within the country (Paras 5.8.1 and 5.8.2).

6.13 The apprenticeship programme should be open to those who complete vocationalised higher secondary education level and the recruitment policy of the government should emphasise vocational qualification rather than general university degrees (Paras 5.9.1 and 5.9.2).

6.14 The vertical mobility of students at this stage should be assured through changes in the admission policies and requirements of formal and non-formal systems of education and through Government policies (Paras 5.10.1 and 5.10.2).

6.15 The Semester Pattern and the Credit System might be followed in States where the universities have adopted it, with the other States following after some time (Para 5.11).

6.16 To ensure co-ordination, co-operation and evaluation, the National Council of Vocational Education, State Councils of Vocational Education and local bodies are recommended (Paras 5.12.1 to 5.12.4).

6.17 For the Sixth Plan, finance needed for higher secondary education level are not much because of the concentration on agriculture and related vocations. However, some additional money would be needed and this should be regarded as a national investment and investment in the future (Para 5.13.1).

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**Vocationalisation of Higher Secondary Education in the member-schools of
the Central Board of Secondary Education**

The Central Board of Secondary Education switched over to the 10+2 pattern from 1st May, 1975 beginning with class IX. The courses at the secondary stage centred round general and comprehensive education covering different aspects of human experience and endeavour. The Senior Secondary stage (+2) commenced from 1st July, 1977. This stage is characterised by diversification of education aiming at offering opportunities for selection of subjects and programmes of study from a wider scale in order to suit different tastes and talents.

In pursuance of the recommendations of the Education Commission of 1976 and further reiterated in National Policy on Education, 1968 issued by Ministry of Education & Social Welfare, Govt. of India, an effort has also been made to link education with productivity.

Accordingly two streams have been provided in the scheme adopted by CBSE viz : academic and vocational. Earlier, there was a proposal that an undifferentiated scheme containing both academic and vocational courses be provided. The students under this scheme may choose either all academic courses or vocational courses or they may also choose suitable combinations of a few academic and one or two vocational courses. It was also envisaged that the vocational courses should be of the duration ranging from 6 months to two years. Each vocational course would have a weightage of half to two months depending upon the length of their duration. The idea behind such proposal was to attract more students to vocational courses without alienating them from the academic courses.

Courses—Nature and Object

Subsequently, National Council of Educational Research & Training in its document 'Higher Secondary Education and its Vocationalisation' suggested two separate streams with a provision that a student may be allowed to transfer from the academic to the vocational stream and vice versa, without having to start in the other stream from the very beginning. The courses therefore were structured in such a manner that in the first semester of each course common elements of theory drawing from basic disciplines are emphasised so that the students may provisionally belong either to the academic or to the vocational stream.

Since the purpose was to divert as many students as possible to the main stream of life the vocational courses were designed to be terminal in character so that those offering vocational courses are not handicapped for their future studies. As such an effort was made to provide a vertical link both with the courses of academic nature as well as vocational and technical nature.

The courses were kept of uniform duration i.e. 2 years coinciding with the duration of the academic courses owing to the fact that in the transitional stage it was difficult to locate the facilities in or out of school for the extended courses. This also involved the difficulty as to whether the schools should be made responsible for these extended courses. This also involved the difficulty as to whether the schools should be made responsible for these extended courses or they should be managed by other independent agencies.

Broadly speaking the aims of vocational education could be summarised as follows : --

- (i) To link education with productivity.
- (ii) To make students more employment-worthy with the ultimate aim of making them capable of self-employment, if the need be.

- (iii) To provide the students with essential occupational background and familiarity with the tools, materials, processes and technological knowledge .
- (iv) To provide more broad based occupational experience rather than training for a specified job. With a view to making students available as many avenues as possible after termination of education.

Structure & Placement

The CBSE adopted the scheme of studies and the courses prepared by NCERT. To begin with the following course structure was suggested.

	<i>Share of total time available</i>
(a) A core course for all the students offering academic or vocational stream	25%
(i) One language	10%
(ii) General Study	15%
(b) A Vocational course	75%
(i) Study of basic Sciences or Social Sciences relevant to vocation	25%
(ii) Practical skills and occupational experience	50%

Subsequently it was felt on the basis of feed back received from the schools that the total load of curriculum as provided in the scheme above was very heavy considering the total time available at the disposal of students. The subject of General Study which was compulsory for all the students, was thus later dropped from the scheme and the time allocation was redone. As per the existing scheme a student now has to offer one language and one vocational courses carrying 20 per cent and 80 per cent of the total time respectively.

Selection of Courses

The courses were selected in keeping with the employment potential in the country. Advice in this connection was sought from the Director General of Employment & Training, Government of India, which suggested the broad areas where the employment potential was relatively high in keeping with the economic policies and programmes of the Government. A wide variety of courses were selected relating to Agriculture, Engineering and Technology, Commerce and Trade, Home Science, Health and Para-medical services etc. etc. the list of which is at Appendix A. The basic guiding factor in providing a wide choice of courses had been as follows :—

- (i) To cater to the varied aptitudes and interests of the students.
- (ii) To meet the requirements of schools as necessitated by regional diversities.

The courses were divided into four semesters and credits were assigned to each one of them. Emphasis was laid on assessment of practical skills hence internal assessment was given a considerable weightage. In actual practice however the semester system was not found much practical on account of several factors. The biggest criticism of the semester system was that this would increase the multiplicity of examinations and thereby will make public examinations more dominant than ever. The semester system therefore was done away with by CBSE, replacing it with two examinations : one at the end of Class XI and the other at the end of Class XII. Since the vocational courses required continuous assessment to be done internally by the schools therefore the assessment in Class XI was wholly made internal. The schools are required to maintain a continuous record of the students growth in these courses, with particular reference to the skills that are involved in the process.

Implementation

The CBSE has different categories of schools which are administratively controlled by different agencies. The schools of the Union Territories such as Delhi, Andaman &

Nicobār, Chandigarh etc. are administered by their respective administrations while the Kendriya Vidyalayas come under Kendra Vidyalaya Sangathan. Besides this, the CBSE also has military schools, Sainik Schools and independent schools attached to it which are again controlled by their respective organisations. The responsibility of vocational courses in these schools therefore primarily rests with these organisations as far as the finances, equipment and teachers are concerned. The Board in order to help in effective implementation of the programme supplied lists of minimum requirements and equipment to guide the schools and agencies in properly equipping their workshops laboratories and farms.

As far as the independent schools are concerned the Board circulated a detailed questionnaire to assess their potentialities. The schools selected vocational courses out of the given list according to their regional requirements. The vocational courses were allowed by the Board only to such schools which had adequate facilities in respect of equipment and finance as laid down by it.

Position of Vocational Courses in Schools

(a) Union Territory of Delhi

The Vocational courses were started for the first time in Class XI during 1977-78 in 17 schools of the Union Territory of Delhi of which 2 were the Technical Higher Secondary Schools and the rest the non-technical schools. The break up of the courses offered by different schools and the candidates is as follows :—

<i>Name of the Course</i>	<i>Number of Schools in which provision made</i>	<i>Number of Candidates</i>
1. Basic Electrical Technology	2	165
2. Electronic Technology	2	142
3. Air Conditioning and Refrigeration Technology	2	143
4. Canteen Management	1	—
5. Accountancy and Auditing	5	121
6. Stenography	5	75
7. Nutrition and Food Preservation	1	26
8. Dress Making & Designing	2	15
9. Textiles and Designs	2	20
		707

(b) Arunachal Pradesh

1. Stenography	2	20
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The provision was also made for the courses such as Agriculture, Dress Making & Designing, Accountancy and Auditing, Office Management and Secretarial Practice, but no student opted these courses.

(c) Kendriya Vidyalaya Sangathan

Provision for different courses was made in 24 Kendriya Vidyalayas the details of which are as follows :—

1. Dress Making & Designing	12	—
2. Furniture Making & Designing	7	—
3. Photography	1	—
4. Canteen Management	1	—
5. Fisheries	2	—
6. Stenography	2	8

(only in one school)

(d) *Other Schools*

5 schools other than Govt. Schools and Kendriya Vidyalayas offered vocational courses which are as follows :—

1. Basic Electrical Technology	2	15
2. Secretarial Practice	1	11
3. Accountancy and Auditing	1	33
4. Stenography	1	9

From the picture given above it may be seen that only the erstwhile technical schools offered the subjects related to technology while the others did not offer perhaps on account of heavy initial investment. Enrolment in these areas is quite satisfactory wherever provided for. The schools other than technical offered only such courses which did not require heavy investment and wherever the teachers were readily available particularly those relating to Commerce & Domestic Science. Of these courses the ones relating to Commerce and Office Management were more popular than the others. 2 schools have also gone for such new courses as Textiles and Designs.

It is also evident from the above figures that though provision was made for such courses as Photography, Canteen Management, Fisheries ; etc. which have a good potential but there were no candidates for these courses wherever provided for.

Problems and their Remedies

The situation, as is obtaining today indicates that the vocational courses did not meet with encouraging response from the field. There could be several reasons, a few of them are listed below :—

- (i) A great majority of the students wish to seek employment in organised sector, therefore very few students like to take risk with the career unless one is sure that a particular course would lead him to a specific job. This points to the need of more centralised system for identifying the courses which are acceptable to the organised sector and whose equivalence is already determined. The Industry and Commerce, as is the practice in Government organisations also care more for general training in the area concerned.
- (ii) The climate for self-employment was still not encouraging so that the students with the type of training provided in the schools could feel themselves confident to risk a heavy investment.
- (iii) A heavy investment is needed by the schools in terms of equipment and teacher which can be rendered useless by the changing demands of the employment market. This factor has discouraged several institutions to come forward for vocational courses.
- (iv) Due to geographical distances, particularly with reference to CBSE schools, it has not been possible to share the limited resources available. This has further increased the cost of investment.

The CBSE because of geographical diversity in the country cannot lay down a uniform nature of courses. In order to make these courses more attractive as the experience suggests these courses need be designed at the grass root level particularly by the schools themselves. This is all the more necessary owing to the fact that the students who have to terminate their studies in order to enter main stream of life would settle by and large in the same area where they have grown up. Their employment market therefore lies in their own districts or the states. The courses therefore should be relevant to the local requirements and be acceptable to the industry, trade or any other organised sector in the area. It is however necessary that in order to provide a proper boost to these programmes a survey at the national level is done by the appropriate agency to identify recognisable courses in different disciplines and sectors and to estimate their potential with respect to different regions of the country. Such an effort will not only make the courses more acceptable but will also help in coordination of efforts. Based on such a survey, the school may take up the programme for such syllabus development.

List of Vocational Subjects

Agricultural Vocations

1. Inland Fisheries
2. Basic Programme in Fruits & Vegetables
3. Agriculture
4. Farm Machines and Engineering.

Commerce and Business Related Vocations

5. Office Management & Secretarial Practice
6. Stenography
7. Accountancy and Auditing
8. Marketing and Salesmanship
9. Purchasing and Store-keeping (Materials Management)

Engineering and Technical Vocations

10. Basic Electrical Technology
11. Electronic Technology
12. Air-conditioning & Refrigeration Technology
13. Laboratory Assistant
14. Furniture Making and Designing

Vocations Related to Home Science

15. Food Processing and Preservation
16. Nutrition and Food Preparation
17. Canteen Management
18. Dress Making and Designing
19. Textiles and Designs

Health and Para-medical

20. Pharmacist
21. Ophthalmic Techniques

Miscellaneous vocations

22. Tourism
23. Photography

Vocationalisation of Education in the State of Gujarat

I. Present Position

In Gujarat the percentage of post-SSC students entering vocational stream is 20 per cent as against 50 per cent visualised by the Education Commission by 1985-86. About 20,000 students seek admission in vocational courses out of 1,00,000 students passing out of SSC. The projections for the likely output of SSC pass students in the years to come would be as under :

Table 1

1976	65,530
1977	92,650
1978	1,61,914
1979	1,72,246
1980	1,81,150
1981	1,88,916
1982	1,90,748

Providing for 20 per cent drop outs after the SSC level due to economic and other factors such as the fact of the boys coming from the rural background, some being girls, getting married, etc., at least by the end of the Fifth Plan, it is proposed to aim at the vocational opportunities arising to the level of 85,000 seats.

II. Existing Facilities—Post SSC Students

Field	Existing Opportunities
1. Agriculture	525
2. Lalitkala	578
3. Education	5413
4. Commerce	850
5. Industry	154
6. Technical	5287
7. Health	2600
8. Apprenticeship Scheme	2772
9. Career Development Courses	285
10. Miscellaneous	290
	18,754

This figure (18,754) includes only those vocational opportunities where passing of SSC is a pre-requisite for admission.

III. Some Weaknesses observed in the Present Vocational Training Courses

The Sub-Committee appointed by the Government of Gujarat in its Report submitted in November, 1977, has noted the following weaknesses in the present vocational training courses :

1. The vocational training at present being made available in the training institutions is not always relevant to the particular needs of the industry. Skilled technicians' training provide only for a general training and not for particular training. It is felt that the dialogue between the existing institutional organisations and the employing industry should be activated and there should be a simpler mechanism to implement the curriculum changes and modifications in the courses.

2. The existing vocational stream is unable to provide training for new areas. The big spurt of growth in the diamond cutting industry or petro industry as in Ankleshwar and in Baroda, and maintenance and repairs to agricultural equipments including engines and pumping sets for irrigation, are a few cases to be cited. The attempts to start technical institutions for the purpose (Agro Polytechnic at Vallabh Vidyanagar) however, failed due to lack of follow up machinery to provide finances and technical guidance from time to time and also for lack of popularity due to subsequent placement problems.

3. The vocational training facilities in the present circumstances are regarded as a sub-culture. Even within the technical/vocational training, the existence of a three-tier Certificate Course, Diploma Course and Degree Course also tend to affix certain values to these courses which inhibit proper flow of talent to the vocational training.

IV. Expansion Facilities

From the general survey of the training facilities made available now, it was clear that the existing facilities were not inadequate to meet the vacancies reported to the Employment Exchanges. However, it was also noticed that some courses like the electrician course and the Draftsman course were very popular may be because of the increased self-employment opportunities available. There were certain trades like Fitters, Turners, and Building Technologists where acute shortage was being felt.

To identify the specific needs, the Committee had felt that the Education Department should intensify its efforts for district surveys at an early date.

The existence of unemployed trained personnel in almost all the Vocations (as seen from the statistics of the Employment Exchanges) shows that the expansion of existing facilities for the certificate courses and diploma courses will have to be carefully designed. There is need for a close inter-relationship between the training facilities and the job opportunities available.

In the Annual Administration Report for the year 1975 of the Labour Department of the State, the shortage had been reported in the following spheres :

Civil Engineering, Stenographers, Steno-typist (English, Gujarati), trained nurses, Boiler Attendants, Printing Technicians, Die Makers, Weavers, Weaving Supervisors, Lecturers in Civil Engineering, Geologists, Architectural Assistants, Experienced Turner, Fitter, Embroiders, Switch Board Operators, Machinists and Electricians.

In the year 1976 also the same shortages continued. The scope for expansion in the ten Vocational Fields are identified by the State Sub-Committee referred to above, as under :—

1. *Agriculture* :—Almost unlimited opportunities exist for starting new courses in Agriculture. The Agricultural University of the State proposes to start Agricultural diploma courses, Diploma Courses in Home Science, Poultry farming, Kitchen gardening etc. 800 seats would thus become available annually for these short-term courses. The Courses need not be confined to only post-SSC students but also a number of certificate courses may be started for Pre-SSC students.

2. *Lalit Kala* :—In the case of Fine Arts, the scope for expansion of opportunities is considered to be not very high and there are no specific plans for the expansion of the seats at the present moment.

3. *Education* :—The training facilities available for the SSC students is in the field of primary teachers training centres. Since the Annual intake of teachers is in the region of 2,000 to 2,500, the training facilities available in this field are adequate. But it would be necessary to start a few classes in specific districts like Banaskantha, Kutch, Jamnagar and

Amreli, in order to eliminate the imbalances at the Regional level. It is felt that the training facilities could be increased to 7,500 by 1982.

4. *Commerce* :—This is one field where specific training in Commerce may help better placement for the students. The Education Department has already suggested certain Commerce Polytechnics to be opened up. It is felt that at least about 200 schools could take up specific courses for the post-SSC students. The opportunities available in these 200 schools could thus rise to at least 8000.

5. *Small-scale Industries* :—The Director of Cottage Industry provides a number of training facilities. These Courses are conducted for the school drop-outs and the level of achievement required for its trainees is also of a lower order. With the thrust being put on development of Small-scale industries, the programme for Post-SSC and technicians may be considered. Based on the post-diploma in Business Management spelling out requirements for new entrepreneurs may be started. These courses may be adopted in the existing Higher Secondary Schools with Com. streams. It is felt that at least one Post-School Diploma in Business Administration could be designed to prepare small level entrepreneurs as also to increase the self-employment opportunities. Such a programme may be developed in 50 schools.

6. *Technical* :—The following fields are identified as areas where special courses could be immediately launched :

Fitter, Electrician, Wireman, Draftsman (Civil), Draughtsman (Mechanical), Radio Mechanics, Carpentry and Electric Gadget.

This could increase the intake by 1200 seats. Similarly there is scope for expansion of certificate level course in the following trades :

Turner, Motor Mechanic, Machinists, Wireman, Fitter, Electrician and Draughtsman (Civil).

It is felt that at least about 200 Higher Secondary Schools should be located which have already certain minimum facilities for workshop for at least 1000 seats. In addition, the Director of Employment and Training feels that there was enough scope for establishment of two I.T.I.'s for this purpose.

7. *Apprenticeship* :—There is a scope for 50 per cent increase in the seats under the Apprenticeship Scheme specially with the introduction of 33 new trades.

8. *Health* :—It is felt that the present facilities available for the training courses for nurses, mid-wife, are adequate. New Courses in para-medical fields could be started such as Lab-Technicians and X-Ray Technicians, Dental Mechanics and Dental Hygienists without large funds. These may add upto 100 seats. Nursing Faculty could also be added by another 200 seats. With the launching of Multipurpose Health Worker Scheme, a new vista for additional training has opened up. Specific Training Programme could be launched at least from 1979 onwards for the purpose. Annual intake is expected to be of the order of 500.

9. *Miscellaneous* :—The Commissioner of Co-operation is providing for a large training programme for Co-operative sectors and for their office bearers—some sort of inservice training—through Gujarat State Co-operative Union.

To gear up the following courses are suggested :—

1. Higher Diploma in Co-operation
2. Junior Basic Course (Cooperative Diploma)

At least 500 training opportunities could be opened up by this.

The following data is given to sum up the above programme plans :

<i>Field</i>	<i>Present Capacity</i>	<i>Expanded Capacity</i>
Agriculture	525	1325
Lalit Kala	578	578
Education	5413	7500
Commerce	850	8000
Industry	154	1000
Technical	5287	7487
Health	2600	3400
Apprenticeship	6817*	10000*
Career Dev. Courses	285	285
Miscellaneous	290	500
	22790	40075

*The total figure of Apprenticeship course available in all the Trades has been indicated, including 2772 reserved for purely post-SSC students.

V. Finances

So far as financial incidence is concerned, the State Sub-Committee has noted that in the expansion programmes there is no need for any substantial development of funds. In the field of Agriculture, the additional expansion can be met from within the existing infrastructure. In education also, the existing infrastructure of Primary Teachers Training Institutes could take the bulk of the load and the financial estimates involved in raising new institutions in the backward districts etc., should not need more than about Rs. 10 lakhs annually.

In the field of Commerce and Industry, the existing institutions can take the load and the additional cost of teachers could be met with from within the additional fees to be collected from students. For Technical side, the Director of Technical Education has estimated the need at Rs. 21 lakhs. In the field of Health, the need for expansion for training facilities has already been provided for in their training programme for the Multi-purpose Health Workers. Once the above expansion plans are accepted, individual Departments concerned should be able to provide for the marginal increase in their requirements in their own individual budgets.

VI. Coordination of Examinations

A number of similar and allied courses are being conducted by different authorities within the State which have the sanction of Gujarat Government. Pending the establishment of State Council of Vocational Education, the examinations are proposed to be conducted by the following 5 specific bodies :—

1. Agricultural Courses Agricultural University
2. Medical and Para-Medical State Health Deptt./Medical Council/
Nursing Council
3. Diploma Courses in Technical subjects Technical Examination Board
4. Certificate Courses NCTVT or State Council with similar
powers.
5. All other vocational courses including
commerce (Shorthand and typewriting)
course State Examination Board

VII. Organisational Arrangements

The Sub-Committee of the State has recommended that a unified authority may be set up with specific functions of :—

- (i) having a co-ordinated look at the Vocational Trainings available,

- (ii) To supervise district surveys periodically,
- (iii) To avoid overlapping in Vocational Fields,
- (iv) To award certificates of achievements,
- (v) To provide Vocational Guidance.

It is felt that this could be achieved only by a Vocational Education Board consisting of the representatives of Employing authorities. The present Vocational Guidance Officer and his institute could be the nucleus for this Vocational Education Board. Pending the establishment of such a Board, the V.G.O.'s post should be upgraded to that of Deputy Director so that he can begin to function as nucleus office.

It is essential according to the Sub-Committee that a specific section should be created within the State Department of Education and charged with the overall organisation of Courses of this nature whether full time or part-time.

(This write-up has been prepared on the basis of a "Report of the Sub-Committee for Examining. The Issue of Identification of Different Courses/Streams etc.", Directorate of Education, Government of Gujarat, Ahmedabad, November, 1977.

Vocationalisation at the + 2 Level in the State of Karnataka

I. Present Position

During 1977-78, 13 institutions in three districts were chosen. As many as 21 courses had been introduced on the basis of their usefulness for both self-employment and for employment in the private or public sector. A list has been enclosed along with the regulation course of study and scheme of examination for these courses (Appendix I). Ten institutions were chosen to introduce 4 courses each. In one institution where the management was running a Medical College and an Engineering College at Manipal, 8 vocational courses were introduced. Two institutions were identified as capable of taking 2 courses each.

II. Criteria for Selection

- (a) Enthusiasm of the Principal and the Management and their capability to operate the scheme successfully.
- (b) Their belief in vocationalisation as a useful means of diversification of training programmes and cater to the needs of the society.
- (c) Infrastructure available in the matter of either equipment needed or availability of trained staff in the College near by or both.
- (d) One Rural college was specially located in each of the 3 districts where the chances of success were highest.
- (e) One Womens' College in Bangalore was selected for implementation of the programme.

III. Latest Plan for Vocationalisation : During 1978-79 additional six districts are being surveyed.

- (a) NCERT forms were sent to all the non-farm establishments to gauge the potential for growth with the data available from them. The response has been very poor as expected. However, the available data has been collected and analysed whether it indicates any direction for the potential growth of job opportunities in the area.
- (b) District Development Programmes, other approved schemes of the districts and the statistics available in the various departments and rural and other developmental programmes planned in the area were analysed and the possible areas of growth in (a) Agriculture, (b) Industries, (c) Banking and other Commercial activities ; (d) Requirements of health and other services arrived at. The District survey officers also met many knowledgeable people in the Taluks and many Industrialists and other interested in the development of the districts and after discussion with them the trends in—
 - (a) changes in the economic power-base ;
 - (b) general economic activity and its direction ;
 - (c) the necessity to aid the existing vocational activities in the area by the introduction of courses in Science & Technology connected with them.
- (c) The local talents available and how a teaching and training programme in vocationalisation would help their improvement in the locality using the equipment and institutions set up in the private or public sector in the area. On the basis of the above the survey officers have reported a number of areas in which vocational courses could be introduced. This has been indicated in the Annexure II from sl. No. 26 to 45.

Vocationalisation has been fairly acceptable to the population of Karnataka in general and the parents and students in particular since for pursuing academic course the requirements of academic excellence has shown a steep gradient in the recent days necessitating those with

average intelligence to pursue courses which are suitable for their special talents which lie in them. A large no. of courses are being planned afresh since the demand for skilled personnel in a large no. of vocational fields is a reality.

It is proposed to introduce during 78-79 vocational courses in 44 institutions throughout Karnataka. One in each of the 19 districts with one more for the city of Bangalore and 24 other institutions in six districts where the surveys have been completed at the rate of 4 institutions per district. Efforts would be made to keep the criteria stated above in mind while selecting the institutions. But the following additional points will have to be borne in mind :

- (a) One Junior College near every one of the Medical Colleges will be chosen to introduce Health Oriented courses only (HE 1.01 to 1.08).
- (b) One Junior College near every Engineering College (Polytechnic) or Junior Technical School may also be similarly chosen for introducing courses related to technical education making use of the facilities available there.
- (c) One Rural college will be chosen specially in each district choosing vocations likely to be popular with them especially in backward and underdeveloped rural parts.
- (d) Attempts should be made to choose one Junior College for Girls in implementing this programme in each district.
- (e) Some special courses such as TE 5.01, 5.02, 7.03, will be introduced where local talent and industry exist.
- (f) General courses such as B 1.06, 1.07 will be introduced in every district.
- (g) It is felt that in some courses such as Medical and Engineering Courses the training facilities available will limit the intake of the students for the course to keep the efficiency of the training programme.
- (h) It is also felt that a large number like 4 courses involving 100 students cannot be introduced in all the districts since the total no. of students taking admission at the 1st year PUC normally is only about 120 on an average. There are many institutions where the total strength at the 1st Year PUC is less than 100. Hence it is proposed to introduce not more than two courses in each institution to encourage slightly larger no. of institutions to serve a larger area of the districts and augment efficiency and keep up the morale of all the concerned.

IV. Special features

- (a) The courses are being introduced in place where considerable enthusiasm both in the management and by the principal is apparent.
- (b) Only courses of 2 year duration have been identified up to now. So that they can fit in at the +2 stage of the 10+2+3 pattern.
- (c) The part I of the course namely 2 languages is common with the academic stream and constitutes 8 hours of work load per week.
- (d) The vocational course forms the main feature of study with about 5 to 8 hours of theory relevant to the appreciation of vocationalisation and 15 to 12 hours of practical work. The course is organised in a semester scheme of 4 semesters of 4 months duration each, with a work load of 18 to 24 hours per week. Attempt is made to take one full time teacher and 2 part time people associated with the employers in the area or experts available in the locality. Some of the courses lend themselves highly for self-employment and the learning skills are given due emphasis.

However, both Government of India and the Government of the State will have to face the problem of providing employment for at least 50 per cent of the students trained in various vocations listed in Annexure II. It is imperative that the diplomas issued by the State Council of Vocational Education at the end of the 2 year course should be recognised as "Appropriate Educational Technology" and recognised for the purposes of recruitments to subordinate services in the various departments.

GOVERNMENT OF KARNATAKA

Regulations, Courses of Study and Scheme of Examinations for Job-Oriented Pre-University Diploma Courses

1. *Qualifications for Admission :*

- (a) Admission to all the Vocational courses listed in Annexure-1, shall, in general, be open to all students who have passed.
- (i) The S.S.L.C. Examination conducted by the Karnataka Secondary Education Board ; or,
- (ii) The Indian Certificate of Secondary Education Examination conducted by the Council for the Indian School Certificate Examination; or
- (iii) An other Examination recognised as equivalent to the Karnataka S.S.L.C. Examination.
- (b) Admission shall be made on the basis of merit in the qualifying Examination and an aptitude test prescribed by Government.

2. *Duration of the Course :*

- (i) The course of study shall extend over a period of 2 academic years coterminus with the P.U.C. Classes.
- (ii) The duration of the course, the scheme of teaching, training and Examination in subjects listed under PART—I of the course shall be common to both Academic and Vocational streams.
- (iii) The teaching, training and Examination of subjects under PART—II of the Vocational courses, shall be arranged under a SEMESTER SCHEME consisting of 4 Semesters of 4 months each.
- (iv) The Scheme shall also include period of intensive practical training in Vocational courses during the Summer Vacations wherever necessary.

3. *Medium of instruction and Examinations :*

The Medium of instruction and Examination in the course shall be ENGLISH or KANNADA.

4. *Courses of Study :*

- (i) The details of the subjects to be studied and the number of hours/week allotted for them in both PART—I and II is separately specified for each course.

The subjects to be studied under PART—I shall be common to both Academic and Vocational streams and shall consist of :

- | | |
|---|-------------|
| 1. Kannada/or any other Indian Language | 4 hrs./Week |
| 2. English | 4 hrs./Week |

There shall be Examinations in the above papers of PART-I for the Academic and Vocational streams.

- (ii) For Part—II Subjects :

For each Theory paper as also Drawing, there shall be a maximum of 100 marks distributed for evaluation as under :

For each subject of 1st & 3rd Semesters

- | | |
|--|----------|
| Continuous internal assessment | 50 Marks |
| Internal Examinations at end of Semester
(3 hrs. paper) | 50 Marks |

For each subject of the 2nd & 4th Semesters

Continuous Internal assessment	50 Marks
External Examinations at end of Semester (3 hrs. paper)	50 Marks

- (iii) Each practical under II shall carry a maximum of 100 marks distributed as under :

For each practical of 1st & 3rd Semesters

Continuous internal assessment	50 Marks
Internal Examination at the end of Semester (3 hrs. paper)	50 Marks

For each practical of the 2nd & 4th Semesters

Continuous internal assessment	50 Marks
External Examination at the end of Semester (3 hrs. paper)	50 Marks

- (iv) The practical experience or field training or in plant training or intensive practical training arranged shall be valued on the basis of daily record prepared by the candidate as an internal assessment only for a maximum of 50 marks.
- (v) An additional 50 marks shall also be prescribed as a maximum for Evaluation of report on the Educational Tour, if any, when prescribed for the subjects in Part—II.
5. *Minimum Attendance :*
- A Candidate shall put in a minimum of 75 per cent attendance in each of the subjects of Part—I.
 - A Candidate shall put in a minimum of 80 per cent average attendance taking attendance in all the subjects of Part—II for both the semesters of the year together.
6. *Condonation of Shortage of attendance :*
- Heads of Institutions shall have powers to condone 15 per cent shortage in attendance for both 5(i) & 5(ii) above for valid reasons.
 - Those candidates who fail to put in the minimum acceptable attendance as per Clause (5) read with (6)(i) above are required to repeat the course afresh in all respects.
7. *Admission to the Examination :*
- Admission to the External Examinations at the end of 2nd & 4th Semesters shall be open to candidates,
- who satisfy the attendance requirements as per Clauses 5 and 6(i) above,
 - and Whose progress and conduct is satisfactory as per the certificate of the Head of the Institution.
8. *Minimum for a pass :*
- Candidates who secure not less than 30 per cent in the subjects and 35 per cent in the aggregate for Part—I shall be declared to have passed in Part—I.
 - No Candidate shall be declared to have passed any Examination in a subject under Part —II unless he obtains not less than 40 per cent of the marks in each of the theory papers and 50 per cent in each of the practicals perscribed for the Examination for both internal assessment and examination at the end of the Semester put together for that paper.
9. *Classification of successful candidates :*
- Candidates who obtain 60 per cent and above of the maximum marks for each part shall be declared to have passed that part in **FIRST CLASS**.
 - Candidates who obtain 50 per cent and above marks but less than 60 per cent of the maximum for each part shall be placed in **SECOND CLASS** for that part.

- (c) All other successful candidates shall be placed in the PASS CLASS in the respective parts.

10. *Promotion from one Semester to another :*

- (a) Promotion from the first semester to the second and from the third semester to the fourth is automatic.
- (b) However, promotion to the third semester shall be subject to the condition that a candidate should not have failed in more than three papers in all of the Ist and IInd semesters put together.
- (c) The marks once awarded for internal assessment shall be final unless the student is permitted to repeat the course afresh.
- (d) The results of the final semester shall be withheld until a candidate has passed in all the papers of all the semesters and has submitted the report of the inplant or intensive practical training diary and the same has been valued and judged as satisfactory, as per Clause 4(iv) above.

Vocationalisation at the XIth & XIIth Standards
Job Oriented Pre-University
Diploma Courses
Duration : 2 Years
Annexure—I

<i>Sl. No.</i>	<i>Code No.</i>	<i>Subjects</i>
1.	TE 1.01	Building Construction Technology
2.	TE 2.01	Servicing Technology (Office Equipment)
3.	TE 3.01	Electrical Wiring & Servicing of Electrical Appliances
4.	TE 6.01	Clock & Watch Repair Technology
5.	TE 7.01	Photography
6.	Ag 1.01	Poultry Science
7.	Ag 1.02	Dairying
8.	Ag 1.03	Sericulture
9.	Ag 1.04	Fisheries
10.	Ag 1.05	Co-operation
11.	Ag 1.06	Pesticides, Fertilisers & Weedicides
12.	HE 1.01	Laboratory Technician
13.	HE 1.02	Physio-Therapy and Occupational Therapy Technician
14.	HE 1.03	X-Ray Technician (Radiological Assistant)
15.	HE 1.04	Medical Record Technician
16.	HE 1.05	Optician & Refractionist
17.	HE 1.06	Multipurpose Basic Health Workers (Male)
18.	HE 1.07	Psychiatric Assistant
*19.	Ph 1.01	Pharmaceutics Operator
*20.	Ph 1.02	Pharmaceutical Laboratory Assistant
21.	B. 1.01	Banking
22.	B. 1.02	Materials Management Technology
*23.	B. 1.03	Accountancy and Taxation
24.	B. 1.04	Accountancy & Auditing
25.	B. 1.05	Accountancy & Costing.

*Not included during 1977-78

GOVERNMENT OF KARNATAKA
Department of Vocational Education

Vocationalisation at the XIth and XIIth Standards Job Oriented Pre-University Diploma Courses

Duration (2 years—4 Semester of 4 months each)

Sl. No. 1	Code No. 2	Subject 3
1.	TE 1.01	Building Construction Technology
2.	TE 2.01	Servicing Technology (Office Equipment)
3.	TE 3.01	Electrical Wiring and Servicing of Electrical Appliances.
4.	TE 6.01	Clock and Watch Repair Technology
5.	TE 7.01	Photography
6.	Ag 1.01	Poultry Science
7.	Ag 1.02	Dairying
8.	Ag 1.03	Sericulture
9.	Ag 1.04	Fisheries
10.	Ag 1.05	Co-operation
11.	Ag 1.06	Pesticides, Fertilizers and Weedicides
12.	HE 1.01	Laboratory Technician
13.	HE 1.02	Physio Therapy and Occupational Therapy Technician (Rehabilitation Theory Technician)
14.	HE 1.03	X-Ray Technician (Radiological Assistant)
15.	HE 1.04	Medical Record Technician
16.	HE 1.05	Optician and Refractionist
17.	HE 1.06	Multipurpose Basic Health Workers (Male)
18.	HE 1.07	Psychiatric Assistant (Psychiatric Nursing Aids)
19.	Ph 1.01	Pharmaceutics Operator
20.	Ph 1.02	Pharmaceutical Laboratory Assistant
21.	B 1.01	Banking
22.	B 1.02	Materials Management Technology
23.	B 1.03	Accountancy and Taxation
24.	B 1.04	Accountancy and Auditing
25.	B 1.05	Accountancy and Costing
26.	B 1.06	Pre-School and Primary Education
27.	B 1.07	Office Practice and Procedure
28.	B 1.08	Hostel and Hostel Management
29.	TE 2.02	Basic Workshop Technology
30.	TE 2.03	Automobile Servicing
31.	TE 4.01	Servicing Technology (Electronics Equipment)
32.	TE 5.01	Oil and Soap Technology

(1)	(2)	(3)
33.	TE 5.02	Leather Technology
34.	TE 7.02	Drawing, Painting and Commercial Art
35.	TE 8.01	Printing and Book Binding
36.	TE 8.02	Tailoring and Embroidery
37.	TE 8.03	Textiles Assistant
38.	TE 8.04	Sugar Technology
39.	TE 8.05	Mining Assistant
40.	Ag 1.07	Post Harvest Technology
41.	Ag 1.08	Forestry and Wood Products
42.	Ag 1.09	Horticulture and Silviculture Assistant
43.	Ag. 1.10	Scientific Agritculture
44.	HE 1.08	Applied Nutrition and Dietetics
45.	TE 7.03	Wood Carving and Inlay Work.

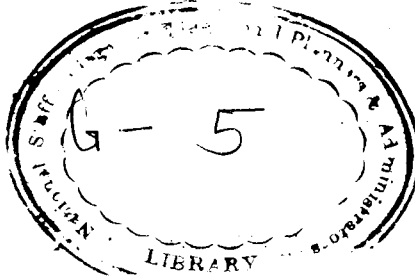
GOVERNMENT OF KARNATAKA

Department of Vocational Education

Statement showing the particulars of the Institutions interested in starting the vocational courses during.....

1. Name of the Institution
2. Name of the Principal with age, qualification and address
3. Details of courses existing at present :
 - (a) Academic
 - (b) Vocational, if any
4. No. of teachers employed with their age and qualification and experience
(a separate list to be enclosed)
5.
 - (i) No. of acres of land available
 - (ii) Liaison with industry if any
 - (iii) Involvement of the other voluntary and service agencies.
6. No. of students admitted to the I.P.U.C. during—
 - 1975-76
 - 1976-77
 - 1977-78
7. Fee structure at the +2 Stage
8. Particulars of Infrastructure already available for starting vocational courses if any :
 - (i) Additional room space
 - (ii) Additional furniture available
 - (iii) Duplicator
 - (iv) Overhead projector
 - (v) Movie projector
 - (vi) Slide projector
 - (vii) Trained Staff, in any trade—give details
 - (viii) Any other facility, such as Typewriters, Printing Press, Hobby Centre, Agricultural & Dairy, Poultry, Co-operative Society, Banks, Sewing Machines Workshop, Garrage.
9. Which courses according to you may be more popular and why ?
 - (a) Agricultural-oriented
 - (b) Technical-oriented

- (c) Medical-oriented
 - (d) Business & Commerce-oriented
 - (e) Nursing-oriented
 - (f) Any other area to be specified.
10. A brief history of the Institution
11. Financial Position of the management in brief
12. Any other information you would like to furnish to substantiate the claim of your Institution for selection.



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