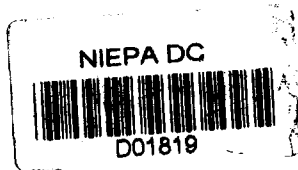




GOVERNMENT OF BIHAR  
EDUCATION DEPARTMENT

Report  
of the  
Job-orientation Education Committee  
Bihar

Volume I



PRINTED BY THE SUPERINTENDENT  
SECRETARIAT PRESS, BIHAR, PATNA  
1975

Sch. ... Unit.  
No. ... Educational  
...  
... 016  
LOC. 1819  
Date. 16-11-84

श्री रामानन्द सिंह,

अध्यक्ष,

रोजगार उन्मुखी शिक्षा समिति,

शिक्षा विभाग, बिहार सरकार,

पटना ।

दिनांक ५ फरवरी १९७५

प्रिय शिक्षा मंत्री जी,

रोजगार उन्मुखी शिक्षा समिति शिक्षा विभाग के दिनांक १ अगस्त १९७४ के संकल्प द्वारा गठित हुई थी । समिति के खर्च के लिये राशि संबंधी स्वीकृत्यादेश दिनांक १ अक्टूबर १९७४ को शिक्षा विभाग द्वारा निर्गत किया गया था । समिति के लिये अभीतक एक पूर्णकालीन सचिव उपलब्ध नहीं किये गये हैं ।

समिति को प्रभावशाली रूप से कार्य करने के लिये अभीतक केवल चार महीने की अवधि मिली है । इसी अवधि में समिति ने एक अंतरिम प्रतिवेदन स्वीकृत किया है, जिसकी एक प्रति इस पत्र के साथ भेजी जा रही है ।

समिति ने अपने अंतरिम प्रतिवेदन में रोजगार उन्मुखी शिक्षा के संबंध में कुछ ऐसे सुझाव दिये हैं जिनपर अविलम्ब कार्रवाई करने की आवश्यकता प्रतीत होती है । वे निम्नलिखित हैं:—

(क) व्यावसायिक और तकनीकी शिक्षा के संबंध में समिति ने अपनी अनुशंसायें अध्याय ४ (चैप्टर ४) में दी हैं । इन अनुशंसाओं की राज्य सरकार के निम्नलिखित विभागों को कार्यान्वित करना है:—

- (१) शिक्षा विभाग ।
- (२) कृषि, पशुपालन और सहकारिता विभाग ।
- (३) औद्योगिक और तकनीकी शिक्षा विभाग ।
- (४) श्रम और नियोजन विभाग ।
- (५) स्वास्थ्य विभाग ।

इन विभागों के कार्य में समन्वय तथा व्यावसायिक, औद्योगिक और तकनीकी शिक्षा को प्रभावशाली ढंग से संचालित करने के लिये समिति ने अनुशंसा की है कि एक राज्य व्यावसायिक और तकनीकी शिक्षा परिषद् (स्टेट काउन्सिल ऑफ वोकेशनल एंड टेकनिकल एडुकेशन) का गठन किया जाये और इनके लिये एक अधिनियम तैयार किया जाये । समिति का सुझाव है कि इस संबंध में अविलम्ब कार्रवाई की जाये ।

(ख) प्रस्तावित राज्य व्यावसायिक और तकनीकी शिक्षा परिषद् (स्टेट काउन्सिल ऑफ वोकेशनल एंड टेकनिकल एडुकेशन) का एक प्रधान कार्य विभिन्न प्रकार की व्यावसायिक और तकनीकी शिक्षा का पाठ्यक्रम तैयार करना होगा । इस समिति को यह भी निर्णय लेना होगा कि किन-किन स्थानों पर विभिन्न प्रकार के व्यावसायिक और तकनीकी शिक्षा संस्थान स्थापित हों । समिति को स्थापित होने और उसके द्वारा इस कार्य को आरंभ करने में कुछ समय लगेगा । यह आवश्यक है कि पांचवी पंचवर्षीय योजना के प्रारंभिक काल में ही व्यावसायिक और तकनीकी शिक्षा के संबंध में आवश्यक कार्रवाई की जाये । यदि राज्य सरकार की यह इच्छा हो कि राज्य व्यावसायिक और तकनीकी शिक्षा परिषद् (स्टेट काउन्सिल ऑफ वोकेशनल एंड टेकनिकल एडुकेशन) की स्थापना जबतक नहीं हो जाती है तबतक समिति पाठ्यक्रम की कम-से-कम रूप-रेखा तैयार करे और विभिन्न प्रकार के शिक्षा

संस्थान कहां-कहां स्थापित हों इसके संबंध में सुझाव दें तो इसके लिये विभिन्न प्रकार की व्यावसायिक और तकनीकी शिक्षा के लिये समिति को उप-समितियां गठित करनी पड़ेंगी। राज्य सरकार के निर्देश मिलने पर समिति इस कार्य को अपने जिम्मे ले सकती है, बशर्त कि समिति को कम-से-कम एक पूर्णकालीन सचिव की सेवा और प्रत्येक व्यावसायिक और तकनीकी शिक्षा संबंधित विभाग से एक-एक ऐसे विशेषज्ञ की सेवा समिति को उपलब्ध कराई जाये जो प्रत्येक उप-समिति के संयोजक के रूप में कार्य कर पाठ्यक्रम के संबंध में अपने सुझाव दें।

(ग) रोजगार उन्मुखी शिक्षा या किसी प्रकार की अच्छी शिक्षा का आधार विद्यालय शिक्षा है। सभी स्तर की विद्यालय शिक्षा के संबंध में समिति ने अपनी अनुशंसा अध्याय ३ (चैप्टर ३) में दी है। इन अनुशंसाओं पर शीघ्र कार्रवाई अपेक्षित है।

(घ) अच्छी विद्यालय शिक्षा के लिये अच्छे शिक्षक आवश्यक हैं और ऐसे शिक्षक को तैयार करने में प्रशिक्षण की एक महत्वपूर्ण भूमिका है। प्रारंभिक और माध्यमिक शिक्षकों के प्रशिक्षण के संबंध में समिति का सुझाव अध्याय ५ (चैप्टर ५) में दिया गया है। इनपर भी कार्रवाई अपेक्षित है।

समिति की ओर से उच्च तकनीकी शिक्षा तथा दूसरे बिन्दुओं पर सुझाव देने के लिये समय के विस्तार के लिये अनुरोध किया गया है। यदि समिति के कार्याविधि का विस्तार सरकार द्वारा किया गया तो समिति अगले ६ महीने में पूरा प्रतिवेदन देने की चेष्टा करेगी।

समिति की शिक्षा मंत्री, शिक्षा विभाग तथा सरकार के दूसरे विभागों से जो सहायता मिली है उसके लिये समिति की ओर से मैं धन्यवाद प्रकट करता हूँ।

भवदीय

रामानन्द सिंह

सेवा में—

## MEMBERS OF THE JOB-ORIENTATION EDUCATION COMMITTEE

1. Shri Ramanand Sinha—*Chairman*.

### *Members.*

2. Shri S. C. Roy, Development Commissioner, Bihar, Patna.
3. Dr. R. C. Mehrotra, Vice-Chancellor, Delhi University, Delhi.
4. Acharya D. N. Sharma, Vice-Chancellor, Patna University, Patna.
5. Dr. S. K. Mukherjee, Vice-Chancellor, Rajendra Agriculture University, Pusa, Samastipur, Bihar.
6. Dr. Y. K. Sinha, Joint Director (M. E.) Health Services, Bihar, Patna.
7. Dr. Gopal Tripathy, Senior Professor and Director, Plan-Co-ordination and Research Evaluation, Banaras University, Varanasi.
8. Dr. J. P. Choudhary, Director, Technical Education, Industries Department, Bihar, Patna.
9. Shri C. P. Sinha, Director, Employment and Training, Labour Department, Bihar, Patna.
10. Shri Deonarain Sinha, Principal, Patna Training College, Patna University, Patna.
11. Shri B. P. Singh, Director, Agriculture, Bihar, Patna.
12. Shrimati R. Nandi, Ex-Director (Higher Education), Education Department, Bihar, Patna.
13. Dr. R. P. Singh, Reader, Department of Education, Patna University.—*Secretary*.

## INTRODUCTION

In its Resolution no. DS (उ० शिक्ष०) ; S1-05/74 शिक्ष० 40 सी०, dated the 1st August, 1974, the Government of Bihar in Education Department appointed a committee consisting of the following persons to consider and report on all aspects of making education job-oriented.

1. Shri Ramanand Sinha, Ex-Education Commissioner, Bihar—*Chairman*.

### *Members*

2. Dr. Gopal Tripathy, Ex-Vice-Chancellor, Lucknow University and at present Senior Professor and Director, Co-ordination and Research Evaluation, Banaras Hindu University, Varanasi.
3. Dr. R. C. Mehrotra, the then Senior Professor of Chemistry, Rajasthan University, now Vice-Chancellor, Delhi University.
4. Acharya Devendra Nath Sharma, Vice-Chancellor, Patna University, Patna.
5. Shri Ganga Sharan Singh, Formerly member, Rajya Sabha.
6. Development Commissioner, Bihar.
7. A representative of University Grants Commission.

2. The committee was empowered to co-opt other members.

3. Shri Ganga Sharan Singh expressed his inability to serve on the committee. The University Grants Commission also expressed its inability to spare any senior officer to serve on the committee.

4. The committee co-opted the following members :—

1. Prof. S. K. Mukherjee, Vice-Chancellor, Rajendra Agriculture University, Pusa (Samastipur) Bihar.
2. Dr. Y. K. Sinha, Joint Director (ME), Health Services, Bihar, Patna.
3. Dr. J. P. Choudhary, Director, Technical Education, Department of Industries and Technical Education, Bihar, Patna.
4. Shri C. P. Singh, Director, Employment and Training, Department of Labour and Employment, Bihar, Patna.
5. Shri Deonarain Sinha, Principal, Patna Training College, Patna University, Patna.
6. Shri B. P. Singh, Director, Agricultural Education, Bihar, Patna.
7. Shrimati Ramola Nandi, Director, Higher Education, Education Department, Bihar, Patna.

5. The Chairman of the committee assumed charge of his office on the 17th August, 1974. The staff and funds required for the committee were sanctioned on the 1st October 1974. The full staff sanctioned for the committee could not be made available; the committee worked even without a Secretary for quite some time and later only the services of a part-time Secretary were made available. In spite of these difficulties, the committee has finalised the first part of the report and made recommendations on the following subjects which deserve priority in implementation within the first six months from the date of the constitution of the committee and within about four months of its effective working.

1. School Education.
2. Vocational Education.
3. Teacher Education.

RAMANAND SINHA,  
*Chairman.*

## CONTENTS

	PAGES
CHAPTER I—Planning Job-Oriented Education :	
Objectives and Strategies ... ..	1—9
CHAPTER II—Education in Bihar ... ..	10—15
CHAPTER III—School Education in Bihar ... ..	16—42
Annexure I ... ..	43
CHAPTER IV—Vocational Education ... ..	44—82
Annexure I ... ..	83
Annexure II ... ..	84
Annexure III ... ..	84
Annexure IV ... ..	85
Annexure V ... ..	86—91
CHAPTER V—Teacher Education : ... ..	92—111
Summary ... ..	111—132

## CHAPTER I

### *Planning Job Oriented Education Objectives and Strategies*

1.1. The term Job-Oriented Education implies that education should prepare students for the economic and social needs of the community expressed in terms of various occupations. Jobs are created by economic and social activities, education (irrespective of whether it is Job-Oriented or not) does not create Jobs. The demand for Job Oriented Education arises from the fact that a large number of students, on successful completion of their education find that the education which they have received, and the certificates, diplomas and degrees, which they have obtained have not brought them gainful employment, and, in many cases, are not relevant to the life they have to lead. Parents of such youngmen and women find that the investments which they have made in the education of their sons and daughters have brought no return in economic terms. The community which also invests a good deal of money in education of such young men and women also gets no tangible return. On the other hand a large number of young men and women who remain unemployed after completing their education become potential sources of social unrest. The young men and women who remain without jobs after completing education suffer from a sense of frustration and disillusionment.

1.2. The demand for job oriented education presupposes that the main objective of education is utilitarian. According to this objective education should prepare young men and women for various skills required by the community for its economic and social activities and that education should be a part of over all planning for economy of a country. There is altogether an opposite view which regards education "a good thing in itself and the more of it the better, irrespective of its relationship to social and economic needs." This view has not been accepted even in very developed countries which spend considerable money on education. In fact, for poor and developing countries such an objective will be "costly irrelevance". Education has, however, been accepted as a political need by almost all the developed countries. Many of the new developing countries also, recognising the political need, have made provisions for a minimum level of education for their all citizens. An educated and enlightened citizenry is considered to be essential for stability of a democratic society and democratic political system like ours. The framers of our constitutions were aware of this need when they provided for free and compulsory education for all children up to the age of 14 years.

1.3. Closely associated with the demand for universal education is the demand of the parents who want their children educated and trained for jobs which will raise their economic and social status. This social demand, partly conforms to the demand for education based on man-power approach, i.e., the need of the community for educated and trained to perform specific tasks in the country's economy. One of the important social and economic goals of education in a democratic society is equalization of opportunities for different sections of the community. Education is considered to be an important instrument for achieving social mobility and promoting an egalitarian society. This is an important goal in Indian Society, and particularly, in Bihar where about 22 per cent of the population are scheduled castes and scheduled tribes, about 38 per cent of the working population are agricultural labourers and more than two-thirds of the people are below the poverty line.

1.4. Educational planning has to take into consideration the socio-economic conditions and features of a community and the man-power requirements for various economic and social activities. However, there are difficulties in the way of long term planning on the basis of man-power approach. Efficient long term planning for education, on the basis of this approach, requires about 20 years, but the details relating to the future requirements for various skills and personnel are difficult to



assess in advance. Developments in Technology and educational standards also pose difficulties. Even in a country like the U.S.S.R. where central planning is best organised accurate long-term man-power requirements with various skills and educational standards are difficult to assess because of difficulties posed by technological changes. These difficulties are much more pronounced in a developing country like India and in a State like Bihar where there is dearth of accurate and reliable data and their timely availability and where development of sectoral imbalances in planning, difficulties in implementation, technological charges, and adherence to traditions pose serious problems.

1.5. There are also difficulties in the way of long term planning of education on the basis of social demand approach. In a developing country like India, although education is a major priority, it has to be considered in close relation with other important needs vital to the development of the country as a whole. Political stability rapid economic development, social transformation, equality of opportunity leading to an egalitarian society, well being of the people as a whole are some of the important national goals of planning in India. Investment has to be made by the society in sectors which are helpful in raising productivity, in bringing about social transformation, and raising living standards. Bihar is among the economically most backward States of India and economic development and rise in productivity are the important priorities for this State. Education is one of the sectors which deserves priority in investment but it is not possible even for many developed countries to invest in education enough to satisfy the rising demand for education. Education has, therefore, to be considered in relation to the overall economic and social planning of the State.

1.6. In a democratic and developing country like ours, Education cannot be planned for its contributions to either economic activities alone, or to the social demand for universal education without limit, and to the exclusion of other considerations. A combination of political, social and economic considerations has to be taken into consideration in Planning Education of the State. However, on account of Limitations of resources and in view of the priorities discussed in the preceding paragraphs in planning education in the State, its contribution to economic activities and fulfilment of national goals are the most important considerations.

1.7. The demand for education is derived from and is implied in the national goals. This has been recognised in the report of the Education Commission (1964—66) which has defined the role of education in India as an instrument for realisation of national goals of (i) increasing productivity, (ii) achievement of social and national integration, (iii) acceleration of the process of modernisation; and (iv) cultivation of social and spiritual value. Each of these goals cannot be considered and achieved in isolation to the exclusion of other goals. All these goals are inter-dependent, to illustrate, although increase in productivity is the most important goal for a developing country like India, Political stability through achievement of social and national integration, acceleration of the process of modernization, and social, moral and spiritual values are essential for creating conditions for increasing productivity. However, as already mentioned, increasing productivity, is the most important and a very major priority for educational planning in developing country like India and economically a very backward State like Bihar. The political and constitutional need for providing free and compulsory education to all children up to the age of 14 years, promotion of nation integration and the social consideration of providing equality of opportunity and promoting egalitarianism, and the social and economic need for modernization have also to be given due considerations in Educational Planning in the State.

1.8. Efforts for increasing productivity require not only better skills and education but also better levels of health and proper utilisation of leisure by human beings engaged in economic activities. Human beings need health education and education for utilising their leisure properly. They also need moral and spiritual education

not only for self-fulfilment, but also for right attitude and motivation, Planning education in the State has, therefore, to take into consideration these factors also.

1.9. Education has to compete with other very important and urgent demands for funds. Provision for more funds for education without reference to its relationship to the social and economic needs of the State may mean corresponding low level of investment in social and economic activities which increase productivity and may lead to reduction in the net domestic product and per capita income. Such a step may restrict the scope for creation of more jobs resulting from increase in economic and social activities consequent upon larger investments.

1.10. There is, therefore, need for establishment of proper relationship between the economic and social activities and investment in education so that tempo of increased economic and social activities results in increase in productivity and in the net domestic product and per capita income, and, provide more jobs and education provides the educational standards and skills required by the economic and social activities.

1.11. Education Commission (1964-66) which forms the basis of the existing National Educational Policy recommended that in the following 20 years, (i.e. up to 1966) the national enrolment should have the following broad objectives :—

- to provide effective general educational of not less than seven years' duration to every child, on a free and compulsory basis; and to expand lower secondary education on as large a scale as possible;
- to provide higher secondary and university education to those who are willing and qualified to receive such education, consistent with the demands for trained man-power and the need to maintain essential standards; and who are economically handicapped;
- to emphasize the development of professional, technical and vocational education and to prepare skilled personnel needed for the development of agriculture and industry.
- to identify talent and to help it grow to its full potential;
- to liquidate mass illiteracy and to provide an adequate programme of adult and continuing education and
- to strive continuously to equalise educational opportunities beginning with the elimination of atleast some of the more glaring inequalities.

The Commission further observed that enrolment in post-primary education should be based on a combination of following criteria :—

- (i) public demand for secondary higher education;
- (ii) full development of the pool of natural ability;
- (iii) capability of society to provide educational opportunities to required levels of quality; and
- (iv) the man-power requirements.

The Commission specifically recommended that estimated requirements of man-power needs for job opportunities form a good basis for planning the expansion of post-secondary educational facilities.

1.12. There is no machinery at the State level for collecting, collating and making available man-power requirements for various sectors of economy of the State. In fact, neither the Planning Department, nor the other departments of the State Government are in a position to indicate their man-power requirements even for the Fifth Plan Period, let alone a longer period of 15 or 20 years, which is necessary for a proper educational planning. In the circumstances, job-oriented education has to be planned on the basis of the broad and social economic trends and broad programme of development for the next 15 to 20 years. Even this planning has to be flexible and adjusted to the social and economic changes on the basis of periodic review. In the case of Bihar this review may conveniently coincide with the review of the Five-Year Plans.

1.13. Although man-power requirements in different sectors of the economy be not available and are difficult to assess for the purpose of planning job-oriented education; the futures of candidates of educated unemployed persons on the live register of employment exchanges in the State broadly indicate the availability or non-availability of job opportunities for various categories of educated persons. Table I will indicate that the number of educated persons (those who have completed secondary education or higher education) have been increasing over the years. The figures also bring out that there is virtually no unemployment among the doctors but a number of engineers are unemployed and the numbers of unemployed secondary schools certificate holders, under-graduates and graduates are very large.

TABLE 1.1

No. of candidates on the Live Register of Employment Exchanges in Bihar State at the end of the year (31st December 1973) of the educated unemployed.

Year.	Matric.	Under-Graduate.	Graduates excluding Engineer/Doctor.	Engg.	Doctors.	P.-G.	Total.
1	2	3	4	5	6	7	8
1961 ..	21,998	4,120	3,233	44	8	included in Col.4.	29,403
1962 ..	29,574	5,586	5,113	43	3	Separate figs. are not available.	40,319
1963 ..	32,130	6,598	6,843	112	4	Ditto	45,687
1964 ..	30,028	6,831	6,388	334	3	586	44,170
1965 ..	27,630	7,436	8,459	316	2	1,267	45,110
1966 ..	43,418	9,702	11,735	444	62	1,395	66,756
1967 ..	52,301	17,518	13,200	747	132	1,318	85,216
1968 ..	57,827	24,115	20,532	1,711	37	2,750	1,06,972
1969 ..	5,025	28,747	21,901	2,204	79	3,166	1,31,122
1970 ..	77,376	26,517	24,528	3,276	12	2,653	1,34,462
1971 ..	99,609	33,384	28,786	3,626	197	2,720	1,68,322
1972 ..	1,88,047	63,862	57,274	4,296	373	4,102	3,22,954
1973 ..	3,00,633	1,36,630	1,04,923	5,537	199	5,441	5,53,363

N.B.—Since this December 1971 there has been a much sharper rise in the no. of candidates on Live Register.

1.14. It is apparent, from these figures, that the numbers of job seekers who are secondary certificate holders, under-graduates and graduates are much larger in comparison with the jobs available. It may also be inferred from these figures that few educated persons are taking up self-employment or/and even those who are taking self-employment have been trying to get jobs in organised sectors.

1.15. According to census 1971, the distribution of workers occupation-wise is shown in the following Table :—

TABLE 1.2

1971	Bihar.	All-India.
1. Cultivators	43.3	43.4
2. Agricultural Labourers	38.9	26.3
3. Livestock Forestry	1.5	2.4
4. Mining and Quarrying	1.0	0.5
5. (i) Household Industry	2.5	3.5
(ii) Manufacturing Industry	2.6	5.0
6. Construction	0.6	1.2
7. Trade and Commerce	3.2	5.6
8. Transport, Storage and Communication	1.5	2.4
9. Other Services	4.9	8.7
Total	100.0	100.0

The census figures of 1971 indicates that the percentage of workers to the total population was 31.90 per cent against 33.50 per cent for All-India. Of the total workers 80.14 per cent are engaged in agriculture and allied activities against 68.6 per cent for All-India and the remaining 19.6 per cent were engaged in secondary and tertiary occupations as against 31.4 per cent for All-India.

1.16. Agricultural sector on which more than 80 per cent of the population depend is almost wholly unorganised and provides no paid jobs for educated persons. Household Industries, livestock and fishing also do not generally provide many paid jobs for educated persons. Even construction provides only small number of jobs for educated persons. The remaining sectors which provide paid jobs form a comparatively small sector of the economy and are unable to absorb all educated persons.

1.17. The percentages of the State income by origin at current prices for the year 1965-66 which are given in Table 1.3 show that agriculture and allied sectors account for more than half the State income, mining major medium and small-scale industry, construction and electricity account for about 1/6th of the income, and trade, commerce, transport, communication, banking and insurance account for about 17th and other services including education, profession, domestic services, public services under public authorities etc., also account for about 1/7th of the national income.

TABLE 1.3

Contributions in percentages to net domestic product (State's income) at current prices.

A-Agriculture and Allied Activities—	1965-66
1. Agriculture	45.42
2. Animal Husbandry	6.75
3. Forestry	0.96
4. Fisheries	1.30
Sub-Total	154.43

*B-Mining, Manufacturing and Small Enterprises—*

5. Mining	...	...	...	...	4.25
6. Factory Establishment	...	...	...	...	7.25
7. Small Enterprise	...	...	...	...	4.05
8. Construction	...	...	...	...	0.81
9. Electricity	...	...	...	...	0.17
					Sub-Total 16.53

*C-Commerce, Transport and Communication—*

10. Communication	...	...	...	...	0.25
11. Railways	...	...	...	...	3.78
12. Banking and Insurance	...	...	...	...	0.63
13. Other Commerce	...	...	...	...	8.39
14. Other Transport	...	...	...	...	1.44
					Sub-Total 14.49

*D-Other Services—*

15. Education	...	...	...	...	1.26
16. Professions, domestic services and liberal arts	...	...	...	...	6.80
17. Public Authorities	...	...	...	...	2.81
18. Real Estate and ownership of dwellings	...	...	...	...	3.62
19. Water-Supply and Sanitary Services	...	...	...	...	0.06
					Sub-Total 14.55

*E-Net domestic product*

100.00

1.18. In 1968-69 for which figures are available the net capital income of Bihar was Rs. 215.61 at constant (1960-61) prices against the average of 329.94 of All-India at constant (1960-61) prices. Taking a person having a monthly income of less than Rs. 20 at constant (1960-61) prices as falling below the poverty line more than 2/3rd of the population in the State are below the poverty line.

1.19. The net State domestic product in the State rose during the first and second plan periods (1950-51—1960-61) by 3.8 per cent. The per capita income at constant prices during the same period increased by 18 per cent or at an average annual rate of above 2 per cent. During the Third Five-Year Plan and the subsequent three years, i. e. (1961-62—1968-69) the increase in the domestic product at the constant price was of the order of 18 per cent only yielding an average annual growth rate of about 2.2 per cent. The per capita income during this period rose by 2.08 per cent over this period and the average annual growth rate of per capita was 0.26 per cent. The net domestic product during the Fourth Plan (1968-69—1973-74) is estimated at about 16.8 per cent over 1968-69 representing a growth of 2.4 per cent per annum. The per capita income during the same period is estimated to grow by 1.9 per cent.

1.20. It will appear, from these data that, although the schemes taken up during the first two plans had marginal impact on the economic growth of the State, the rate of growth in the economy considerably slowed down from 1961, and the economy virtually remained stagnant till 1968-69. On a study made by the Economic and Scientific Research Foundation, New Delhi regarding the regional economic disparity between Bihar and Punjab an analysis has been made regarding the causes of stagnation of the economy of Bihar for the last so many years. In this analysis the most important among the contributing factors to the virtual stagnation of the economy of the State is the vulnerable agricultural sector in the State. The pressure of population on land is very high. The agricultural sector is unable to avert the incidence of major crop failure because of lack of adequate irrigation facilities. Although some important public sector industrial companies have been set up in the State. They have not been followed by

corresponding development in small-scale ancillary and subsidiary industries with the result that manufacturing industries employ only 2.6 per cent of the working force of the State as against All-India average of 5 per cent. The infrastructures required for development, i. e., communication, electricity, banking facilities and other credit institutions are inadequate. Although Bihar has a large mining sector, which produces 39.5 per cent of the minerals of the country and employs 1 per cent of the working force against All-India average of 0.5 per cent growth of small and medium scale industries required to support it is inadequate.

1.21. *Density of population.*—Bihar is the second largest State in India by size of population. According to census of 1971, the population of the State was 56.23 millions, and it is estimated that it has gone up to about 59.75 millions in March 1974. The State has an area of 1.74 lakh square kms. and density of population in 1971 works out to 322 persons per sq. km against 185 for the whole of India. The population increased by 21.30 per cent from 1961—71 representing an average increase of 2.13 per cent per annum.

1.22. The State is divided into three geographical regions—(a) North Bihar Plains, (b) South Bihar Plains, and (c) plateau consisting of Chotanagpur Division. The density of population in North Bihar region is 482 persons per sq. km., that of South Bihar is 399 persons per sq. km., and that of plateau region is 179 persons per sq. km.

1.23. Only about 10.04 per cent of the population live in towns and cities and can be categorised as urban population and the remaining about 90 per cent live in the rural areas as against 19.87 per cent and 80.13 per cent respectively for All-India. The urban population in North Bihar plains is only 5 per cent, in South Bihar plains it is 12.7 per cent and in the plateau region it is 16 per cent.

1.24. *Land uses.*—Out of a total area of 428.2 lakh acres about 280.4 lakh acres, i.e., 65.66 per cent are culturable and 139.7 lakh acres, i.e., 32.71 per cent are not culturable or available for cultivation. In 1971, the net area cultivated works out to only 0.36 acre per capita which has declined to 0.34 acre by the end of the Fourth Plan (1974). It is estimated that it will decline to 0.31 acre per capita by the end of the Fifth Plan (1979). Taking the State as a whole about 80 per cent of the holdings are less than 5 acres. The vast majority of the cultivators in the State are small and marginal farmers subsisting on low earnings.

1.25. In the study made by the Economic Scientific Research Foundation, New Delhi, referred to earlier, a suggestion has been made that to reduce the pressure two things should be done, firstly, enough provision should be made for the growth, and diversification of non-agricultural business in rural areas, and, secondly, urbanisation and industrialisation should progress at a much faster rate providing thereby scope for larger non-agricultural employment.

1.26. In the Report of the Bihar Unemployment Committee (1960) also, suggestions were made for the growth of diversification of the economy of the State in order to provide employment to those who are already unemployed and to the new entrants to the work force. The Committee emphasised economic growth based on—

- (i) transfer of farm population to non-agricultural occupations producing capital and consumer goods;
- (ii) increase in productivity in all sectors of economy;
- (iii) a special emphasis on increase in productivity of agriculture by means of intensive cultivation and modernisation; and
- (iv) growth in tertiary sectors of trade, commerce, transport, banking, etc. consequent upon increase in production and productivity in agriculture and secondary sectors of manufacturing industries and increase in the number of personnel to be required for administration and offices.

1.27. Since the Committee submitted its report in 1960, some major industries have been set up in the public sector in Barauni area in North Bihar and Bokaro-Ranchi regions in the plateau regions of the State. Some medium scale industries have also been set up in private sector. There has also been some but wholly inadequate growth of small-scale industries in the areas. There has also been growth in the tertiary sector of trade, commerce, transport, communication, banking and industries, etc. but the growth in the secondary and tertiary sectors has not been able to absorb the increase in working population and number of educated persons. This is due to two reasons: firstly, on account of the growth of population as well as greater urge for education, the numbers of educated persons have been increasing and; secondly, the growth of secondary sector (industries) and the tertiary sector has been inadequate in comparison with the growth of population and increase in the numbers of educated persons seeking jobs.

1.28. Establishment of industries and development of tertiary sectors require investment of capital. Capital required for the establishment of new industries or expansion of the existing industries and development of tertiary sector has to be, by and large, generated from the existing economic activities, i.e., from agricultural and the secondary and tertiary sectors existing in the State. As already mentioned, agriculture and allied industries account for more than half of the State's income. Capital required for further development in all sectors has to be necessarily generated by increase in productivity in all the sectors of economy and, particularly, agriculture.

1.29. The need for development of agricultural and secondary and tertiary sectors of economy in the State has been recognised in the "Approach to the Fifth Five-Year Plan" of the State in which it has been emphasised that the State's Fifth Plan should be designed, to provide, among other things, for sufficient outlays to ensure adequate development of agriculture, industries, transport and communication. The other two main aims and objectives of the Fifth Plan are—

- (i) strengthening and revitalising area development programmes in the major irrigation commands for promoting optimum utilisation of the irrigation potential available, introduction of multiple cropping, and high-yielding varieties with related inputs;
- (ii) accelerating the progress of the irrigation schemes which have already reached an advanced stage of execution for bringing an additional two million acres under irrigation effectively during the Fifth Plan period;
- (iii) pushing ahead a massive ground-water development and rural electrification programme from now so as to increase the area under lift irrigation by an additional 2.5 million acres;
- (iv) introducing comprehensive area development programme in 30 selected blocks of 5—10 thousand acres chiefly in the plateau and sub-plateau areas for promoting full development of the agricultural potential of the area and build-up of the infrastructure of irrigation, power and roads and development of small-scale and cottage industries, besides removing of regional disparities;
- (v) enforcement of the land ceiling law and other land reforms;
- (vi) promoting full development of ancillaries and small scale industries in the large industrial complexes of Jamshedpur, Ranchi, Bokaro, Sindri, Dalmianagar and Barauni and agro-industries elsewhere;
- (vii) promoting the establishment of secondary and tertiary industries on a larger scale in the private sector and joint sector;
- (viii) strengthening of the electric transmission and distribution system, and further expansion of power generation capacity; and

- (ix) giving higher priority to road development programme for activating the economy, opening up new areas for development and reducing regional imbalances.

1.30. It will appear that in the programmes proposed for economic development during the Fifth Five-Year Plan period, great emphasis has been placed on raising productivity in agriculture and development of small-scale and medium-scale industries. The State will provide infrastructures in the shape of irrigation, electricity, communication, etc. There is also emphasis on provision of facilities for health measures and education. Implementation of the programmes relating to development of infrastructures, health measures and education will result in creation of some new jobs. There will also be corresponding development of tertiary sectors leading to creation of new jobs. But the main impact of development programmes will be on agriculture which is almost a wholly self-employment sector and small-scale industries which is, to a large extent, a self-employment sector.

1.31. As already mentioned, educated persons in the State have not been keen on taking self-employment. One of the principal reasons, amongst others, for this tendency is the fact that educated persons from the State very often lack the quality of entrepreneurship and seek safety in paid jobs. The social structure of the State is still traditional and even the educated persons are not able to shake off traditions. There is real need for replacing the traditional social system and traditional values by a system which is more responsive to the economic needs and by values which are based on reason and science.

1.32. In the context of these economic and social conditions of the State, planning job-oriented education will include the following important objective and strategies:—

- (a) education should be related to the social and economic needs and activities of the State;
- (b) it should prepare young men and women with various skills and abilities and motivate them to contribute to increase the productivity in all sectors including agriculture, secondary sector of mining which occupies an important stage in the economy of the State industries, and particularly small-scale industries which provide considerable scope for employment including self-employment and tertiary sectors of trade, commerce, transport, banking, insurance and other services including administration;
- (c) it should promote the quality of entrepreneurship so as to enable an adequate number of young men and women to engage themselves in self-employment which is the largest sector of employment in the State;
- (d) it should prepare young men and women who can successfully compete for under the Central Government (post in civil administration and the defence services), in major and medium public and private sector undertakings, including railways, banks, insurance companies, etc.;
- (e) it should prepare adequately trained and motivated teachers for schools, colleges and universities;
- (f) it should help in modernising society and the various productive processes; and
- (g) it should prepare young persons to meet the requirements for health services and other social services.



## CHAPTER II.

**EDUCATION IN BIHAR—THE PRESENT POSITION—A REVIEW OF EDUCATIONAL SYSTEM OF BIHAR—ITS CONTENTS AND ITS EFFICIENCY—ITS RELEVANCE TO ENVIRONMENT AND ECONOMIC AND SOCIAL NEEDS.**

2.1. Below are mentioned the broad structures of formal education available in the State.

(a) School education comprising Classes I to XI is subdivided into—

Lower Primary Classes	...	...	...	I—III.
Upper Primary Classes	...	...	...	IV-V.
Middle Classes	...	...	...	VI-VII.
Secondary Classes	...	...	...	VIII—XI.

The State Government have recently taken a decision that school education will be subdivided into—

Primary Classes	...	...	...	I—IV.
Middle Classes	...	...	...	V-VI.
Upper Middle Classes	...	...	...	VII-VIII.
Secondary Classes	...	...	...	IX-X.

At the end of the Secondary course, a public examination is held for the secondary school examination certificate.

(b) (i) Collegiate Education in Arts, Science and Commerce of 4 years' duration is subdivided into two years of intermediate classes and two years of under-graduate classes leading to the Bachelors degree in Arts, Science and Commerce. The public examinations are held, one at the end of two-year intermediate course, and the other at the end of the two-year under-graduate course. Those who are successful in the examination at the end of two-year under-graduate course are awarded a Bachelor's Degrees. The State Government have now accepted, in principle, the All-India educational pattern of 10+2+3, according to which on completion of 10 years school education, there will be two streams, one academic stream of 2 years' duration, and the other vocational stream of 1 to 3 years' duration. The academic course will be a preparatory course for those who will be admitted to the three-year degree course.

The vocational course will be mainly a terminal course for those who want to enter vocations.

(ii) Post-Graduate course in Arts, Science and Commerce. Two years course leading to Master's degree in Arts, Science and Commerce.

At the end of the two-year course a public examination is held and those who are successful in the examination are awarded Master's degrees.

(iii) *Teachers' Training Colleges.*—Two of these colleges are constituent colleges of Patna University and the remaining three are under the Government affiliated to other universities of the State. They conduct courses of ten months' duration for training teachers for secondary schools. The minimum qualification for admission to this course is a degree in Arts, Science or Commerce.

The institutions imparting school education, under-graduate education and post-graduate education mentioned above are either under the Education Department, or under its control, or linked with it in some way or the other.

(c) *Vocational Education*.—Two principal types of vocational education which are conducted in the State are—

(i) Vocational education in Engineering and some non-Engineering trades of two years' and one year's duration is conducted in the Industrial Training Institutes which are controlled by the Labour Department of the State Government. The minimum qualification for admission to some of the courses is pass in the secondary school examination with advanced Mathematics and Science and study upto two classes below the secondary course for other trades.

(ii) *Teachers' Training*.—Primary teachers training colleges under or controlled by Education Department conduct two-year course for training teachers for elementary schools. The minimum qualification for admission of this is a pass certificate in the secondary school examination.

(d) Some vocational courses are imparted in small private institutions. Some vocational courses are also conducted by Medical Department to meet the requirements of auxiliary and para-medical personnel required by them from time to time. Most of these courses are *ad hoc* courses.

(e) *Technical Education*.—Department of Industries and Technical Education looks after technical education in the State. There are mainly two types of technical institutions :—

(i) Engineering Colleges/Technological Institutes conduct four-year degree courses in Electrical Engineering, Mechanical Engineering, Civil Engineering, Metallurgical Engineering, Electronics, Communication Engineering and Production Engineering. The minimum qualification for admission to these courses is a pass certificate in Intermediate Examination in Science with Mathematics, Physics and Chemistry. Post-Graduate courses in Engineering are conducted in some of the Engineering Colleges.

(ii) Polytechnical Engineering Schools conduct 3-year Diploma Courses in Civil, Mechanical, Electrical and Mining, Metallurgical, Ceramic and Chemical Engineering. The minimum qualification for admission to these courses is a pass certificate in Secondary School Examination with Mathematics and Science.

(f) *Agricultural and Veterinary Education*.—There is a separate Agricultural University in the State known as the Rajendra Agricultural University which looks after Agriculture and Veterinary Education in the State. Three Agricultural Colleges provide for three-year degree course and two-year post-degree course in Agriculture and two Veterinary Colleges provide for a four-year degree course and two-year post-degree course.

There are four Agricultural Extension Training Centres which conduct two years' Diploma Course and one year Certificate Course in Agriculture. This course is mainly meant for training village level workers for the community development blocks. The minimum qualification for admission is a pass certificate in Secondary School Examination.

(g) *Medical Education*.—Department of Health of the State Government looks after Medical Education in the State. There are four Government Medical Colleges and five non-Government Medical Colleges conducting a five-year Degree Course in Medicine and Surgery (M. B., B. S.). There is also provision for conducting Post-Graduate Degree in Medicine and Surgery in Government Medical Colleges. The

minimum qualification for admission to degree course in medicine/surgery (M.B., B.S.) is Intermediate in Science with Physics, Chemistry and Biology.

(ii) The Department of Health also runs two-year Diploma Course in Pharmacy in the only School of Pharmacy which has been set up at Patna. The minimum qualification for admission is a pass certificate in Secondary School Examination with Science. There are training centres for training nurses, auxiliary nurses and midwives.

(h) There are some special institutes and schools which conduct courses in classical subjects, like Sanskrit and Arabic and special courses in Buddhism, Jainism, etc. They are not very important from the point of view of job-oriented education.

2.2. In Table no. IV below are given the numbers of schools and colleges, polytechnics, Industrial Training Institutes, Vocational Institutes, Teachers' Training Colleges (Technical) and together with the number of students in them in 1950-51 and 1970-71 or 1971-72 or 1972-73 for which figures are available.

TABLE 2.1.

Serial no.	Age-group and nos. of schools and colleges.	1950-51.	1972-73.	No. of students enrolled and admitted in 1950-51.	Number of enrolled and admitted students in 1970-71, or 1971-72 or 1972-73.
1	2	3	4	5	6
1	(Age-group 6—11) Primary schools ..	23,699	48,238	14.65 lakhs	34.01 lakhs
2	Age-group 11—14) Middle Schools ..	2,172	18,777	2.32 lakhs	8.42 lakhs
3	(Age-group 14—17) Secondary School ..	643	2,650	1.53 lakhs	7.89 lakhs
4	Agriculture Schools .. ..	1	4	9	411(70-71)
5	Training Colleges for training Elementary School teachers.	84	95	446	16,500
6	Training Colleges for training Secondary School teachers.	2	7	103	1,090
7	Arts, Science and Commerce Colleges ..	31	275	21,896	2,32,040(70-72)
8	Agricultural and Veterinary Colleges ..	2	5	290	1,317(70-71)
9	Engineering Colleges .. ..	3	6 (71-72)	734	6,316(71-72)
10	Medical Colleges .. ..	4	10 (71-72)	1,211	4,528 (71-72)
11	Polytechnics .. ..	3	13	861	3,408(70-71)
12	I. T. I. .. ..	7	30	964	8,146(70-71)

2.3. The figures in the Table above bring out that while in about 20 years the numbers of elementary schools (primary and middle schools) increased by about 120 per cent, and the students enrolled in them increased by 151.3 per cent during the same period, the numbers of secondary schools increased by 312.13 per cent and

student enrolled in them increased by 415.68 per cent and the numbers of Arts, Science and Commerce Colleges increased by 787.09 per cent and the students enrolled in them increased by 959.73 per cent. There have also been substantial increases in the number of institutions providing vocational, agricultural, veterinary, engineering and medical education, but, in absolute numbers the increases in the numbers of institutions and students enrolled in them form a comparatively small proportion of the number of institutions providing liberal education in arts, science and commerce colleges and the number of students enrolled in them. The figures highlight the fact that there has been disproportionate increase in the number of arts, science and commerce colleges and enrolments in them, in spite of the fact, that the numbers of unemployed under-graduates and graduates have been increasing over the years as brought out in Table I in Chapter I.

2.4. Some of the reasons for the large increases in the numbers of secondary schools and colleges and enrolments in them from 1950-51 to 1972-73 are mentioned below :—

- (i) After independence, there has been an urge for the secondary and college education among those sections of the population who had been so long deprived of the benefits of such education. Secondary and college education has been the channel of entry into the various positions in Government and Commercial offices, administration, industries and professions and through them to the elite classes and persons so long excluded from entry to the elite classes have been keen on securing entry into them for their children.
- (ii) Productivity in agriculture and household industry in the rural area had been low and as such they have been regarded only as residual vocations in which young persons seek employment only when there are no other avenues of employment.
- (iii) Over the years the standard of education at various levels has deteriorated with the result that the minimum qualifications for entry into Government and Commercial offices have been raised.
- (iv) Many unemployed graduates and post-graduates, in co-operation with political and social workers, have been setting up secondary schools and colleges in small towns and rural areas. The opening of new schools and colleges in these areas provide employment to them as well as opportunities to the school-going children and adolescents for pursuing secondary and college education. Many of those who complete secondary education find that there is no employment for them and, instead of remaining idle, they continue their education in the college access to which has become easy.
- (v) In some years before the middle of 1972, success in public examinations became easy because of adoption, on a large scale, of unfair means. This led to the opening of non-viable schools and colleges and enrolments in them of students who are not qualified for secondary or higher education, but who wanted success in the examinations by easy and unfair means.

2.5. While there has been some degree of planning in respect of numbers of elementary schools, vocational and technical schools and technical and professional colleges to meet the requirements of constitutional obligation for providing elementary education to all children up to the age of 14 years and to provide skilled personnel and technicians, engineers and professional men required in economy and social

service, there was no such planning in respect of secondary schools and arts, science and commerce colleges most of which were set up by agencies other than the Government. The result has been that expansion of secondary and collegiate education has no relationship with the economic and social activities in the State. Most of the under-graduates and graduates turned out by these colleges have no specific skills. Even most of the secondary schools examination certificate-holders are without any specific skills. At the same time there have been complaints of shortage of competent stenographers, typists, accountants and para-medical personnel and of suitable candidates in adequate numbers, from this State for recruitment of officers cadre in the Armed Forces and All-India and Central Services.

2.6. While the numbers of students enrolled in secondary schools and arts, commerce and science colleges have increased over the years, the efficiency of education imparted in the schools and colleges appears to have gone down. Efficiency of educational system may be judged with reference to its internal and external efficiency. One criterion of judging internal efficiency is the proportion of the numbers of those who enter a particular course to those who successfully complete that course and attain certain prescribed standard of knowledge and ability. External efficiency is mainly judged on the basis of application of knowledge, ability and skill acquired by pursuing a particular course of education to the economic, social and cultural needs and the problems of the community. Whether the man-power needs of the community in terms of knowledge, ability and skill are adequately met by the educational system may, therefore, be one of the measures of judging external efficiency of the educational system.

2.7. A survey made some years ago indicates that about 78 per cent of the pupils enrolled in primary classes (6—11) drop out and stagnate before reaching Class V and only about 22 per cent ultimately reach Class V. In view of the fact that provision in terms of teachers, physical facilities and money is made for the entire number of pupils enrolled, to be enrolled, this huge wastage caused by drop outs results in terrible wastage of efforts and money. This largely accounts for very low level of literacy in the State. Below is given a table 2.2 showing the numbers of candidates appearing at and the numbers and percentages of successful candidates in the Secondary School Examinations in four years (1971—74).

TABLE 2.2.

Year.	Total enrolled.	Total appeared.	No. of candidates passed.						Percentage.
			I	II	III	Pass	Total		
1	2	3	4	5	6	7	8	9	
1971 ..	1,67,573	1,67,573	8,154	61,978	43,727	6,290	1,20,149	72	
1972 ..	1,91,064	1,91,064	10,005	64,331	46,791	1,284	1,22,411	64	
1973 ..	1,90,132	1,90,132	3,057	17,343	30,855	537	51,792	27.2	
1974 ..	2,12,902	2,12,902	2,842	16,810	34,608	966	55,246	25.9	

2.8. The percentages of successful candidates in 1973 and 1974 when examinations were held under strict supervision are true indicators of efficiency of the secondary schools. The low percentages of 27.2 per cent and 25.9 per cent of those who were successful in the examinations held in 1973 and 1974 clearly bring out that there was huge wastage of efforts and money in secondary schools, because nearly three-fourths of those who appeared from these schools did not succeed in these examinations. The percentages of those who were successful in 1973 and 1974 also indicate fall in moral standards in the earlier years when many candidates were successful mainly because of adoption of unfair means in those examinations.

2.9. That educational system of the colleges under the University was also inefficient was clearly brought out by the Intermediate and Degree examinations held by the University in 1973 under strict supervision. In some of the examinations the percentages of the successful candidates was as low as 10 per cent or even below it.

2.10. Complaints have been received from employers that not only many of the secondary school examination certificate-holders, but also under-graduates and graduates are unemployable because their knowledge and powers of expressions are poor and shallow and they are found wanting in qualities and motivations required for hard and sustained work. Even as early as 1960, Bihar Unemployment Committee mentioned that there were complaints from employers that the qualities of secondary school examination certificate-holders had gone down. Since then there has been sharp deterioration in the standards.

2.11. The large numbers of educated persons borne on the live registers of employment exchange highlight the fact that secondary and post-secondary education, specially in arts, science and commerce has no relationship with the man-power requirement of the State. They also bring out the fact that, although self employment in agriculture as well as in secondary and tertiary sectors is the largest sector of employment, almost all who complete secondary and college education seek employment in paid jobs and do not take up self-employment. This may be partly due to the fact that agriculture and household industry have so long remained economic activities with low productivity and have been regarded as residual vocations in which people seek employment only when there are no other avenues of employment.

2.12. Modern technologists are now being applied to agriculture. Small-scale industries are now using modern technology in an increasing measure. There is scope for self-employment of educated both in agriculture and small-scale industries.

2.13. Educated young men and women of the State have not been able to secure numbers of jobs under the Central Government (including officers cadre of the Armed Forces), Central Government undertakings, Banking and Insurance concerns proportionate to the population of the State. It is not that young men and women of the State are not as good as those of other States in intelligence. In fact, many young men and women who can afford to go to Delhi for education have been doing so with a view to competing, on completion of their university education, for entry into the All-India or Central Services and quite a number of them are successful in their efforts. Very good students educated in the State itself are able to secure good positions in competitive examinations held for All-India and Central Services. However, educational standards of the universities, colleges and schools cannot be judged by the performances of only the outstanding or very good students who succeed in their efforts mostly because of the environment of their homes and education imparted in the few good schools of the State and colleges. The fact remains that, except for the success of these outstanding or very good students other young men and women are not able to compete for other jobs under the Central Government, Central Government undertakings, Banks and Insurance Companies in numbers proportionate to the population of the State.

2.14. One of the main objectives of education is mentioned in Chapter I is its role in modernising society and various productive processes and commitment to the social goals. The social structure in the State is still feudal in many respects and prejudices based on narrow loyalty of caste and kinship persist. Large numbers of people are still superstitious and scientific spirit which is essential for modernisation progress is lacking. Women still occupy inferior status and dowry system continues to be a social evil. Agriculture and household industries which are the most important sector of economy are, by and large, still using traditional methods.

2.15. The review of the present position regarding educational standards and efficiency clearly points to the need for changes in the system so as to make it more efficient, more job-oriented and as an effective tool for modernisation.

## CHAPTER III.

## SCHOOL EDUCATION IN BIHAR—STRUCTURE—CURRICULUM AND STANDARDS—SUGGESTIONS FOR REFORM

3.1. According to one of the constitutional directives, the State shall endeavour to provide free and compulsory education to all children up to the age of 14 years. This directive was to be implemented within 10 years of the adoption of the Constitution, i.e., by 1960, but we are still far from this goal. In fact, by the end of March, 1974, it is estimated that in Bihar only 24.8 per cent of the children of the age-group 11—14 years have been enrolled in the schools and only 7.9 per cent of the girls of this age-group were enrolled. Only 62.2 per cent of the school-going children of the age-group 6—11 were enrolled and only 32.2 per cent of the girls of this age-group were enrolled.

3.2. In a democratic country like ours, a minimum level of education is a political and social need. Enlightened citizenry is considered essential for proper functioning of democracy and social progress. It was in recognition of this need that the framers of the Constitution provided this minimum level of education. It may be mentioned that in advanced countries like the U.S.A. and U.S.S.R. mass secondary education is now considered necessary for social and economic advancement; in fact, in the U.S.A. there is now urge for mass higher education beyond the secondary stage. The present state of our economic and social development will, however, not be able to sustain mass secondary or higher education; it will result in massive unemployment and consequent frustration. Sufficient funds will also not be available for mass higher and secondary education. Division of funds for providing massive education at the secondary and higher level will result in corresponding reduction in the availability of funds for investment in economic and social activities which create jobs.

3.3. However, inspite of monetary constraints, we have to implement the constitutional obligation of providing free and compulsory education to children up to the age of 14 years within a reasonable time. Since we shall be able to provide mass education to the children up to the age of 14 years only, care has to be taken to see that contents and quality of education imparted are such as to promote modernisation and productivity. Care has also to be taken to see that what students learn is not only immediately relevant to their needs but also enables them to change their environments. In order to enable them to change their environment, the students of the State have to be taught to be discontented with the existing state of low economic productivity, economic stagnation and social evils and traditions which inhibit modernisation.

3.4. In this connection it is worthwhile referring to the recommendations of a high level commission of UNESCO contained in "World of Education—Today and Tomorrow—Learning to be". According to the recommendation of this commission the subjects of general education must be markedly broadened so that they definitely include language, social, economic, technical and practical knowledge. The commission goes on to say that redistribution between different types of teaching—general, scientific, technical and professional—must be dropped and education as from primary and secondary levels must become theoretical, technological, practical and manual at the same time.

3.5. Education Commission on education (1964—66) mentioned that no reform is more important or more urgent than to transform education and to endeavour to relate to the life, needs and aspirations of the people and thereby make it a powerful instrument of social and economic and cultural transformation necessary for the realisation of our national goals. This can be done if education—  
is related to productivity;

strengthens social and national integration; consolidates democracy as a form of Government and helps the country to adopt it as way of life;

hastens the process of modernisation; and

strives to build character by cultivating social, moral and spiritual values.

3.6. The Commission has further recommended that all good and purposeful education should consist of, at least, four basic elements—

'literacy' or a study of languages, humanities and social sciences;

'numberacy' or a study of mathematics and natural sciences;

work experience; and

social service.

3.7. In the existing school structure of Classes I—XI in Bihar there are three separate syllabuses and courses of studies for—

(i) Elementary Classes (I—VII);

(ii) Classes VIII-IX of Secondary School; and

(iii) Classes X-XI of Secondary Schools.

A public examination leading to the secondary school examination certificate is held in the courses of studies prescribed for Classes X-XI.

3.8. As already mentioned, the State Government have now accepted the national pattern of 10-year school education and sub-divided it into Primary Classes (I—IV), Middle Classes (V-VI), Upper Middle Classes (VII and VIII) and Secondary Classes (Classes IX-X). The subjects studied in the existing Classes I to XI and those now approved for study for the new pattern of Classes I to X are mentioned below :—

Subjects now being studied in existing classes (I to XI).

Subjects to be studied in the new pattern (classes I to X).

A. Subjects for elementary school in Bihar (Classes I—VII)—

1. Primary Education (I—IV)—

(i) Daily and weekly clearing school building and its maintenance.

(a) Classes I-II Academic Studies—

(1) Mother tongue—One paper.

(ii) Mass drill and prayer.

(2) Mathematics—One paper.

(iii) Physical training and games

(b) Activities—

(iv) Craft

(1) Science (Study of Physical environment.



Subjects now being studied in existing classes (I to XI).

- (v) Language and Literature (Mother tongue).
- (vi) Second Indian Language to be taught from Class IV onwards.
- (vii) Mathematics.
- (viii) Social Study.
- (ix) General Science.

(x) Fine art and music.

(xi) English to be taught either optional subject from class VI onwards.

**B. Subjects of study in Classes VIII and IX—**

- (1) Modern Indian Language
- (2) A Classic.
- (3) English.
- (4) Physical training.
- (5) Craft work
- (6) Social Studies.
- (7) Mathematics.

In addition each student has to take three optional subjects from one of the five groups consisting of (a) Mathematics and Science, (b) Humanities, (c) Art and Music, (d) Commercial and Secretarial Practice, and (e) Technical studies.

**Subjects of study for Classes X and XI—**

- (1) A modern Indian Language and Literature.

Subjects to be studied in the new pattern (classes I to X).

- (2) Social Science (Study of Social environment).
- (3) Games and Recreation.
- (4) Handicraft and Music
- (5) Work experience.

**2. Classes III and IV—**

(a) Academic—

- (1) Mother tongue—One paper.
- (2) Mathematics—One paper.
- (3) Science—One paper.
- (4) Social Studies—One paper.
- (5) Drawing.

(b) Activities—

- (1) Games and Physical Exercises.
- (2) Handicraft and Music.
- (3) Work experience.

**2 Lower Middle Classes (V-VI)—**

- (1) Mother tongue—One paper.
- (2) National Language (Hindi) for those whose mother tongue is not Hindi or any of the following languages :—

(i) Sanskrit, (ii) Urdu, (iii) Bengali, (iv) Oriya, (v) Maithili, (vi) Mundari, (vii) Oraon and (viii) Santhali.

- (3) English—One paper.
- (4) Mathematics—One paper.
- (5) Science (Physical and Biological)—One paper.
- (6) History and Geography—One paper.
- (7) Moral Education and Citizenship—One paper.

Subjects now being studied in existing classes (I to XI).

- (2) English Language and Composition.
- (3) Social Study.
- (4) Everyday Science or Elementary Physiology and Hygiene.

In addition, he has to offer three subjects from one of the nine groups namely :—

- (a) Humanities and Social Science.
- (b) Natural Science.
- (c) Art and Crafts,
- (d) Education and Welfare.
- (e) Commercial Training.
- (f) Agriculture and allied subject,
- (g) Elementary Engineering.
- (h) Public Health and first aid,
- (i) Home Management.

Subjects to be studied in the new pattern (classes I to X).

- (8) Work experience—One paper.
- (9) Drawing (Geometrical).
- (10) Activities—Games and Physical exercises.
- (11) Music.

#### 4. Classes VII and VIII—

- (1) Mother tongue—One paper.
- (2) National Language or Second Indian Language—One paper.
- (2) English—One paper.
- (4) Sanskrit or Persian or Arabic—One paper.
- (5) Mathematics—One paper.
- (6) Science (Physics, Chemistry and Biology)—One paper.
- (7) History and Civics—One paper.
- (8) Geography—One paper.
- (9) Work experience—One paper.
- (10) Drawing (Geometrical)—One hour a week.
- (11) Music—One hour a week.
- (12) Physical education—Two hours a week.

#### 5. Secondary Course (Classes IX and X)—

- (1) Mother tongue—One paper.
- (2) National Language or Second Indian Language—One paper.
- (3) English—One paper.
- (4) Mathematics—One paper.
- (5) History and Geography or Science (Physics, Chemistry and Biology)—One paper.
- (6) Work experience—One paper.

NOTE.—Students taking History and Geography will study Science as one of the optional subjects and students taking Science subject will study History and Geography as one of the optional subjects.

7. Optional subjects (three papers from amongst the one of the following subjects).

*GROUP 'A'*

1. Physics.
2. Chemistry and one of the following subjects :—
  - (1) Biology.
  - (2) Advance Mathematics

*GROUP 'B'*

1. History and Citizenship.
2. Geography (together with Economics Geography) and one of the following subjects :—
  - (a) Literature (Hindi, Urdu, Bengali, Oriya or Maithili or English).
  - (b) Oriental Language (Sanskrit, Arabic or Persian) or one of the following foreign languages (French, German or Russian).
  - (c) Elementary Economics and Co-operation.
  - (d) Advance Mathematics.
  - (e) Science.
  - (f) Music.
  - (g) Dancing.
  - (h) Art and Sculpture.
  - (i) Commercial Art.
  - (j) Secretarial Practice and typing.
  - (k) Tailoring.
  - (l) Physical Education and Hygiene.
  - (m) Embroidery and needle work.
  - (n) Textile Printing.
  - (o) Radio Engineering.
  - (p) Wood Work.
  - (q) Weaving.
  - (r) Leather Work.
  - (s) Metal Work.

*GROUP 'C'*

1. Commercial Arithmetic and Book Keeping.
2. Commercial Geography and Trade Practice.
3. One of the following subjects :—
  - (1) Secretarial Practice and typing.
  - (2) Shorthand and typing.
  - (3) Elementary Economics and Co-operation.

GROUP 'D'.

1. Science (Physics, Chemistry and Biology).
2. General Agriculture.

One of the following subjects :—

- (1) Horticulture.
- (2) Animal Husbandry and Dairying.
- (3) Forestry and Silk Production.

8. One of the following subjects as additional subjects for a candidate who has not already taken the subject as one of the optional subjects :—

- (1) Sanskrit.
- (2) Persian.
- (3) Advanced Mathematics.
- (4) Biology
- (5) Secretarial Practice and typing.
- (6) Stenography and typing.
- (7) Home Science.

3.9. From the scheme of study for various classes of school education now approved by the State Government, it will appear that four core subjects namely, (i) languages and literature (ii) Mathematics and Science, (iii) Social Sciences and (iv) work experience have been made compulsory at all levels in school education. While study of mother tongue has been made compulsory—at the lowest level in Classes I—IV, study of two languages have been made compulsory in Classes V-VI and study of three languages, including one foreign language has been made compulsory from Classes VII to Class X. A classical language (Sanskrit or Persian or Arabic) has also been made a subject of compulsory study in Classes VII and VIII.

3.10. The study of Mathematics, Science and Social Sciences and work experience has received equal importance in the scheme of study prescribed up to Class VIII, but in the scheme for study prescribed for Classes IX and X, a student has been given option to make his choice from a number of alternatives. A student, upon the basis of choice from the options open to him, may study more of Mathematics and Science than another who, on the basis of his choice, may study more of Social Sciences, than the former; a third student may study more of languages and literature than one who chooses to study more of Mathematics and Science or more of Social Sciences.

3.11. In the scheme of studies now approved by the State Government the system of diversification of courses in new classes of study in force in the existing Classes X-XI has been continued in the new Classes IX-X.

3.12. Diversification of secondary courses as contained in the existing syllabuses Classes X-XI (Secondary Classes) has not proved popular and successful. Of about 2,700 secondary schools, only 187 have provision for courses for Commerce, and Secretariat Practice, and Business Methods, and only 16 have provision for teaching vocational courses. Of more than 2,10,000 students who appeared at the Secondary School Examination in 1974, only about 3,000 took up Secretariat Practice and Business Methods and of these only 27 took up shorthand and typewriting which is

purely a job-oriented course, 15 took up tailoring and only 10 took up wood-work. On the basis of this experience, there does not appear to be any justification for diversified courses at the secondary level (Classes IX and X). This does not, however, mean that job-oriented education or vocational education should be introduced only at the post-secondary level. There is adequate justification and considerable scope for vocational education for those who leave the schools before completing Secondary School Examination. This will be discussed in detail in the next chapter.

3.13. Education Commission (1964—66) recommended that in non-vocational schools, a common curriculum of general education should be provided for the first 10 years of school education and diversification of studies and specialisation should begin only at the higher stage. This has now been accepted as a national policy on education. The national committee on 10+2+3 educational structure has also recommended that there should be general education for the first 10 years of school with compulsory study of 2 or 3 languages, mathematics, physical and biological sciences (2 papers), social sciences of history, geography and citizenship (2 papers) and work experience which are core subjects in addition to moral and physical education. A candidate should however, be allowed to have the option of one subject from a number of alternative consisting of language and literature, advanced mathematics, advanced science, advanced social science subjects, commerce and business subjects, art, music and craft subjects.

3.14. According to a survey made by the UNESCO, one of the most recent trends and reforms is to have more comprehensive schools with a uniform programme of study with only a few optional subjects. In the U.S.S.R. in which education has been, to a great extent, responsible for modernising economy, general education is provided up to 10 years in the secondary schools in language and literature, mathematics, physical and biological sciences, social sciences and craft work as compulsory subjects. In the U.S.A. in which the economy is highly diversified three types of high schools, namely (i) general or college preparatory high schools, (ii) technical high schools and (iii) vocational high schools in which higher intelligence level students, moderately high level intelligence and students with low intelligence respectively are admitted. These high schools consist of four Classes (VIII—XII) including the secondary and higher secondary courses. As will be discussed later, there will be diversification of courses in the higher secondary classes (Classes XI—XII) in our State also.

3.15. From the point of view of employability it is desirable to include mathematics and science as compulsory subjects in the secondary course. A student who takes mathematics and science has better chances of employment than one who does not. If he wants to take up a technical or professional course he will have to take up mathematics and science in higher secondary or intermediate course and he cannot be so unless he has studied them at the secondary stage. For entry into many of the engineering and para-medical vocational courses a pass certificate in secondary examination with mathematics and science is the minimum qualification. Most of the important metallurgical and engineering concerns recruit, as trainees, Secondary School Examination Certificate holders with Mathematics and Science for training them as skilled workers. A person who wants to compete for entry into commission rank of armed forces has to appear in competitive examination in which knowledge of English, Mathematics and general knowledge which includes science and social science is essential. questions on general knowledge in the competitive examination for entry into many of the Central and State Services include those on Science. Even from the point of view of self-employment a study of science at the secondary stage is desirable. Modern agriculture requires some knowledge of biological sciences. Similarly, a person who wants to set up small-scale industries using modern technologies can do better if he has knowledge of science on which modern technologies are based.

3.16. It may be mentioned that even in the existing courses of study for secondary school examination, everyday science which includes physics, chemistry biology, astronomy and geology has to be compulsorily studied by students opting for study of humanities and social sciences. A student taking up natural sciences group of subjects has to study three of the following subjects (i) advanced mathematics, (ii) physics, (iii) chemistry, (iv) biology, (v) geography and (vi) elementary physiology and hygiene. Most of the students studying for the secondary school examination take up humanities and social science and natural sciences groups of subjects. Moreover, those who take up humanities and social science group cannot acquire satisfactory knowledge about physical and biological sciences by studying only one paper of everyday science including physics, chemistry, biology, astronomy and geology. There has been so much explosion of knowledge in these sciences that even for acquisition of the working knowledge of his own body, his environment including plant life and the physical world and the chemistry of the water he drinks and food he eats, a student will have to study the physical and biological sciences in a more satisfactory manner than what is included in the terms everyday science and elementary physiology and hygiene”.

3.17. It will appear that in the existing courses of study from Classes I to VIII and the courses of study now approved for Classes I to VIII mathematics and science are compulsory subjects. The minimum qualification for recruitment of teachers of elementary schools is a pass in secondary school examination. Unless a candidate who is recruited as a teacher has studied mathematics and science of a reasonable standard at the secondary school stage, he cannot satisfactorily teach these subjects in the elementary schools. In fact, complaints are heard that although science is included in the school courses even today it is either not taught or not taught satisfactorily because, apart from lack of equipment necessary for carrying of experiments, teachers themselves have no adequate knowledge of science subjects.

3.18. It is mentioned in some quarters that some of the existing schools have no laboratories and equipment and a few do not have even science teachers. It will therefore, be difficult for them to teach science subjects in a satisfactory manner. This cannot, however, be a ground for not including science as a compulsory subject in the courses of studies for secondary schools. Syllabuses and courses of studies cannot be framed to suit the convenience of non-viable, ill-equipped and ill-staffed schools. Laboratories, equipment and staff have to be provided to meet the requirements of the syllabuses and courses of studies which are essential not only for improving the chances of employability of the students but also for enabling them to acquire a minimum level of knowledge about their physical and social environment. All schools therefore, have to be well-equipped and well-staffed for the prescribed courses of studies.

3.19. It is also sometimes mentioned that there will be larger number of failures in science subjects, particularly, among the students of the poorer community. There should be no such large failures, if schools are directed and enabled to make arrangements for additional tuition of students who are backward in Mathematics and Sciences. As the scope for employment of those completing secondary school examination with science subject is much better, it will be in the interests of the children coming from poorer sections of the community that they should be enabled to study science. As an interim measure, however, provision may be made that those who fail in science may be declared to have passed in other subjects. Their overall grade/division should, however, be determined with reference to percentage calculated on the basis of the total aggregate marks in all the subjects including science subjects. In case the percentage of marks, so calculated is short of even the minimum of the last (3rd) division at present the student concerned will not be awarded any division but will simply be declared to have passed with percentages of marks noted in the certificate. No such difficulty will arise in the grade system, as there will be a grade even for the lowest mark. Such students will not be admitted to courses including vocational courses in which a pass in secondary school examination with

science subjects is the minimum qualification. They should not also be admitted to courses of study which are preparatory courses for admission to the undergraduate course.

3.20. It is recommended that in Classes IX and X there should be no diversification courses for school education should be broadly be on the lines recommended by the Education Commission of 1964—66 and the National Committee on 10+2+3 educational structure. Accordingly the subjects to be studied at the last two years of 10 years school education should be as recommended below :—

		Marks.
(1) Hindi which is the regional and national language.	Two papers	... 100
(2) Mother tongue (in case those whose mother tongue is Hindi any other modern Indian language)	One paper	... 50
(3) English	One paper	... 50
(4) Mathematics	Two papers	... 100
(5) History and Citizenship	One paper	... 50
(6) Geography including human Geography.	One paper	... 50
(7) Physical Sciences (Physics and Chemistry).	One paper	T. 40 + P. 10
(8) Biological Sciences (including human Biology).	One paper	T. 40 + P. 10
(9) Work experience (including theoretical and practical work).	One paper	T. 50 + P. 50
(10) Optional subjects—one of the following subjects.	One paper	... 100
Total		700

(1) English literature. (2) Hindi literature. (3) A Modern Indian Language literature. (4) Sanskrit or Arabic or Persian. (5) French. (6) German. (7) Russian. (8) World History. (9) Economic Geography. (10) Advanced Mathematics. (11) Physics. (12) Chemistry. (13) Biology. (14) Elements of Commerce. (15) Elements of Book-keeping and Accountancy. (16) Economics. (17) Civics. (18) Home Science. (19) Physical Education. (20) Vocal Music. (21) Instrumental Music. (22) Dancing. (23) Painting. (24) Commercial Art. (25) Office Procedure and Typing. (26) Tailoring. (27) Embroidery, needle work and knitting. (28) Farming. (29) Animal Husbandry. (30) Horticulture.

NOTE 1.—Each of the core subjects of the regional language, mathematics, social sciences, sciences, and work experience will carry 100 marks; in addition, the optional subject which will be of advanced type will also carry 100 marks.

NOTE 2.—Social sciences and sciences have each been divided into two subjects of 50 marks each. In Physical sciences and biological sciences theory papers will carry 40 marks and practical work 10 marks.

NOTE 3.—Theory paper in work experience will carry 50 marks and practical work 50 marks.

NOTE 4.—Each examination paper of 50 marks should be of two hours' duration; only the examination in the option subject carrying 100 marks should be of three hours' duration.

29. Fruit Preservation and Canning.
30. Mechanism and Repair of Radio.
31. Electric Gadgets and their repairs.
32. Carpentry.
33. Blacksmithy.
34. Weaving.
35. Leather-work.
36. Bee-Keeping.
37. Cloth Printing, including Datik.

11. Activities —(i) Physical education.  
(ii) Moral education.

(The list is not exhaustive and can be expanded according to need.)

3.21. In the scheme of study now approved study of four languages including study of classical subjects (Sanskrit or Persian or Arabic) has been made compulsory in classes VII and VIII. A study of four languages at this stage will mean very heavy burden on the students of the age group studying in classes VII and VIII. No useful purpose will be served by asking a student to study a classical language compulsorily at this level when he has not studied it before reaching these classes and may not be required to study it further after completing class VIII unless he chooses it as an optional subject. It is, therefore, recommended that study of a classical language should not be made compulsory either for the students of these two classes or for any other classes of school education.

3.22. The Committee agrees that, with the changes suggested in the foregoing paragraphs, the scheme of study for school education already approved by the State Government may be introduced in the schools of Bihar.

3.23 In drawing up the detailed contents of the courses of studies the objectives should be to attain defined standards at the end of each sub-stage. The courses of studies from classes I to X should be continuous so that there is no avoidable repetition of courses at different sub-stages. Since the present goal is to provide free and compulsory education to all children up to 14 years of age, the courses up to classes I—VIII should be such as to enable the students to acquire such skills in language, in manual operations and understanding of physical, biological, physiological and social sciences and appreciation of principles of health and synthetic matters that he can lead a happy and healthy life and function as an enlightened citizen in a co-operative and productive society based on justice-political, social and economic and contribute to increase in productivity and to modernisation and progress. The courses should also prepare him for think for himself and for independent study.

3.24. Details syllabuses and courses of studies for different subjects will have to be drawn up by experts on each subject. Some broad suggestions requesting the subjects to be included in the school curriculum are discussed in the following paragraphs.



3.25. The curriculum for classes I to VII of the elementary schools were drawn up in the fifties. However, many of the books produced by the national council of Educational Research and Training with adaptation have been introduced how in these courses. Complaints have been made that, in some cases adaptations made are not sufficiently adequate to meet the requirements of the students of the State. According to the present practice, the Bihar State Text Book Publishing Corporation makes necessary adaptations after consulting the teachers of the concerned subjects in Seminars convened by State Institute of Education. If in some subjects books are not published by the National Council of Educational Research and Training or the books published by them are not considered suitable, the Text Book Corporation gets books written by experts and teachers on these subjects. The books are vetted by panels of experts appointed by the corporation.

3.26. The State Text Book Corporation is, at present not well staffed and well equipped for preparation or adaptation of text books in all subjects. We shall later discuss the role of State Institute of Education and State Institute of Science Education and the Staff and the equipment they require for adequately performing the task assigned/to be assigned to the, we, however, suggest that the State Institute of Education and State Institute of Science Education should play a more active role in the preparation and adaptation of text books. Besides having on their staff experts in different subjects, they should have panels of experts who should be consulted on the books to be written or for adaptation of the books published by the National Council of Educational Research and Training. A satisfactory method of getting good results may be to invite, by open advertisement, writers of different subjects to write books on the basis of the approved curricula and get them vetted by experts.

3.27. *Study of language.*—The objective of study of three languages at the secondary stage should be acquisition of skill in one language, i.e., skill in oral communication, writing and reading in Hindi which is the regional as well as the National language working knowledge of a second language which will generally be English which is not only the associate official language of the Union Government, but the most important library language and an acquaintance with the third language which will generally be the second Indian Language. It needs to be mentioned here that the objective at this stage is that a student need not go into the depth of the literature of the language at this stage but should acquire necessary skill of communication through oral expressions and writing in Hindi which is the regional and national language and a telebraly satisfactory knowledge of English. If the students want to study in depth the literature of Hindi or the mother tongue or English he can take it as one of the optional subjects.

3.28. From the point of view of employment in Jobs requiring oral and written expressions, skills in language are most valuable. They, along with skills in Mathematics, are the basic skills which are essential for most jobs open to those who complete school education. They are also essential for doing well in such jobs. Very great importance has, therefore, to be attached to the learning by the students and teaching the first language (Hindi) and also English.

3.29. In this connection the committee has noted that the standard of English taught in the schools of the State is very low with the result that only about 20 per cent of the students appearing at the school final examination in this subject are successful. The Examination regulations provide that, if a student is successful in other subject and fails in English, he will be given a certificate of having passed the secondary examination without English. If English has to be studied for secondary school examination it should be studied with a view to acquiring a satisfactory working knowledge of that language. Study of English is still important from the point of view of employment. In almost all the offices under the Central Government, business is transacted in English and students who have not acquired satisfactory knowledge of English are not able to secure employment in them. Even in big private sector undertakings English continues to be the language of business

transactions and they require that their clerical employees and employees of higher level must have satisfactory knowledge of English. Medium of most of the competitive examinations held by the Union Public Service Commission for recruitment to All India Services, Central Services and Armed Forces is in English. From the point of view of employability, therefore, it is necessary to improve the standard of English at the secondary stage.

3.30. One of the reasons for lower standard of English at the Secondary stage is lack of teachers having good knowledge of English. So long the standard of English continues to be low at the secondary stage dearth of teachers with good competence in English will continue because foundation of competence in language is laid in schools. The comparatively few persons with good knowledge of English are able to compete for more lucrative services. In order to improve the standard of English in the schools it will not only be necessary to have teachers with satisfactory knowledge of this language but also to train the existing teachers. Institute of English located in the State is not adequately staffed and equipped to carry on the task of in service training. It is, unfortunate that even the existing meagre resources in the shape of staff equipment are not fully utilised. Response from teachers to in service training courses conducted by this institute is not satisfactory and many teacher sponsored for training at the institute do not turn up for training. One of the reasons mentioned for this lack of response is want of incentives for those who complete training. There is difficulty in giving incentive training courses. Department of Education may consider whether any scheme of incentive for this in-service or any other in-service course is feasible. Even it is not possible to provide any incentive for such in service training courses, it should be ensured that teachers appointed to teach English are not confirmed or are not given increment unless they undergo in service training English at this Institute or Central Institute of English or any other approved institute within a specified period. It will be unnecessary to strengthen Institute of English for this purpose and devise a Crash programme for in service training. To insure recruitment of teachers with satisfactory competence in English, it is necessary to improve the standard of teaching at the school stage. This will be a fairly long, term process. In the meantime, care should be taken to enrol in the secondary school teachers' training courses, a reasonable number of graduates possessing satisfactory knowledge of English.

3.31. Although English continues to be the associate official language of the Union Government and it is the language of business of the important industrial and business concerns. Russian Language is gaining importance among the foreign languages. A study of German Language is also desirable for those who want to study Engineering or Technology. French language is also an important international language. Japanese and Chinese languages are two important Asiatic languages. These languages are being included in the list of subjects for optional study for those who want to study these languages even at the secondary stage. Study of these languages will be suitable for those who want to qualify themselves as interpreters, translators or study higher technology. Provisions should be made for teaching these languages and appointment of teachers/part-time teachers should be made in some of the schools in important cities, towns and industrial areas.

3.32. Competence in language can be acquired not only by books but also by such media as drama, debates, dialogues and essay competitions. These methods should be increasingly adopted in schools. Oral communication in Hindi which is the official language of the State needs to be improved by these methods.

3.33. Mathematics—As already observed, skills in languages and Mathematics are very valuable form the angle of employability of School-Leavers. It is, therefore, necessary that teaching of Mathematics should receive adequate emphasis at all level of School Education.

3.34. Education Commission (1964—66) observed that division of Mathematics at the primary stage into Arithmetic, Algebra and Geometry involves unnecessary repetition in teaching the fundamental operations with numbers. It was, therefore, suggested by the Commission that courses in Arithmetic and Algebra should be integrated and emphasis placed on the laws and principles of mathematics and logical thinking. The Commission went on to observe that at the secondary levels Mathematics now divided in the traditional manner into Arithmetic, Algebra, Geometry and Trigonometry need to be revitalised and brought up-to-date. The Commission suggested that the entire Arithmetic course and the basic operations in Algebra can be completed by the end of primary (and middle) stages (Class VIII).

3.35. In the schools of Bihar traditional method of teaching Arithmetic, Algebra, Geometry and Trigonometry as separate subjects continues in the schools and there is unnecessary and avoidable repetition and duplication. It is of utmost importance that the entire Mathematics course at the school stage should be revised in the light of the recommendations made by the Commission. Once the course of Mathematics is revised in accordance with the recommendations made by the Commission, a student may learn more of useful Mathematics than what he learns now, with a rational programme of instructions at different sub-stages of school educations. Revision of the courses may be taken up without delay with the help of experts of National Council of Educational Research and Training and other experts available in the State and the country. In fact, some books prepared by the National Council of Educational Research and Training in accordance with the suggestions of the Education Commission have been introduced in the Elementary Schools of Bihar but in absence of competent teachers trained to teach Mathematics in accordance with the topics and methods contained in those books, Mathematics is still taught in the schools in the traditional way.

3.36. Complaints have been made that many schools have no teachers with adequate competence to teach Mathematics. From 1954 to 1972 Mathematics was not a compulsory subject of study at the secondary stage. Many teachers who completed secondary school course during this period did not study Mathematics even up to the secondary stage and they find it difficult to teach Mathematics. Teaching of Mathematics and science is of so very great importance from the point of view of employment as well as from the point of view of mental discipline that it is necessary to ensure that all schools have competent Mathematics teachers. A survey should be conducted by the Director of School Education/Board of Secondary Education to find out which schools do not have competent teachers in Mathematics and, on the basis of the survey, steps should be taken to ensure by transfer or other methods, to post competent teachers in Mathematics in the school which do not have such teachers at present.

3.37. It is also necessary that teachers of Mathematics already working in the Elementary and Secondary Schools should be enabled to acquire competence to teach Mathematics in accordance with the proposed revised syllabus. It will be essential to conduct in service training programmes for this purpose. The State Institute of Education should devise in consultation with experts, such programmes and conduct them with the collaboration of training colleges. Such programmes can also be conducted in collaboration with the Departments of Mathematics of the Universities and selected colleges. The State Institute of Education have itself to be strengthened by appointment of experts of Mathematics for this purpose.

3.38. *Science*.—According to the recommendations of the Education Commission the aim of teaching science in the primary school (Classes I—VIII) should be to develop proper understanding of the main facts, concepts, principles and processes in the physical and biological environment, and at the secondary level, science, as a discipline of the mind and a preparation for higher education, deserves special emphasis. The Commission specifically suggested that in the secondary schools in

the rural areas linking of education with the environment can be done through integrated courses which bring out impact of the physical science and biology on agriculture and in the schools in industrialised areas, the curricula should have a bias towards the technical and industrial aspects of experimental science and its impact on industrialisation, knowledge about application of science to agriculture and industries will make it relevant to the environment of the students.

3.39. One of the main objectives of science education is to develop an enquiring mind among the school children, understanding of the processes of investigations and experiments and conclusion based on them. In the existing science courses for the school which were drawn up in fifties emphasis is placed on acquisition of knowledge, facts, formulae and principles. Science courses have to be revised in the light of modern developments in science education which emphasise enquiry method of teaching. One of the important objectives of science education should be the development of scientific attitude among the students. This task should be taken up without delay. The Institute of Science Education plays an important role in the regard.

3.40. Here also it is necessary to conduct a survey to find out whether science teachers of adequate competence are available in the schools of the State and to rectify deficiencies, wherever necessary. There will also be need for re-orienting the science teachers in the new methods of approaches to teaching. This is already being done to some extent in the summer institutes conducted under the auspices of National Council of Educational Research and Training. This is, however, far short of the requirements. The State Institute of Science Education will have to be strengthened to undertake this task as well as for revision of syllabuses and preparation of books. The Committee understands that proposals for strengthening Institute of Science Education has already been sanctioned but recruitments to the sanctioned post are yet to be made. The Committee recommends that the Institute of Science Education be strengthened on priority basis. Under an agreement with the Government of India, Unicef's support is available for teaching of science in elementary schools in the State. Full advantage should be taken of this programme for teaching of science in the elementary schools of the State.

3.41. *Social Science (History, Geography and Citizenship Education)*.—The aim of social education is to enable the students to acquire knowledge about their social environment including understanding of History and Culture of the country and important historical developments in the world and geography of the country and the world including physical features, climate, products, people and their occupations and, of good social behaviour, right attitude etc. Study of History, Geography and Citizenship is also important from the point of view of employment in as such as apart from the fact these subjects are included in the list of subjects which candidates can offer in competitive examinations for recruitment to All-India, Central and State Services, questions on them are included in the subject of general knowledge which is included in the list of subjects prescribed for most of the competitive examinations.

3.42. In the courses of study now in force in classes I—VII of the elementary schools, study of history and geography is included in social studies which also includes study of health habits, cleanliness, social behaviour and attitude and civics. In the courses of classes VIII to XI there is an integrated course of social studies but history and geography can be studied as separate subjects if a student chooses these two subjects among three optional subjects of study included in the humanities and social science group. In the scheme of studies now approved by the State Government for school education, there is an integrating course of social studies, including studies of health habit and cleanliness including civics in classes I to IV, but, in classes V and VI History and Geography constitute a separate subject of study, in addition citizenship and moral education are to be studied as a separate subject. In classes VII and VIII history and citizenship education are to be studied as one subject and geography as a separate subject.

In classes IX and X of the newly approved scheme of study, a student may take either History and Geography as one combined subject of study (one paper) or Science (one paper). A student who offers science (one paper) will have to take-up History and Geography as a combined subject (one paper) as one of the optional subjects. However, a student who takes up subjects included in group 'B' subjects mentioned in paragraph 3.8 of this chapter will study History and Citizenship as one subject and Geography (together with Economic Geography) as a separate subject. We have already recommended earlier in this chapter that Physical and Biological Science (two papers) and Social Sciences with History and Citizenship as one subject (one paper) and Geography with Economic Geography as a separate subject (one paper) should be included in the subjects to be compulsorily studied in classes IX and X. The contents of History and Geography as only one subject to be studied in classes IX and X will be very shallow and will hardly serve any useful purpose. Study of History, together with Citizenship as one subject and Geography as separate subject is essential for enabling candidates to answer satisfactorily questions included in the study of general knowledge in the competitive examinations, as also from the point of relevance of subjects of study to environment. As stated by the Education Commission (1964—66) an effective programme on social studies is essential for the development of good citizenship and emotional integration. The Commission suggested that, at the lower primary stage (classes I to IV) social studies may be organised with an integrated approach which seeks to combine the knowledge.

The Commission suggested that, at the lower primary stage (classes I to IV) social studies may be organised with an integrated approach which seeks to combine the knowledge and skills provided by separate subjects of history, geography, economics and Civics and in the upper classes of the primary school (classes V to VIII), the contents of social studies may still be organised as an integrated whole in connection with the treatment of certain topics but the pupils should be gradually inducted to an appreciation of History, Geography and Civics as separate subjects. In the secondary schools, these subjects should be studied as separate disciplines.

3.43. According to the existing syllabus, history is taught in the elementary classes in the form of stories and life of great personalities of India and the world. While it is desirable that the students of lower primary classes should learn educative stories and the lives of national heroes and great personalities of the world, it is desirable that the students of the higher primary classes and middle classes should study history in a more systematic manner so that the students completing the first eight years of education up to the age of 14 years are familiar with the main trends of Indian History and Civilization has satisfactory knowledge about the modern developments in Indian History and an acquaintance with very important developments in world history. The stories about great national heroes and life of some great personalities should also form part of study of language.

3.44. The syllabus of Indian History for existing classes X and XI includes study of Indian History from 526 A.D. to the present time and an outline of World History with special emphasis on ancient civilisation of Egypt, China, Greece, Rome, Renaissance and Reformation in Europe. Industrial Revolution, British Parliamentary democracy, the French Revolution, Makers of Modern China, Modern Turkey and Modern Russia, U.S.A. after World War I and the League of Nations and the U.N.O. The syllabus for classes VIII and IX includes study of ancient and medieval Indian History up to 1526 and introduction of World History from 1485 up to the present day.

3.45. There is no reason why a student of secondary classes should study Modern Indian History from 1526 up to the present time but at the same time, he should study ancient civilization of other countries. While Modern Indian History together with the important developments in the world like French Revolution, Russian Revolution, Chinese Revolution, Independence of America and emergence of United States of America and U. S. S. R. as super powers, the League of Nations and the U. N. O.

should be the main topics of study in classes IX and X as they are more relevant to the students. The salient features of Indian Civilization as it has developed from ancient times through the mediaeval period and up to the modern times together with broad references to development of contemporary civilisation in other countries may also be included in the course. Ancient and mediaeval history should be studied in depth only by those who take up history as optional subjects. Adequate emphasis should be placed on economic, social, economic and cultural aspects of history.

3.46. *Citizenship*.—Social education (acquaintance with the social environment) has been included as an activity in the newly approved curriculum of classes I-II and as an academic study in classes III-IV. Citizenship and moral education have been included as a subject of academic study in classes V and VI, citizenship has been included as a part study of history in classes VII and VIII. In the syllabuses of the existing classes I—V of the primary schools teaching of social studies is mainly oral based upon observations and activities. The topics included are (a) personal cleanliness, (b) cleanliness of environment, (c) training in social behaviour, (d) co-operation and (e) learning responsibility. The consultative committee on the primary school (U. K. 1931) recommended that, in order to develop character and corporate life, every opportunity should be taken, whether in the ordinary lessons or by means of short topics to inculcate good manners, courtesy and consideration for others and to develop in the children self reliance, self control, thrift, punctuality, kindness to animals and fair play.

In the lower classes study of citizenship should include teaching of good manners and the virtues as recommended by the Consultative Committee of the United Kingdom on primary education. Examples of good manners and other qualities should be given from stories and lives of great men. In the higher classes, the students should be inducted to the duties and responsibilities as well as the rights of the citizens, the national goals as laid down in the Constitution and the five year plans and the broad features of the system of administration from the village level to the national level. Emphasis should be placed on national integration and secularism, social commitment to the idea of progress, modernisation, equality of opportunity etc. Students should also be encouraged to take responsibility, wherever possible.

3.17. While studying Modern Indian History and citizenship in the secondary classes students should be taught duties, responsibilities and rights of the citizens, broad and salient features of village panchayats, subdivisions, district and State administration. They should also be taught in very general terms as to how the country is administered. The present syllabuses of social studies and text-books prescribed enumerate the essentials of the Indian Constitution, the working of the basic economic laws, social structure of organised society, a special reference to the Indian villages, major events and affairs of World History, the Geography and economy of Bihar, the basic teaching of Mahatma Gandhi, the laws of public health and sanitation current events etc. Such an omnibus assembly of topics does not serve much useful purpose. It is difficult for a student of secondary schools to grasp all these topics. This cannot create interest in the students and the purpose of study of these items, namely, to prepare the students as an enlightened citizen is defeated. The course of citizenship should be re-arranged so as to give a general idea in clear terms about how the citizens are governed at different levels and what are their duties, responsibilities and rights not only as citizens but also as social beings.

3.48. *Geography*.—In the early stages of school education teaching of Geography should be "thought of in terms of activity and experience rather than of knowledge to be acquired and facts to be stored". The teaching of Geography in the early stages of school education should include geography of the neighbourhood, district, State and the country and the map work connected with them and introduction of the conception of the world as a whole and its representation by means of a globe. In teaching Geography map should be invariably used. Many primary schools do not possess maps. In the middle and even some secondary schools only old and outdated maps are available. It is necessary that every primary schools should have a map of the district in which it

is located, a map of the State, a map of the country and a globe representing the world. Secondary schools should have adequate numbers of up-to-date maps for study of Geography. Children in the earlier stages of their school life should be asked to prepare maps of the objects with which they are familiar like the plan of the school and the playground, his home and neighbourhood. As child grows up his attention should be drawn up to outdoor work in Geography like direct observation of the motion of sun, its increasing height in the sky at mid-day during summer, the phenomenon of day and night and the change of climate.

3.49. The present syllabus of Geography prescribed for study in elementary classes (Classes I to VIII) is systematically arranged. It begins from the study of village and its neighbourhood and the introduction of Indian Geography from Class III and include study of agriculture, forest, minerals, occupations, industries, irrigation, political divisions, population of India and acquaintance with the Geography of India's neighbours and outline of World Geography. The courses of studies for secondary school examination (Classes IX and X) include fundamentals of Geography, General Geography of the World. Regional Geography of India with special reference to Bihar includes study of boundaries, general features, drainage, climate, vegetation, forest, minerals, irrigation, leading industries, communication and principal commodities.

3.50. As recommended by Education Commission (1964—66) the teaching of Geography should emphasize unifying rather than divisive aspects in relation to new concept of one world. Importance of agriculture in India and Bihar as well as mines and minerals in Bihar should be emphasized in the study of Geography. Students should study different crops of the State and the country and the total area under cultivation and the areas under each main crop. There is also need for emphasising the importance and the availability of water resources and the role in the development for agriculture, and availability of raw materials for developing industries and particularly, small-scale industries which still occupy a comparatively small sector in the economy of Bihar. Students of senior classes should be indicated to the problems posed by increasing population in the State and the country. Study of Geography should in short include not only certain topics referred to in paragraph 3.50 but also topics which are of immediate as well as of long term-interest to the students

3.51. *Work experience.*—Surveys made in the United Kingdom on school leavers indicate that the study of language which enables the students to learn correct and easy way of speaking and writing, knowledge of Mathematics and Manual skill acquired by work experience or craft work in the schools are most useful to them in the jobs and vocations they take up. The importance of work experience or craft work in the scheme of studies, therefore, deserves the same importance as the study of language and Mathematics. Manual scheme involves adjustment of activity of senses and limbs of the children. This includes both drawing and actual manual work. It lays foundation for technical skill and increase in productivity. Care has, however, to be taken to see that manual work does not become drudgery for the children. One of the many reasons why experiment in basic education involving study largely centred on productive work introduced in the State did not succeed was the fact that young children and their parents disliked drudgery involved in the types and the processes of manual work which they had to perform at the cost of neglect of other aspects of education, namely, languages, Mathematics, etc. However, work experience and craft work can not only be made interesting but educative if it is related to the age and capacity of the children studying in the schools. Keeping this end in view, the Education Commission (1964—66) recommended that in the lower classes of primary school work experience may begin as simple hand work, the object being to train children to make use of their hands and thereby help their intellectual and emotional growth. In the senior classes it may take the form of learning a craft which develops technical thinking and creative capabilities in the pupils. The Commission suggested that some work experience can be provided for such as work on the farms at the time of harvesting or sowing or in a family production unit, and opportunities for this kind of activity should be utilised to the maximum extent possible.

3.52. In the existing syllabuses for primary stage in Bihar (Classes I to V) the following crafts have been included :—

- (a) cardboard work;
- (b) clay modelling, toy making and pottery;
- (c) rope making, basket making and mat making;
- (d) simple weaving process on some side rooms, preparation of newar-tape etc. (for pupils of classes IV and V) only; and
- (e) making of rakhi, janeyo, asni, pad, pin-cushion etc.

The following craft and subsidiary crafts have been included in the syllabuses of classes VI-VII.

- (a) spinning and weaving;
- (b) gardening and elementary agriculture; wood-work and bamboo-work;
- (c) metal work;
- (d) home craft; and
- (e) clay modelling, toy making and pottery.

3.53. Education Commission (1964—66) has given a list of crafts which it says is purely indicative (Annexure I). The choice of the craft has to be made in the light of prevailing conditions including availability of raw materials and usefulness of the craft in the area concerned. Addition to this list should be made wherever necessary and crafts to be taught in a particular area may be selected from this list or, if necessary, even from outside the list. The main criterion for the selection of the craft in a particular area should, apart from the availability of raw-materials and usefulness of the craft in that area, be the availability of teachers and equipment. An important consideration to be borne in mind is that the craft to be chosen should not be one that is languishing and for which there is no future. The craft selected should be one which is not only likely to continue at least for some years but in which there is scope for increase in productivity through improved techniques and improved skills.

3.54. There are complaints that, although craft teaching is included as a compulsory subject in the syllabuses for classes I to VII of the existing schools, there are very few schools for which students are taught crafts. In fact, there is no adequate provision for teaching crafts even in many training colleges which train teachers for primary and secondary schools. Since work experience or craft teaching is to be compulsory at the levels of school education, it is essential that adequately trained teachers and equipment should be available for training in the crafts. We shall deal in a subsequent chapter with the problem of training teachers for schools including the problem of training in crafts.

3.55. It is obvious that, in the rural areas of the State, work experience relating to agriculture, horticulture and crafts based on agriculture will be most important and relevant. In order to take up agriculture or agriculture-based crafts, it is necessary that the schools should have some lands. Many primary schools do not have even proper buildings, let alone lands, for taking up agriculture and agriculture-based crafts. In such primary schools, paper-cutting, card-board cutting and folding, clay modelling or toy making, spinning, or simple needle work can be taken up. Those children whose parents have agricultural lands or lands around their houses can be given home projects for developing flower garden or kitchen gardens for raising flowers and vegetables. The children of the parents owning poultry, cattle or goats may be given the home project of raising poultry or calf or a goat. Those primary schools which have got land should, however, be encouraged to take up flower gardening and kitchen gardening and each child should be encouraged to look after at least one flower plant/vegetable plant. Home projects will require close liaison between the teachers and the parents of the children.



3.56. Many of the middle schools in the State possess land. The students of those schools should be encouraged to develop flower and kitchen garden. If there is adequate land for farm, farming on a modest scale with equipment which will not entail heavy work on young children can be taken up by students of classes VI, VII and VIII. They should not, however, work more than two to three hours a week on the farm. Even if there is no sufficient land in the schools, the students in the rural areas should be taken to farms of those progressive farmers who adopt improved methods of farming at the time of sowing and harvesting. They can also be encouraged to participate in actual operations if they are permitted to do so. In such case the children should be paid for their labour. In order that the students may develop interest in craft work they should be allowed a share in the products of the kitchen garden or any other craft which they may take up.

3.57. In the secondary school in which there is not adequate land for farming, arrangements for teaching other crafts, should be made for students of classes IX and X. There should be arrangements for crafts other than agriculture also even in the schools which have land for agriculture and agriculture-based craft. Skilled craftsmen should be available for all crafts which are taught and they should be on par with other teachers in matter of pay-scale. There should also be adequate provision for workshop for the crafts in which workshop practice is essential. It may not be possible for each to have its own separate workshop. Arrangements may be made for utilisation of the workshop of the industrial training institutes for the students and those schools which are located in these centres. In the urban areas and in the densely populated rural areas a workshop may be set up for a group of schools. The school complex recommended by the Education Commission (1964—66) can be utilised for setting up one workshop for each complex. This workshop should be available for use by all the schools included in the complex. Students of each school may utilise the workshop for one day or half a day (as may be convenient in a week). Many of the products produced by the students can be utilised in the schools, some can be utilised by the schools themselves. Education Department should make arrangements, in collaboration with the Industries Department, for the disposal of the products which cannot be utilised by the schools and the Education Department. Arrangements may be made, wherever feasible, to give practical training in the workshops of the industries which are prepared to co-operate in such arrangements in industrial areas. Each school should, on the basis of the numbers of the student and their age-groups and the crafts selected, have adequate revolving funds for purchase of raw materials, repair and replacement of equipment in addition to the initial supply of equipment.

3.58. *Physical education and games.*—Physical education contributes not only to physical fitness but also promotes mental alertness and the qualities of leadership, team spirit, submission to prescribed rules and sense of fair play. A student who has taken keen interest and has acquired efficiency in games and sports has better chance of being selected in jobs requiring physical fitness, mental alertness and qualities of leadership. Besides, participation in games and sports is one of the best methods for utilising hours outside the school and study.

3.59. In the existing syllabus for Classes I—VII, physical training and games are compulsory and different games have been suggested for different age-groups. There is, however, no provision of games and physical training in Classes X and XI. It is necessary that detailed syllabus should be drawn up for physical education in games. In drawing up the syllabuses, care should be taken to see that the games and physical training prescribed for students of different age-groups are suitable for them and are meant to develop their physical fitness and mental alertness. Many schools have no suitable playgrounds and care has to be taken to see that games and physical training which do not require big playgrounds and costly equipment are also prescribed. School complexes should organise competitive games and sports between the schools in the complex as well as between one complex and another.

3.60. *N. C. C. and Social Services.*—Every student must participate actively in sports and games or junior wing of the N. C. C. or Social Service camps which

should be organised during vacations. Participation in N. C. C. or Social Services will not only promote corporate life but will also develop qualities of self-reliance which will be helpful in jobs which the students may take up later on completion of their education. Education Commission has made suggestions regarding organisation of social camps, an extract from which is given in Annexure I. The programme suggested by the Education Commission may be followed with such variations as may be necessary according to local conditions. Participation in teaching adults and school drop-outs should form an important part of social service camp.

Individual students may also be encouraged to take up social service in their villages or Mohallahs. We are recommending later in this chapter that the students of colleges and senior classes of the secondary schools should be encouraged to take up informal teaching for an hour or two of those who, on grounds of poverty or other reasons, drop out from the school. They can do during vacations. Many students of the senior classes of secondary schools can take up this work in their villages even while they are attending schools. A suitable honorarium may be paid to them for this work. They should also be given certificate of having done social work if they successfully participate in this work for at least a year. This type of social work will not only inculcate sense of service among the students but will also be helpful in tackling illiteracy.

3.61. *Pre-School Education.*—We have not considered education of pre-school as it is not included in formal education and has no direct relationship with job-oriented education. We would, however, like to reiterate the observations made in a recent report of UNESCO that education of pre-school children is an essential pre-condition to any educational and cultural policy and this must be one of the major objectives of the educational strategies in 1970's. Since more than 2/3rds of the population of the State are below the poverty line, the majority of the children come from disadvantaged homes. The children of marginal farmers and of agricultural labourers in the rural areas and residents of the slum areas in the cities are, because of the environment in which they live, particularly handicapped. Pre-school education compensates, to a considerable extent, the adverse influence of the home environment. The numbers of working mothers have been increasing in the cities and they also need, for their children, facilities of pre-school education. Pre-school education will also be helpful in retention of a larger number of children beyond class I in which largest proportion of wastage caused by drop-outs and stagnation occur.

3.62. Pre-school education will improve the efficiency of the educational system. The main difficulty in providing pre-school education on a large scale is want of resources and lack of trained personnel. Since resources are limited, pre-school education facilities should be provided in phases—the first segment to be covered should be the children of parents living in slum areas in the cities, and those of the marginal farmers and agricultural labourers in the rural areas. Existing school buildings can be utilised for pre-school education by adjustment of school hours.

3.63. There is no systematic arrangement in the State for training of personnel for pre-school education. It will be desirable to start training centres for pre-school education in big cities and selected districts of the State. The courses of pre-school education should also be started in Post-Graduate training colleges where key personnel of the profession will be prepared. Investments made in providing training facilities for pre-school education will pay good dividends in the long run. In the meantime, services of educated ladies, wherever they are available, and retired personnel can be utilised for augmenting the facilities for pre-school education.

3.64. *Development of personality and character.*—In course of discussions on various subjects to be studied in the schools, references have been made, at appropriate places to their importance in general education and their usefulness in preparing school students for various positions and occupations in life. Apart from the contributions of each subject, the total curricula and cocurricular activities in the school

should also contribute to development of personality and character of the students. Personality development is influenced by many factors including influence of home, social environment and school environment. Development of personality manifests itself in the qualities of self-confidence, mental alertness, leadership, initiative, social adaptability, spirit of co-operation courage, etc. Self-confidence can be created through curricular as well as co-curricular activities like drama, social activities, inter-group competitions and social activities contribute to mental alertness; and spirit of co-operation is developed through group-projects, games, service to the community, etc. It will, therefore, appear that, co-curricular activities play an important part in the development of personality of the students. Students whose personality is developed can adapt themselves better than those whose personality is not developed to the requirements of various jobs. Schools have, therefore, to pay adequate attention to various co-curricular activities.

3.65. *Efficiency of schools.*—In order to successfully perform their roles of developing the personality and character of students and preparing them for various jobs and occupations which they may have to take up in life, schools have to function efficiently. As has been mentioned earlier, the results of the secondary school examination held under strict supervision are indicative of low efficiency of the schools in the State. It is necessary to improve the efficiency of the school education in order to enlarge the scope of employment of the students and increase their contributions to the net domestic product. The single most important factor in improving the efficiency of the school is the teacher himself. It is, therefore, of utmost importance that teachers of competence and character should be appointed to the schools. Most of the secondary schools are non-Government schools and appointments to them were not made on merit. In fact, many of the appointments were made without considering whether the persons appointed had studied and were able to teach the subject for which they have been appointed. Even in Primary and Middle Schools, appointments were not very often made on merit when they were under District Boards and private management. Complaints have been heard that many teachers of the Primary and Middle Schools are not even regular in attending the schools and do not take interest in teaching. It is essential that appointments of teachers should be made purely on merit and with due regard to their competence for teaching the subjects they had to teach. An independent body with experts associated with it may be entrusted with this task. Competence of teachers who are already in position has to be improved by in-service training and guidance from their Inspecting and Supervising Officers. There are complaints that some of the Inspecting or Supervising Officers themselves do not take adequate interest in their work. We shall deal with the problems of in-service training as well as pre-service training and the need for proper inspection and supervision in subsequent chapters.

A Headmaster of a school is the leader of the team of the teachers and he can motivate teachers with the examples set by him. Headmasters should be selected from among teachers of proved competence, integrity and character.

3.66. There are many secondary schools which have no facilities in respect of accommodation, play-ground, library, laboratory and equipment. In fact, many of them do not possess even buildings of their own. The position is worse in respect of Middle and Primary Schools. About 30 per cent of the Primary Schools do not have their own buildings. Although conditions of recognition of Secondary Schools lay-down minimum facilities to be provided, schools have been recognised without fulfilment of those conditions and have been continuing to function without any efforts to fulfil those conditions. No schools should be recognised unless they fulfil the minimum conditions laid down. The minimum conditions should be such as to ensure adequate standards of teaching. A survey should be conducted in the existing schools to find out the facilities available in them and, on the basis of this survey, the schools which are weak, inefficient and non-viable and which cannot be improved within a reasonable time should be amalgamated with viable ones which have these facilities.

3.67. The huge wastage caused by drop-outs and stagnation also needs urgent attention. One of the main reasons of the huge wastage is the poverty of the people. Poor parents find it difficult to keep their children in schools. Some measures like supply of midday meals, free supply of text-books and stationery, to poor students have been included in the Fifth Five-Year Plan of the State. These measures have to be introduced urgently and expanded to cover a larger proportion of children in subsequent Plans. Another important reason, however, for wastage and stagnation is the attitude of teacher himself. A good teacher who takes interest in all his students will be able to retain a larger number of children in the school than one who does not take such interest in his students. Here also teachers' attitudes and values are of very great importance. If school education is of good quality, final products of the schools from which teachers are recruited will be of better calibre and it will be possible to recruit a greater number of better types of teachers from among them. Provision of satisfactory school buildings for schools and their improved surroundings will also be helpful in retaining larger numbers of children in the schools.

3.68. Existence of single-teacher schools is also responsible to a considerable extent, for wastage. If and when the single teacher in the school, for some reason or the other, remains absent from the school, the children of the school lose interest and many of them drop-out from the school. There is provision in the State Education Plan for replacement of single-teacher school by two or more teacher schools. With the raising of the lower primary classes from three classes (I—III) to four classes (I—IV) it should be possible, in the Fifth Plan, to replace the single-teacher schools by two or more teacher schools. In fact, the aim should be to continue to raise the status of the primary schools by adding two classes, in the first stage, so that all lower primary schools are upgraded to six-year schools (classes I—VI). Ultimately with availability of resources two more classes (VII and VIII) may be added so that all elementary schools are of eight classes (Classes I—VIII).

3.69. Even with all these measures, wastage in the schools will continue and number of children mainly of poor parents will drop-out from the schools. When once the children drop out they go out of education system and may remain virtually illiterate. Arrangements have to be made for non-formal part-time education, if necessary, in combination with vocational education, to adequate them at an age when they will be able to understand the contents of education and benefits of education better. This will be discussed later in this chapter.

3.70. There are at least half a dozen Middle Schools (Class I—VII) in the State which have very good reputation because of their efficiency. A number of boys from these schools compete annually in the competitive examinations held for admission into the public schools and forward of national scholarship to students of rural schools. There is keen competition for admission to these schools and parents not only from the area in which these schools are located but also from distant places and their children to these schools. These schools are partly residential and the boys who remain in the hostels bring rice, pulses and pay a small sum in cash for purchase of vegetables. The standard of the residential public school of Netarhat and the Sainik School, Tilaiya is very high. Admission to them is made on the basis of competition and per head expenditure on the student admitted to these schools is very high. A few traditional secondary schools in the State also function quite efficiently. The main factor for efficiency in the Middle Schools mentioned above and in some secondary schools other than the two public schools is the devotion of teachers and their interest in the students and teaching and the co-operation of the public. Leadership provided by the Headmasters of these schools has created enthusiasm among the teachers and the devotion of the teachers and their interest in the students and their teaching has evoked co-operation from the public. It should be possible, with the co-operation of the teachers and parents, to bring about improvement and increase the efficiency of other schools also.

3.71. Promotion from one class to another in the schools is made on the basis of internal assessment in the schools. A public secondary school examination is, however, held at the end of class XI (Class X in the newly approved scheme of study). References have already been made to the fact that in the years in which the public examinations are not held under strict supervision, unfair means were adopted in a large number of schools and the percentages of successful candidates were quite high. When, however, the public examinations were held under strict supervision, the percentage of successful candidates decreased considerably and nearly three-fourths of the candidates failed to qualify themselves for the secondary school examination certificate. There are reasons to believe that in a large number of schools internal assessment is not very systematic and promotion from one class to another is made without proper assessment. The result is that many students have to appear at the secondary school examination without adequate preparations and background. Views are widely held that the present system of external examination is not satisfactory and should be replaced by a more satisfactory system. The question of reforms in the examination will be discussed in a subsequent chapter. It may, however, be mentioned here that the Committee agrees that there should be only one public examination at the end of the secondary course and the system of internal evaluation should continue and should form the basis of promotion from one class to another. The internal evaluation system should, however, be made more effective.

3.72. Education Commission has recommended that in the present circumstances classes I and II should be treated as one block divided into two groups one for the slow and the other for the fast learners. The Committee agrees that no formal internal examination should be held for promotion from class I to II but for promotions from class II to class III, assessment of the achievement of the pupils should be made and promotion should be made on the basis of such assessment. Assessment should be both, oral and written, and should also include achievement in day-to-day class work. All schools should maintain a comprehensive card for each student in which should be noted not only the academic achievements of the pupil concerned from year to year but also his achievements in games, his skill in craft and his attitude and values. Wherever facilities are available height weight and chest measurements of the pupil concerned at the beginning and end of the academic year should also be noted in the comprehensive card. We appreciate that facilities for maintaining comprehensive cards for pupils may not be available in many of the primary schools but, these facilities should be available in the middle and secondary schools. When a student satisfactorily completes education up to Class IV in a primary school, he should be given a certificate to that effect. If the school maintains a comprehensive card for the student, the contents of certificate may be entered in the comprehensive card also.

3.73. There should be no statewide external or public examination to assess the achievement of the students completing Classes VI and VIII but, in order to improve the standard of education and prevent failures of large numbers in the public examinations to be held at the end of the secondary classes, it will be desirable to have a more systematic arrangement for valuation at these two stages. School complexes should be authorised to hold evaluation tests at the end of Class VI and Class VIII and successful candidates should get certificates about their achievements from and on behalf of the complexes. Comprehensive cards given to the students studying in schools with four classes (I—IX) or six classes (I—VI) or eight classes (I—VIII) should be produced by them for admission into higher classes in the schools, they join on completion of study up to class IV, or VI or VIII. Comprehensive cards should be finally given to the students on completion of the study in Secondary classes.

3.74. The school complexes recommended by Education Commission (1964—66) references to which have been made in the foregoing paragraphs can play an important part in improving the efficiency of the schools. It is, therefore, of highest importance that school complexes should be organised to cover as soon as possible all the schools in the State. A few complexes which have been organised have been doing good work. The Committee suggests that the work of organising school

complexes should be entrusted to a whole-time officer in the Directorate of School Education. The Officer should provide guidance to the complexes.

3.75. With the improvement in efficiency of schools, it will also be possible to secure public co-operation. With the limited resources of the State Government there will be difficulty in providing adequate facilities in respect of accommodation, playground, library, laboratory equipment, etc., to all the schools within a reasonable time. The State resources have to be supplemented by public contributions which will be forthcoming with the improvement in the efficiency of schools.

Inspecting Officers and school directorate have to give active support to the Headmasters and teachers in securing public service and contributions, co-operation of Legislators, social workers and educationists and the parents of school children should also be sought.

3.76. Low level of efficiency of school system affects very adversely children of the disadvantaged classes. Parents belonging to the advantaged classes are able to send their children to a few good existing in urban areas which are like 'CASES' in the desert and their children are able to compete for most of the lucrative jobs. It is, therefore, absolutely necessary that the efficiency of the schools open to common people must be improved. The Committee feels that, instead of permitting special types of schools to be opened for the children of the parents who are in a position to pay higher fees, all efforts should be made to improve the efficiency of common schools. This is one of the most important means by which equality of opportunity can be ensured, in some measures, to the children of disadvantaged classes. This will also ensure adequate preparations of young men and women for enabling them to play meaningful role in the economic and social activities of the State. Good education in the schools related to the economic and social activities and productivity meets requirements of jobs oriented education. It is also the basis of further job oriented education.

### NON-FORMAL EDUCATION

3.77. In the foregoing paragraphs, we have dealt with mainly formal educations in the schools. Since the vast majority of students enrolled in Class I drop out even before completing minimum level of literacy, formal school education covers only a small proportion of children. Education up to a minimum level for all citizens is not only a political need but also essential for modernising social and economic system, and arrangements should be made for imparting education according to their convenience, to those children of 6—11 years and 11—14 years of age group who drop out from the schools. As has already been mentioned, one of the main reasons why these children drop out from the schools is the poverty of their parents. The children of such poor parents look after their younger sisters and brothers when parents go out to work, or they tend goats and cattle. Children of the age groups of 11—14 years of such poor parents units become regular economic, and work for their livelihood. Free supply of mid-day meals and text books and stationery and award of attendance prizes may act as incentives to some parents to send their children to school but for others, these may not prove to be adequate incentives. Moreover, it will not be possible due to paucity of funds, to give these incentives to all the children of the parents who are below the poverty line. The only practical solution therefore, is to make some arrangement to impart education to these children during the time when they are free. Children who assist their parents, by looking after their younger brothers and sisters or tending goats and cattle, will be free for atleast two hours in the day. Most of the agricultural operations in the villages are undertaken in the morning and forenoon. Goats and cattle are also tended during the forenoon. Most of the children are free in the afternoon and in the evening. If arrangements can be made to teach them in the afternoon between the hours of 4 P.M. and 6 P.M. it should be possible for their parents to send them to schools or to other convenient places in the village. Most of the schools conduct their classes up

to 4 P.M. and the school premises are free after that hour. A teacher who has been teaching the regular students from 10 A.M. to 4 P.M. may not find it possible to teach these children between the hours 4.6 P.M. However, services of others, including retired teachers, young men trained in teachers' training colleges in elementary schools who are waiting for jobs and school leavers, undergraduates who, on completion of their formal education, are waiting for jobs or for special training may be utilised. Teaching in such informal schools should also be a part of social service to be undertaken in the social service camps for colleges boys and girls of the school. Students, of classes IX and X of secondary schools residing in the villages may also undertake teaching work in these informal schools. Payments of suitable honorarium will be an incentive to all these categories of personnel.

3.78. It will be necessary to ensure adequate inspection and supervision through not only the officers of the Education Department but also through the Headmaster and teachers of High and Middle Schools and Gram Panchayats. School complex of the area should include informal education as one of their programmes and carry on supervision and evaluation of the programmes undertaken in their areas.

3.79. *Expansion of Secondary Education and Man-power requirements*—About 21 per cent of boys and girls of the age-group of 14—17 are at present enrolled in the existing secondary classes of IX—XI of the State as against about 25 per cent for All India and about 24 per cent of the boys and girls of the age group 11—14 enrolled in classes VI—VIII. The percentage of boys and girls enrolled in Secondary classes is only a little lower than percentage of enrolment in middle classes. In comparison with the numbers enrolled of the relevant age-groups in advanced countries this percentage is low, but, as has already been mentioned, even with low percentages of passes in the secondary school examination out of those enrolled in the secondary classes the numbers of secondary school certificate holders waiting for jobs are quite large. It is, therefore, pertinent to consider whether enrolments in the secondary classes should be restricted.

3.80. While considering this question, Education Commission (1964—66) was of the view that in order to restrict un-planned and uncontrolled expansion of secondary and higher education, it is necessary to restrict the provision for places in accordance with the man-power estimates and wherever the applicants for admission exceed the places to make the admission on a "Selective" basis. Of about 2,700 secondary schools in the State, statistics regarding the numbers of students in 2,273 schools are available. According to these statistics only 477 out of these 2,273 schools have each 400 students or more, 339 have each on its rolls between 300—400 students, 695 have each between 200—300 students on its rolls, 704 have each between 100—200 students on its rolls and 58 schools have each fewer than 100 students on their rolls.

3.81. It will appear from these figures that most of the Secondary Schools in the State are weak and nonviable. As has already been mentioned, most of these schools do not possess the minimum facilities in respect of accommodation (teaching and hostel accommodation), play-field, library, laboratory, teaching aids, etc., Bihar spent 106 per cent of its budgeted expenditure on secondary education in 1972-73 as against All-India average of 29.7 per cent and 55.2 per cent spent by Haryana on Secondary Education. In 1973-74 and 1974-75, the percentage of expenditure on secondary education in the State has increased to 14 and 14.5 per cent respectively but it is still very low in comparison with that for All-India and some other States. Since the percentage of enrolments for All-India is only marginally higher, the low expenditure on secondary education has affected and continue to affect the quality of education in the secondary schools. One of the reasons for adoption of unfair means for schools in the secondary school examinations was the existence of weak and non-viable secondary schools in which deficiencies in respect of teaching were sought to be rectified by inflation of percentage of passes through unfair means. This is evident from the fact that when centres of examinations were shifted from centres located in weak schools in which strict supervision was not possible to areas in which strict

supervision was possible, the percentage of passes of students appearing from the weak and non-viable secondary school examinations dropped very sharply.

3.82. Many of the weak and non-viable schools were recognised by the Bihar Secondary School Board on the conditions that they fulfil the requirements in respect of accommodation, play-field, library, laboratory, teaching-aids and funds within a stipulated time. Such schools have been continuing for years in spite of the fact that they have not fulfilled the stipulated requirements.

3.83. Massive unemployment of secondary certificate holders would suggest restriction on unplanned expansion of secondary schools as recommended by the Education Commission (1964—66). We recommend that new secondary schools should be set up only on the basis of genuine requirements of an area in which there is need for such a school on the basis of population, numbers of fewer primary and middle schools and the numbers of existence and distance of other secondary schools in the area. It was brought to the notice of the committee that, new schools have been allowed to be set up and recognised in the vicinity of already existing secondary schools which themselves are weak and non-viable. Such a policy has resulted in all the schools in the area remaining weak and non-viable affecting not only the quality of education but also creating conditions for turning out unemployable persons.

3.84. There is need for eliminating weak and non-viable secondary schools which are not likely to become viable in the foreseeable future by amalgamating them with the nearest viable secondary schools or such non-viable schools which are likely to become viable within a short period after amalgamation. The courses of studies which have been recommended for the secondary classes cannot be conducted in weak and non-viable schools and, as already mentioned, there cannot be any job-oriented education without good school education.

3.85. It has already been mentioned that one of the reasons for large percentage of failures in the secondary school examination is the fact that teaching not satisfactory in secondary and lower classes and students are promoted from one class to another without proper evaluation. A weak and non-viable school is not in a position to impart satisfactory education and carry on evaluation on performance of students strictly. From this point of view also weak and non-viable schools which cannot become viable in the near future should be amalgamated with those which are viable or likely to become viable within a reasonably short time. It will be desirable to expand and create additional places for admission, wherever necessary, in the viable institutions instead of allowing weak and non-viable institutions to be set up or/and allow them to continue indefinitely.

3.86. Large failures in the examinations held under strict supervision result in huge wastage of resources. These failures indicate that many students who have no aptitude for education at the secondary level or/and who are inadequately prepared at the lower levels in the school seek enrolment in secondary classes, they also indicate unsatisfactory state of teaching in many of the secondary schools. It will be in public interest to enrol only those who have aptitude for secondary education and who are adequately prepared for this level of education and to improve teaching in secondary schools and classes so that adequate attention is paid to the quality of teaching and to academic needs of individual students. There is need for student-centred education and teaching in the schools. Teaching may have to be adjusted to the pace of learning of individual students. Such student centred teaching is necessary, particularly for the first generation learners who are mostly the children of the disadvantaged classes. By this method a larger percentage of students will come out successful in the secondary school examination. In fact, concentration on improvement of teaching in schools an adequate attention to individual students may result in larger number of students coming out successful than at present. Better quality of education will also make them more suitable for employment.



3.87. An educational survey is being conducted at present on the basis of the data to be made available, as a result of this survey, steps for planning secondary education and its expansion wherever necessary by creating additional places in the existing viable institutions or by setting up new viable institutions may be taken by the Government and Board of Secondary Education. Such steps will result in restricting unplanned and uncontrolled expansion of secondary education and massive unemployment of secondary school certificate holders. In planning expansion of existing secondary schools and establishment of new ones, care should be taken to see that children of disadvantaged classes have adequate access to such schools. In the areas inhabited by Scheduled Tribes, it may be necessary to set up Ashram type schools where children coming from longer distances can reside. Provisions for scholarship for the students of scheduled castes and scheduled tribes and children of other poor parents who show promise are made on a liberal basis.

3.88. We have not made any recommendations regarding the system of evaluation and examination to be conducted at the end of secondary course. We shall deal with the whole system of examination and evaluation at different stages in a separate chapter. It may, however, be mentioned at this stage that our intention is that the secondary examination should be held in 2 stages so that a student may not have to carry too much load at one time. The details of this will be discussed in the chapter relating to Evaluation and Examination.

## ANNEXURE I.

8.83. *Labour and Social Service Camps.*—While every encouragement should be given to each secondary school to develop its own programme of social service on the lines indicated above, we realise that it will not be possible for many schools to do so, at least for some years to come. We, therefore, recommend that labour and social service camps which will run throughout the year (except during the monsoon season when out door work will not be possible), should be organised in each district, and each secondary school which does not have a social service programme of its own should be under an obligation to participate in such camps and provide this rich and valuable experience to its students. For this purpose, a special organisation should be set up in each district under the direct control of the district educational officer. It will be the responsibility of this organisation (1) to select one or more specific projects on which students can work all the year round (2) to provide the necessary community contacts, (3) to assist in providing residential arrangements, implements, utensils, etc. and (4) where possible, to provide a part of the expenditure of the entire organisation of the camps. The school will be responsible for drawing up the programme for their participation in consultation with this district agency, for taking the students to the camp, and for guiding the students in carrying out the projects assigned to them.

8.84. Great care should be taken in selecting the projects for the camps. The idea should be to take up a project which should be completed within time given. This would make the students and teachers feel something which results in a lasting benefit to the community. The co-operation of the Community Development Administration should be sought for the purpose and the project should be connected with the five-year plans for the area.

8.85. During the period of the camp, students would be expected to put in 8 hours of work per day and the general routine would be as follows:—

- 2 hours—personal time in morning.
- 2 hours—intellectual work not connected with school studies.
- 6 hours—manual work.
- 2 hours—intellectual work not connected with school studies.
- 2 hours—rest and recreation.
- 2 hours—personal time in the evening.
- 8 hours—sleep.

8.86. A part of the funds for the programme could be obtained from the local Rural Works Programme. All the overhead charges which will come to a very small amount should be met by Government. The students should be required only to bear (1) transport charges to the camp site and back and (2) food charges during the stay at the camp. Even these could be subsidized to some extent on the basis of the work that the students put in. A student who holds freeship or half freeship should be given similar concessions in the camp. Adjustments could also be made by requesting the students to bring some articles of foodstuffs, etc., from home. On the whole an attempt should be made to keep the cost of this camp down to the minimum for each period. Moreover, camps for boys and girls will have to be organised separately but there need not be much difference between the types of programmes undertaken for them.

8.87. The preliminary spade-work to be done for this scheme would be similar to that of work-experience described earlier. We suggest that the programme may be started, as a pilot project, in about five per cent of the districts to begin with and that it should be extended to the country as a whole in a period of about ten years. It may also be incidentally stated that when this programme becomes general at the secondary stage, there would be no difficulty in extending it, on the same lines, to the university stage also.

## CHAPTER IV.

## VOCATIONAL EDUCATION.

4.1. It has already been mentioned that the national pattern of education which has been accepted in principle, by the State Government provides that, on completion of 10 year general education in the schools, there should be two streams for those who want to study further: (1) the academic stream as a preparatory course for those who want to study for degree courses in Arts, Science, Commerce, Engineering, Technology, or professional courses; and (2) the second stream should provide vocational courses relevant to the needs and requirements of different regions of the State. The aim is that the vocational should be a terminal course for those who want to enter vocations which are available and for which they opt.

4.2. The need for vocational education arises from division of labour which is the characteristic of modern economy particularly, in an industrial country. Occupational skills in modern industries are numerous and specialised and often involving an understanding of science. However, even in agriculture and commerce new and sophisticated methods are being applied. Modern agriculture requires training in technologies based upon physics, chemistry and biology and employing skilled mechanics. Modern commerce engages not only machines but also modern methods of transactions of office business.

4.3. Based on the broad divisions of economic and social activities in the State, vocational education and training in the State can be considered under the following heads:—

- (i) Agriculture including allied activities, Animal Husbandry, Forestry and Fisheries.
- (ii) Mining, manufacturing and small enterprises including construction and electricity.
- (iii) Commerce, transport and communication including railways, banking and insurance, road and transport projects.
- (iv) Social services including education and public health and medical services.
- (v) Other services including public services and administration, etc., and
- (vi) Miscellaneous.

Some of the items listed in the broad divisions are over-lapping, e.g., training of clerical personnel, accountants, typists, shorthand typists will be common to almost all the divisions referred to above.

4.4. Formerly, training was considered to be the responsibility of the employers only. Employers used to recruit apprentices in their establishments for training them in various skills. Since the end of the second World War training and development of skilled man-power as a national resources is considered to be a national responsibility in which the educationists, employers and the Government have all to actively participate. This implies a co-ordinated policy at the national level (also State level in our country) in respect of method of recruitment for training, contents of pre-service training and inservice training and evaluation of training imparted.

4.5. Contents of vocational education include, to a large extent, practical training as well as theoretical teaching, mainly related to the understanding of science and technology on which practical training is based and also humanities and social sciences which are necessary for understanding the complex relationship between individuals and groups as also between groups and groups in the industries and other economic units and the society. Technologies have been changing fast in developed countries. A developing country like India has, very often, to borrow technology from foreign

countries. With the increase in tempo of industrialisation and development of the secondary and tertiary sector, India has been developing its own technologies. With the change of technologies, skills learnt at a particular point of time may be obsolete after some years. There are in our country, very often, imbalances in the sectoral development and persons trained in particular sets of skills may become surplus and, at the same time, development in other sector may require a different sets of skills. Care has, therefore, to be taken to see that persons whose skills become obsolete with the change in technology or who have become surplus because of sectoral imbalances are re-trained in skills for which there is demand. "Manual skills once acquired may not last life-time but mental development which will enable a person to pick up another skill after re-training easily will last a life-time. Vocational education should, therefore, aim at training people with a view to equipping them to adapt themselves to variety of jobs and developing their capacity continuously required for the developing production methods and working conditions. This will help in achieving mobility in employment through retraining. Attention has, therefore, to be paid to mental development as well as manual skill in vocational education.

4.6. Vocational education can be imparted at the work place itself. In fact, many important industries have their own training programmes for training skilled personnel they require. It can also be imparted in educational institutions which have to maintain close relationship with industries and other establishments for practical training and, at the same time, maintain their own workshops for day to day practical work.

4.7. There is need for providing vocational education not only to those who complete secondary education and want to take up some vocations, but also for those dropouts from the school, who for some reason or other, fail to complete secondary education. There are many vocations including agriculture and allied activities, tailoring, carpentry, book-binding, etc., for which they can be trained. Their training will be practical, to a large extent, but they should also be given education in language, mathematics and basic science relevant to the vocations in which they are to be trained.

4.8. *Agriculture and allied activities.*—Vocational education in the State is to be related to the economic and social requirements for rapid growth of economy and rapid increase in productivity. For rapid increase in productivity development in secondary sector like manufacturing industries and tertiary sectors is highly desirable but it requires investments, funds for which have to come, largely from the net domestic product in the State, the largest contributions to which are made by agriculture and allied activities. It is, therefore, of basic importance that agriculture and allied activities should be modernised and developed. Agriculture which has long been treated as a traditional sector of economy and residual occupation also requires skilled personnel. Inputs of skills combined with other inputs like supply of water, good seeds, fertilisers, etc., have been responsible for raising productivity of agriculture in advanced countries so much so that, the United States of America with 6 per cent of labour force engaged in primary sector is able to produce food stuffs and other raw materials not only to feed its own people and industries but also for supply to other countries. There was a time when as many as 60 per cent of the labour force in the U. S. A. were engaged in the primary sector of that country. In Japan 70 per cent of the labour force were engaged in the primary sector of agriculture and allied industries in 1900, but this declined to 33 per cent in 1960. Vocational education in Agriculture for improving the skill of those engaged in farming is essential for increase in agricultural productivity and transfer of surplus labour to secondary and tertiary sectors.

4.9. Although agriculture is, by and far, the largest sector of economy, accounting for more than half of the gross net domestic product of the State, there is no systematic arrangement for agricultural vocational education. There is an Agricultural University known as Rajendra Agricultural University in the State with three colleges of

agriculture and two veterinary colleges which trained graduates and post-graduates in agriculture and veterinary sciences, mainly, for meeting the requirements of the Government for agricultural and veterinary research, teaching, supervising and extension personnel. The State Government had set up in fifties an agricultural school in each district mainly for training persons required to work village level workers who work as extension workers in the development blocks. They are employed roughly at the rate of one for a group of 10 villages by the Government for extension work. Since the requirements of the village level workers have been met and the percentage of persons retiring from among them is still very low, most of these agricultural schools have been closed and there are now only 4 agricultural training centres which train every year a few persons for meeting the small requirements of village level workers and also conduct refreshers' training courses for the village level workers already in position. In addition, there are some Kishan Vidya-piths which conduct five days programmes for farmers.

4.10. While considering education in agriculture, Education Commission recommended, among other things, that (i) a number of agricultural universities with integrated programme of research, training and extension and (ii) Agricultural Polytechnics to train agricultural technicians should be set up. The Commission also recommended that agricultural extension programmes and particularly primary extension centres should be developed and progressive farmers should be closely associated with the agricultural universities, colleges, polytechnics and primary extension training centres. While an Agricultural University has been set up and three colleges of agriculture and two colleges of veterinary have been training graduates and post-graduates to meet mainly the requirements of Government for these personnel, no polytechnics have been set up for the training of agricultural technicians. The village level workers have not been very effective as extension workers in Agriculture. The five days programme for training farmers is wholly inadequate and mostly big farmers are able to derive the little benefit that such a short programme can offer. The result is that agricultural education in the State is, by and large, elitist and has little impact on the vast majority of those engaged in agriculture operations.

4.11. Agricultural polytechnics, recommended by the Education Commission, were also to be responsible for training the non-professional specialists required as farm mechanic, farm manager, laboratory assistants, craftsmen and technicians in agriculture, assistants in agriculture credit and insurance organisations, assistants in extension services, self-employed craftsmen and technicians to work in the rural areas and field representatives of fertilisers and pesticides manufacturers. These agricultural polytechnics were conceived as institutions providing a wide range of training in specialised courses at the diploma and certificate level. They were also to run short courses for the farmers. The polytechnics were to have large well-managed farms attached to them with facilities to demonstrate a full range of mixed farming and well-equipped laboratories for science teaching and small processing plants for practical course in food and other product processing.

4.12. Government of India appointed a Committee under the Chairmanship of Dr. Mohan Singh Mehta to work out the details of Agricultural Polytechnics. The Committee recommended that the agricultural polytechnics or Krishi Vigyan Kendras should impart learning through work experience and should be concerned with technical literacy, the acquisition of which does not necessarily require, as a pre-condition, the ability to read and write. The Committee also recommended that the agricultural polytechnics or Krishi Vigyan Kendras should impart training only to those extension workers who are already employed or to practising farmers or those who want to take up farming as self-employment. The syllabus and programme of each polytechnic or

kendras as recommended by the Committee should be tailored according to the felt needs, natural resources and the potential for agricultural growth in particular area in which it is located. According to the recommendations of the Committee emphasis should be placed on recruiting well-experienced and specialised persons to the core staff of the kendra but some of the expert craft teachers may, if necessary, be hired for short periods who ever required for specific purposes. Competent and experienced farmers should be invited as visiting Instructors. While the core staff to have adequate practical experience and skill, they should also have sufficient theoretical knowledge to explain to the trainees the principles involved in operation and practice.

4.13. The committee recommended that some of the skills to be imparted would include the use of fertilizers, pesticides, water management, recycling of organic wastes and also engineering aspects like repair, maintenance and operation of agricultural equipments like tractor, pump, tube-wells and sprayers. The Committee recommended that training should not be allowed to become watered down course of agricultural colleges. The training programme, according to the recommendations, should be directed and more responsive to local needs and should cover illiterates as well as school drop outs. The course of training, duration, and method of teaching would be adjusted to the level of education of trainees. The Kendra would not ordinarily award diploma or certificate for short courses since holders of those might feel "qualified" for jobs that might not exist. There are no specific recommendations whether diplomas or certificates should or should not be awarded on completion of courses of one or two years' duration which may have to be conducted in response to the needs felt in a particular area.

4.14. We have mentioned, at more than one place, in our report that training in agricultural vocation should aim primarily at providing skill required for self-employment. We, therefore, agree with the recommendations of Dr. Mohan Singh Mehta Committee that agricultural polytechnics should cater primarily for the need of practising farmers or others who want to take up self-employment in agriculture. We also agree that extension worker already working in villages should receive in service training in these Polytechnics. We, however, feel that the Agricultural Polytechnic should also conduct one year's course leading to a certificate and two-year courses leading to a diploma in agricultural vocation for those who have obtained secondary school examination certificate with science in the areas in which need for such training is felt. As mentioned by the Education Commission (1964-66) as well as by Dr. Mohan Singh Mehta Committee, there is a wide range of agricultural operation like use of fertilizers, pesticides, water management etc. which, persons with knowledge of Chemistry and Biology can understand better. Similarly some education is required for proper understanding of repair, maintenance and operation of agricultural equipment and implements like Tractors, Pumps, Tubewells etc. processing and canning of food and other products will require guidance and supervision by educated persons. As already mentioned, educated persons with proper training in agriculture are required not only to work as farm mechanics farm managers, laboratory assistance but they are also required as assistants by agricultural credit organisations and as representatives of fertilizer and pesticide manufactures. Fertilisers and pesticides are, at present, sold in retail to farmers by persons who have no proper and adequate knowledge of their use. We suggest that the State Government should consider whether only those who obtain diplomas and certificates in agriculture should be given license to sell fertilizer and pesticide. If this suggestion is accepted, persons who obtain diplomas and certificates in agriculture will not only work as salesman selling fertilizer and pesticides but will also advise the farmers regarding the soil on which and the quantities in which they are to be used. There is, at present, a gap in agricultural education inasmuch as persons required to work as technicians in agriculture are not being trained in the State

4.15. Given below is the curriculum for training of agricultural mechanic in Czechoslovakia :—

TABLE 4.1

Subject	Hours per week	
	First year	Second year
Mother tongue and literature	2	2
Russian	1	1
Civics	1	1
Mathematics	2	1
Physics	2	1
Chemistry	1	1
Physical Education	3	2
Crop Production	3	2
Livestock Production	3	2
Engineering	1	2
Organisation and Economics		2
Workshop Training	3	2
Technical Training	15	18
	<b>Total</b>	<b>37</b>
		<b>38</b>
<i>Non-compulsory subjects—</i>		
Family and House-keeping	3	3
Mathematics	2	2
Sports and Games	2	2

It will appear that the curriculum in Czechoslovakia provides for teaching of languages, Civics, Mathematics, Science in addition to training in technical aspects of the vocation.

4.16. Although agriculture and allied activities in our State and country are not mechanised to the same extent as in Czechoslovakia, power-driven equipments are being increasingly used. If we have to meet the requirements of the increasing population for agricultural products, we shall have to increasingly use modern technology in agriculture. In this context, there will be need for persons with education who acquire practical skill in agricultural operations and repair and maintenance of power-driven equipment. Agricultural polytechnics should, no doubt, conduct practical courses for farmers and their sons, even if they are not educated as well as for school dropouts who want to take up agriculture for self-employment with such theoretical contents as may be absorbed by them. Such courses will be of short duration and conducted on sandwich basis to suit the convenience of the farmers and their sons engaged in agricultural operations. Even in such courses, it will be desirable to teach functional literacy, farm accounts and related Mathematics and basic science related to Agriculture. The polytechnics should, however, also conduct diploma and certificate courses also for persons who have completed secondary school examination and who want to take up farming, or seek employment in various occupations mentioned in foregoing paragraphs. No assurance need be given to them that they will get employment under Government. But, if and when, it becomes necessary to employ more extension officers, persons who have acquired such training and diplomas/certificates and who have taken up actual farming after completion of training may be recruited to work as extension workers.

4.17. Agricultural polytechnics must have adequate land for imparting intensive practical training to the various categories all the year round. Complaints have been made that sufficient lands are not available even in Rajendra Agricultural University and the agricultural colleges for training the students in practical aspects of farming.

Some of the Agricultural schools which are now closed and which have adequate lands for farming may be utilised for establishments of Agricultural Polytechnics/Krishi Vigyan Kendras. There are some training colleges for training primary school teachers, each of which have got more than 25 acres of land. Nagarpara Training College in Bhagalpur District has about 60 acres of land. There are some Sarvodaya Schools and old basic schools which have land for farming. It is estimated that institutions under Education Department have about 30,000 acres of cultivable land. These lands are not at present utilised for intensive cultivation. Some of these can be utilised for establishments of agricultural polytechnics. If necessary, some additional lands may be acquired near them. If Agricultural polytechnics/Krishi Vigyan Kendras for training farmers and conducting diploma and certificate courses are set up in the same campus or very near it in which the training colleges or schools with adequate lands are located, there will be optimum utilisation of the available land. While the trainees of the Agricultural polytechnics/Krishi Vigyan Kendras will be given intensive practical training in farming on this land, the trainees of training colleges or students of the schools under the Education Department will also work for one day in a week or 1 to 2 hours a day on the farm and acquire practical knowledge for teaching craft of agriculture and allied activities to be taught in the schools. Compulsions of increasing population will demand adoption of improved techniques in agriculture throughout the State. For this purpose a number of Agricultural polytechnics/Krishi Vigyan Kendra may ultimately have to be set up in significant numbers. It will be worthwhile reserving some surplus land in each district/subdivision likely to be available consequent upon enforcement of ceiling on lands for location of agricultural polytechnics. The polytechnics should work not only as training centres but also as extension centres. Progressive farmers of the area should be closely associated with the polytechnics.

4.18. Depending upon the felt needs in different areas, the specific subjects relating to agricultural and allied activities in which training may be imparted are indicated below :—

1. Multiple cropping Grouping.
2. Dry land farming.
3. Fruits and vegetable crops, preservation and processing.
4. Crop husbandry.
5. Seed production and processing technology.
6. Dairy cattle management.
7. Poultry Farming.
8. Plant protection.
9. Soil and Water Management.
10. Farm Machinery, maintenance and repairs.
11. Farm management and economics.
12. Agricultural marketing (inputs and outputs) and extension.
13. Processing Farm Produce.
14. Farm structures including Warehousing.
15. Milk Processing.
16. Fodder Crop Production.
17. Co-operation.
18. Fishery.
19. Soil Conservation.

(These are only indicative and not exhaustive.)

4.19. Suggestions have already been made that, depending upon the levels of education of the farmers and their sons, training to be imparted in these polytechnics should be mainly practical with such theoretical contents as they can absorb. A specific suggestion has been made that, in addition to practical they should be taught functional literacy, farm accounts and related mathematics and science. For school dropouts, the theoretical contents will be somewhat higher and may include skill in language, farm accounts and related mathematics as also science of a standard



which should be roughly equivalent to mathematics taught up to class VIII for those who drop out before completing class VIII. In addition, they should also be taught Civics. The duration of the course for these should be one year of which about 2/3rds of the time devoted to practical work and about 1/3rd to theoretical course. This course would lead to a certificate in agriculture or agricultural engineering. The third course meant for those who have passed secondary school examination should be of two years' duration and the practical training and theoretical contents should be in the proportion of about half and half. This course, should also include teaching of language, mathematics, science and civics. Each polytechnic will, therefore, conduct three types of courses. Adequate provision for accommodation, teaching staff, teaching aids, laboratory and above all sufficient land for practical work should be made available in these polytechnics.

4.20. *Forestry*.—Forests occupy 18.1 per cent of the land of the State which is below the national average of 23 per cent and the national norm of 33 per cent. Of about 30,000 sq. km. under forest, 6,000 km. consist of degraded forest needing soil conservation and afforestation measures. Forests in the State are spread over mainly, in the districts of Chotanagpur, a few districts of South Bihar and only one district of North Bihar. Measures to be undertaken during the Fifth Plan include afforestation, plantation of trees like teak, bamboo and match-wood required for industrial and commercial purposes, farm forestry plantation of quick growing trees, departmental timber operations, logging, exploitation of minor forest products, etc. There is one forest school for training of foresters, the lowest supervisory personnel under the Forest Department and three schools for training Forest Guards. These institutes are meant for training the personnel required by the Forest Department. There is no arrangement for training people living in forest areas who depend their livelihood, to a considerable extent, on operations of the forest.

If some of the secondary school certificate holders and school dropouts who have read up to class VIII are given training in various operations in connection with forestry they can find employment in the Tribal Development Corporation, Forest, Labour, Co-operative Societies and under forest contractors. They can be given training in Silviculture, forest management, soil conservation, utilization of timber and forest products including felling and extraction (including logging), conversion of timber, storage of timber, seasoning and preservation of timber, Botany relating to forest trees and surveys. A Forest Department is going to set up very soon. The Forest Development Corporation which will take up development of forestry as well as utilization of forest products can also employ a number of persons trained in forestry.

The committee recommends that Forest Department may set up one training centre each in Singhbhum, Palamau and Hazaribagh districts and one for Monghyr and Santhal Parganas district (combined) for training Secondary Certificate holders and school dropouts in various aspects of forestry.

4.21. Persons trained in these institutions can find employment in the operations of afforestation, soil conservation, utilization of timber and forest products and exploitation of forest products under the Forest Department or under the contractors. Some of them may carry on soil conservation work on their own land and plant trees on them and exploit economically trees standing on their lands. This training will also be helpful in agricultural operations in the forest areas.

## SECTION II

**Vocational Education for Mining, Manufacturing and small enterprises, including construction and electricity.**

4.22. Bihar's mineral production constitute about 39 per cent of the total mineral production of India. Important minerals produced in the State include coal, iron-ore, lime-stone, mica, copper, bauxite, fire-clay and other clays used in the manufacture of refractories and ceramic products. Although Bihar has a very rich industrial potentiality, manufacturing industries in Bihar accounted for only 15.70 per cent of the total State income in 1968-69 as against 23.1 per cent for all India. Village and small scale industries also employ proportionately a smaller number of persons and contribute a smaller share to the State's income than in many of the advanced States in the country. There is, therefore, considerable scope for development of minerals and small scale and medium scale industries in the State.

4.23. Coal Mining is the most important mining industry in the State. Except four mines owned by the N. C. D. C., all the coal mines were previously owned by private sector. All coal mines are however, now managed by Public sector undertakings, namely, Bharat Coking Coal Ltd. and the Coal Mines Authority with its subsidiary National Coal Development Corporation. National Coal Development Corporation has been mechanising old coal mines and using mechanical equipment in the new coal mines. The programme of Bharat Coking Coal Ltd. includes mechanisation of their mines. In view of the energy crisis caused by high prices of oil, plans have been drawn up for development of coal on fairly big scale, according to a tentative estimate made by the C. M. A. The additional man-power requirements of the skilled, semi-skilled and unskilled personnel for development of coal mines in Bihar area (for mines other than in Jharia Coal Field which are under Bharat Coking Coal) are estimated at 40,000 during the fifth plan period, besides the requirements of about 20,000 middle level technicians and about 900 managers and officers. Bharat Coking Coal will also need more skilled persons in the various branches of the mining industry.

4.24. In the initial stages, National Coal Development Corporation had set up their own technical institutes for training skilled personnel. After their initial requirements of skilled personnels had been met, they discontinued these technical institutes. Bhart Coking Coal Ltd. and Coal Mines Authority have not so far set up their own institutes for training skilled and technical personnel.

4.25. Of the industrial concerns, expansion of Bokaro steel plant from 1.7 million tons to 4 million tons will continue to require skilled personnel for construction and operation. There will be corresponding development of coal mines under the B. C. C. L. which supply coking coal to the steel plant, lime stone mines in Bhawanathpur in Palamau district and iron-ore-mines in Singhbhum district to meet the requirements of the expanded plant. With full commissioning and expansion of Bokaro Steel Plant, there will be increasing demand for fire-bricks and there will be corresponding development of fire-clay mines.

4.26. In view of the difficulties experienced in respect of the availability and prices of imported raw material, for manufacture of fertilizers, steps have now been taken to develop coal based fertiliser industries, a coal based fertiliser plant is likely to be materialised in Bihar in the next ten years.

4.27. To meet the shortage of power, existing Thermal Power Houses will be expanded and new power-houses will be set up. Some of these power-houses will

get supplies of coal from the Mines in Bihar. Development of Power in the State will also require skilled personnel trained in Mechanical and electrical engineering trades.

4.28. During the fifth plan period, it is proposed to take up a number of medium scale industries by the Bihar State Industrial Development Corporation, in collaboration, wherever possible, with private sectors.

4.29. In many areas near and round heavy industries, ancillary and subsidiary industries have developed. These areas include Adityapur near Jamshedpur, Bokaro, Ranchi, Sindri Patratu, Barauni, Fatwah and Dehri. New medium and small scale industries are being set up in these areas. With the increase of tempo in the industrialisation, these areas will continue to develop.

4.30. Small and village industries including some of the traditional house school industries will receive assistance from the Government. With the development in agriculture, heavy and medium industries, there will be scope for self-employment in the small scale industries. These developments will need more skilled persons trained in various trades.

4.31. There are 30 Industrial Training Institutes in the State for Training craftsmen in various trades, for meeting the requirements of the skilled/semi-skilled personnel in the mining and manufacturing enterprises. There are about 13,000 places for training (inclusive of the number of trainees in the 1st and 2nd years of two-year courses of training) and the annual outturn of the trainees is about 5,000. Some of the trades are of two-years' duration and some others are of one year's duration. The trades in which training is imparted in these training institutes for two years and one year are listed below :—

*List I—Engineering trades of 2 years' duration—*

- (1) Draughtsman (Mech.).
- (2) Draughtsman (Civil).
- (3) Surveyor.
- (4) Fitter.
- (5) Turner.
- (6) Machinist Composite.
- (7) Grinder.
- (8) Electrician.
- (9) Wireman.
- (10) Mechanic Radio and Television.
- (11) Pattern-maker.
- (12) Electroplating.
- (13) Mechanic Instrument.

*List II—Engineering Trades of one year's duration—*

- (1) Carpenter.
- (2) Plumber.
- (3) Sheet Metal Worker.
- (4) Blacksmithy.
- (5) Moulder.
- (6) Mechanic Tractor.
- (7) Mechanic Refrigeration and Air-conditioning.
- (8) Mechanic Motor.
- (9) Welder.
- (10) Mechanic I. C. Engine.
- (11) Brick Mason.

Training is also imparted in trades of Non-Engineering Trades listed below in some of the Institutions—

*Non-Engineering Trades—*

- (1) Cutting and tailoring—1 year.
- (2) Dyeing and Calico Printing—1 year.
- (3) Weaving—1 year.
- (4) Leather Goods—1 year.
- (5) Stenography (Hindi and English)—1 year.
- (6) Book-Keeping and Typewriting—1 year.

4.32. The institutional training of one year or two years is followed by training the establishment of the employers for various periods depending upon the trades. There is neither any obligation on the part of the employers to employ those who undergo apprenticeship training in their establishment under the scheme nor is there any obligation on the part of the trainees to accept employment if and when offered. A number of these trainees are, however, ultimately employed as skilled workers in the establishments of the employer in which they undergo apprenticeship training. Many of trainees trained in some of the trades are still unemployed.

4.33. The contents of Engineering trades include theoretical and practical training in the relevant trades and teaching of Mathematics and Science relevant to those trades. There is provision for teaching of languages in the curriculum of stenography.

4.34. Some of the big establishments prefer recruiting secondary school certificate holders with Mathematics and Science and passing in first or high second division to the products of the I. T. Is. because, they feel that the basic knowledge of the former in language, mathematics and science helps them in picking up training more quickly. Industrial training institutes are still regarded by school leavers as second class Institutes into which only those Secondary certificate holders who cannot secure entry into the training programmes of such big establishments or who cannot pursue higher education because of financial difficulties seek admission.

4.35. In order to improve the scope of employment of persons trained in the I. T. Is., it will be essential to bring about improvements in the contents and methods of training. Syllabuses of training should include not only the contents of Mathematics and Science relevant to the trades, but also language and knowledge of the theories and practices of the trades. Each training institute should have competent teachers in language, Mathematics and Science, in addition to those who are competent in teaching theories and practices of the concerned trades.

4.36. For satisfactory teaching of the practices of the trades, teachers who are not only competent in theories, but who have also practical knowledge of the concerned trades, should be available. Such teachers should preferably have 4 to 5 years' practical experience in the concerned industry. The pay scales in the training institutes are not attractive to persons with such experience. The other alternative, therefore, is to impart inservice training to the teachers who are already in position. Arrangements should, therefore, be made in collaboration with the industrial establishments, to give them inservice practical training. Full advantage should also be taken of the facilities offered at the Central Training Institutes set up by the Central Government for training instructors of the Industrial Training Institutes. No promotions should be made of instructors to higher posts unless they have acquired adequate practical experience and undergone inservice training. The other alternative to engage, wherever possible persons

with adequate theoretical and practical knowledge from industry, as part-time teachers in the industrial training institutes located near industrial establishments.

4.37. Proper equipment should be available for giving satisfactory practical training to the trainees. The committee understands that, for want of proper maintenance, equipments are not always available for giving to the trainees adequate practical experience. There should be proper arrangements for the maintenance of the equipment and wherever necessary, trained maintenance personnel should be appointed. Instructors and trainees, however, be actively associated in maintaining the equipment.

4.38. There are many other trades besides those training in which is already being imparted in the Industrial Training Institutes in which training may be imparted in different regions of the State. Some of these trades are mentioned below :—

*Civil Engineering—*

- (1) Architectural craftsmanship.
- (2) Construction Supervisor.
- (3) Interior designing and decoration.
- (4) Mistry.

*Electrical Engineering—*

- (1) Electronics.
- (2) Televisions.

*Mechanical Engineering—*

- (1) Engine and Pump repairs.

*Applied Chemistry—*

- (1) Plastic Technology Course.
- (2) Soap Manufacture and Cosmetics.
- (3) Ink, Glue, Cellulose Manufacture.
- (4) Matches and Fire Works.
- (5) Tyre retreading and rubber-products.

*Sugar Technology and operative course.—*

- (1) Juice Treatment Manufacturing Assistant.
- (2) Pan Boiling.
- (3) Sugar Operative in Milling House Practice.
- (4) Operative in Boiling House Machinery.

*Printing Technology—*

- (1) Printing, designing and composing including mechanical composition and proof reading.
- (2) Book binding.
- (3) Letter Press Printing.
- (4) Graphic reproduction.
- (5) Lithography and Offset Science of Printers.

*Textile—*

- (1) Weaving (Powerloom)
- (2) Hosiery.

*Craft Teachers Courses—*

- (1) Tailoring and Master-Tailoring.
- (2) Needle work and Embroidery.
- (3) Cardboard work and Book Binding.
- (4) Cane work and Bamboo work.

*Miscellaneous Course.—*

- (1) Bicycle, stove, petromax repairs.
- (2) Painting.
- (3) Home Science.

- (4) Laundry Bleaching and Dyeing.
- (5) Glass Blowing.
- (6) Optics and Glass Grinding.
- (7) Tanning.
- (8) Fancy Leather Goods Manufacture.
- (9) Instrument Mechanic (sophisticated instrument).
- (10) Watch repair.

4.39. Some of these trades like Architectural Craftmanship, Construction Supervisor, Interior Designing and decoration, Printing Technology, Home Science and Instrument Mechanic (sophisticated instrument), Electric Television, instrument mechanic (sophisticated equipment), craft teacher's courses in tailoring and master tailoring, and cardboard work and book binding, sugar juice treatment manufacturing assistant and pan boiling, are suitable for those who have passed the Secondary school examination. In others school dropouts who have completed class VIII may be admitted.

4.40. In many organisations there is demand for Architectural Craftmanship. In a developing economy construction requires a large number of construction supervisor at the lower level. At present the Works Departments of the State Government employees work Sirkars who have no pre-service training. There are virtually no Interior Designers and Decorators in the State and their services have to be obtained from outside. There is increasing use of Electronics in the country and there is a programme for use of Television even during the Fifth Five Year Plan as a medium of instruction for school children. More and more agriculturists are using pumps and tractors. There is sufficient scope for groups of trade under the head Applied Chemistry. The trades regarding Sugar Technology and operation may be suitable from the point of view of employment for the districts of North Bihar in which Sugar Factories are located. There is no institute or training centre in the State for Printing Technology. There is need for at least one or two schools of printing technology in which vocational courses for 2 year's duration and technical courses for 3 years duration can be conducted. The trades under Textile and Miscellaneous courses have employment potential and school dropouts can be trained in them. Tailoring, needle work and embroidery, cardboard work and book-binding, cane work and bamboo work will be taught as crafts in the schools and the training colleges and persons with some education and good training in these crafts will require to work as craft teachers in these institutions.

4.41. However, introduction of these trades in the existing newly-training institutes or location of new training centres should be decided on the basis of a survey of employment potential in each district of the State. It would be desirable to introduce the Engineering trades as also some of the trades under the head miscellaneous courses in the existing Industrial Training Institutes. Trades concerning Sugar Technology and operations in sugar factories may be introduced in the Institutions of those districts of North Bihar which are located near the sugar factories. A separate institute for Printing Technology may be set up preferably at Patna. The trade under the head Applied Chemistry and Crafts Teachers course may be introduced in the Higher Secondary/Post Secondary courses (classes XI-XII) which should be added to the selected secondary schools. Only such schools will be selected for this purpose as have adequate facilities in respect of accommodation, laboratory, library etc. for workshop. In view of limitation of resources, there will be no adequate justification for starting separate training centres for these vocations.

4.42. Provision should be made for introducing these trades in the existing training centres and new training centres to be opened at suitable centres on the basis of a survey of the employment potential in each area. The new training

centres should be opened preferably in the existing secondary schools whose location is suitable from the point of view of employment of those who will be trained in vocations to be taken up in those centres on the basis of survey and which have adequate facilities in respect of accommodation, laboratory and land for workshop. In view of the limitation of resources, there will be no adequate justification for starting a separate training centres for these vocations.

4.43. For admission to some of the vocations, a pass in secondary school examination with Mathematics and Science will be the minimum qualifications, for some other study upto class VIII of the 10-year school will be the minimum qualification. Knowledge of Advanced Mathematics is necessary for the trades of instrument mechanic (sophisticated), television and Electronics.

4.44. While location of new I. T. Is/training centres will depend upon the results of the survey, the Committee recommends that, in view of the large requirements of the skilled and technical personnel required in the coal mines, two industrial training institutes/training centres should be set up immediately, one in Karanpura area in Hazaribagh district (preferably at Bhurkunda or Ramgarh) and the other in Bermo-Bokaro area. Polytechnic school and Industrial Training Institute, already located in Dhanbad, should be able to meet the additional requirement of Bharat Coking Coal in Jharia Coal Field. Provision for teaching of and training in the Mechanical, Electrical and Civil Engineering and Mining trades should be made in these institutes. These institutes should also provide part-time facilities like evening courses for those who are already working in the mines and who want to have additional vocational and technical qualification to improve their chances of promotion. This is an important programme of vocational education which had been neglected in the State so far.

4.45. As already mentioned, during or on completion of their institutional training, the trainees are required to undergo apprenticeship training for different periods (depending upon trades) in their trades in establishments relevant to these trades. Under the provisions of the Apprenticeship Act, Mining, Industrial and Commercial establishment are required to train as apprentices a number of trainees proportionate to the numbers of work force in these establishments. The establishments are required to provide adequate facilities for such training and supervise the training programmes, while some big establishments carry on their obligation of providing adequate facilities for training the apprentices and supervise the training programmes in satisfactory manner, many establishments do not take adequate interest in the training programme of these apprentices. The establishments are not bound to offer employment even if employments are available, to these apprentices, nor are the apprentices obliged to accept employment, if and when offered. Those employers who recruits, from these apprentices, the personnel they require as skilled workers take interest in the apprenticeship training. As already mentioned, some employers recruit secondary school examination Certificate-holders for training them for the position of skilled workers as, according to them, they are better materials than the products of the Industrial Training Institutes. The need for bringing about improvement in the standard of products of the I. T. Is. for improving chances of their employability including self-employment has already been emphasised and suggestions for bringing about improvements made at appropriate places.

4.46. Apprenticeship in the mines is regulated by the Central Government who are the appropriate authority in respect of mines. Complaints are made that, although the nationalised mines employ a large number of skilled personnel, recruitment is not made for the vacant positions of skilled workers from among the apprentices. According to the practice prevalent in the mines, initial recruitment is made at the level of general mazdoors and promotion to the category

of skilled personnel is generally made from the category of general mazdoors. Since mechanised mines require skilled personnel, in an appreciable number, it is desirable that the apprentices who do well during the period of apprenticeship should be able to find employment in the mines as well as in other undertakings. The matter may be taken up by the State Government with the concerned Ministry of the Government of India and the B. C. C. L. and N. C. D. C.

4.47. Products of the I. T. Is. look for mainly paid jobs in mines and industries and do not take up self-employment. Self-employment requires self-confidence and entrepreneurship. Large numbers of trainees of the I. T. Is. come from rural areas and from the lower middle class or poorer sections of the community and their home environment is not very conducive to the development of these qualities. With improvement in the quality of training in the I. T. Is. and development of skill of the trainees during the period of apprenticeship it should be possible to develop a greater degree of self-confidence in them. It is, therefore, essential that adequate facilities for the training on the job should be available during the period of apprenticeship and this training should be properly supervised. Since in some of the establishments, the apprentices do not receive adequate attention, the department of the State Government incharge of vocational education will have to take greater interest during the period of apprenticeship. If necessary, supervising officers may be appointed to ensure this. The trainees should also during their institutional training, be given some training in entrepreneurship including information about assistance likely to be available from the Government and credit facilities given to the bank to person taking self-employment in industries, commerce, etc.

4.48. Courses of study for trades in the Industrial Training Institutes, other than the non-engineering trades, include, besides theoretical and practical courses related to the trade which a trainee takes up, study of mathematics and science related to the relevant trade. There is, however, no provision for teaching languages and civics to the trainees. Importance of languages for effective communication has already been emphasised in the chapter relating to school education. Some of the employers of the State have mentioned that one of the main deficiencies of the school leavers and the products of industrial training institute is lack of skill in languages (both oral and written). Annexed to this chapter are specimen programmes of study—vocational education for fitter and mechanic for 3-year curriculum for specialisation in Czechoslovakia (Annexure I), curriculum for 3-year full time course in an industrial centre in France (Annexure II) and curriculum for a vocational high school in the U. S. A. (Annexure III).

4.49. It will appear that the courses of study of industrial/vocational education in these countries include study of language, civics or citizenship, mathematics and science, besides theory and practice related to the trade. It is desirable that there should be provision of teaching languages (both Hindi and English) and civics in addition to the teaching of mathematics and science in the Industrial Training Institutes. In teaching civics, emphasis should be placed on importance of production and productivity for achievement of the social goal of removal of the poverty and welfare of the people, healthy relationship between the management and the managed for increased production and productivity and the responsibility towards the society of all those engaged in productive processes.

4.50. It is necessary that there should be effective consultation between the Directorate of Employment and Training looking after the vocational education relating to trades in the State and the employers in mines and industries in order to ensure that apprenticeship training is purposeful and effective. A periodical review of the position should be made and, wherever necessary, corrective measures should be taken. The forum of the State Council of Vocational Education which we are proposing separately should also be utilised for this purpose.



## SECTION III

COMMERCE, TRANSPORT AND COMMUNICATION INCLUDING RAILWAYS, BANKING  
AND INSURANCE, ROAD TRANSPORT PROJECTS, OTHER SERVICES INCLUDING  
PUBLIC SERVICES AND ADMINISTRATION.

4.51. Excepting for two training centres where training is imparted to a small number of trainees in shorthand, typewriting and book-keeping, there are no institutional arrangements by the Government for vocational education in vocations relating to office, commerce and transport groups of vocations. There are a number of ill-staffed and ill-equipped establishments managed by some individuals which impart training in typing and stenography. Training in such establishments is not satisfactory. Central Government offices in the State and State Government offices recruit, every year, a number of accountants, book-keepers, clerks, typists, stenographers. Mining and industrial concerns, commercial offices, banks, Life Insurance Corporation and transport organisations require these categories of personnel. Some of them require purchase and stores assistants and salesmen. There is considerable scope for employment in wholesale and retail trade. The vocations for which there are significant demands are listed below :—

- (1) Accountancy, Book-keeping and Cashier.
- (2) General Clerks.
- (3) Typists and Teletypists
- (4) Stenography and Secretarial Practice.
- (5) Purchase and Store Assistants.
- (6) Salesman and Shop Assistants.
- (7) Wholesale and Retail Trade.

4.52. No estimates are available regarding the requirement of personnel for these vocations in the State. Institute of Applied Manpower and Research, New Delhi has prepared an estimate on the requirements of these categories of personnel in three count under the following heads for the years up to 1978-79 :—

TABLE 4.2.

Estimated demand for Commercial Manpower in organised sector at the beginning and end of the Fifth Plan period.

Figures in thousands.

Occupational category.	1973-74.	1978-79.
1. Book-keepers and Cashiers .. .. .	2,76.8	4,45.5
2. Stenographers .. .. .	63.0	85.3
3. Typists and Teletypists .. .. .	86.5	1,14.0
4. Office Machine Operators .. .. .	24.0	31.4
5. Clerical Supervisors .. .. .	4,53.3	5,96.7
6. Clerical Workers Miscellaneous .. .. .	14,77.2	19,00.7
7. Proof Readers and Copyholders .. .. .	6.2	7.4
8. Ticket Collectors and Ticket Examiners .. .. .	20.7	25.9
9. Agents and Salesman, Insurance .. .. .	6.9	9.1
10. Real Estate Salesman, Salesman of Securities and Services and Auctionners. .. .. .	2.5	3.1
11. Commercial Travellers .. .. .	16.8	28.0
12. Manufacturers' Agents .. .. .	7.2	11.8
13. Salesman and Shop Assistant, Wholesale and Retail Trade .. .. .	69.1	81.9

4.53. Requirements of book-keepers and cashiers, clerical workers, salesman and shop assistants, as brought out in these estimates, will be considerable in the country. Requirements of these categories of personnel in the State will also be proportionately sizeable. Good stenographers and accountants are not available even now and there is considerable scope for employment of these categories of personnel.

4.54. These vocation are very suitable for being taken up as 2-years diploma course and 1-year certificate course in classes XI and XII post-secondary/higher secondary schools. Based on results of survey regarding employment potential of different categories of personnel in different regions of the State, selected secondary schools with adequate facilities not only in the urban areas but also in some rural areas may conduct courses relevant to the regions of their location in the two classes (classes XI and XII) to be added to them. Pending survey which has been suggested, vocations of accountancy, book-keeping, cashier, general clerks, typists and stenography and those of salesman and shop assistants, wholesale and retail trade can be introduced in at least one school in each of the district and important subdivisional towns and in at least three schools in Patna, three in Ranchi, two each in Jamshedpur, Bhagalpur and Muzaffarpur. Training of purchase and store assistants may be taken up in, at least two schools in Patna, two in Ranchi and one each in Bhagalpur, Muzaffarpur and Jamshedpur.

4.55. Syllabuses for training in the Post-Secondary/Higher Secondary Institutes conducting courses in these vocations have to be drawn up by experts including teachers of various subjects and persons with experience of having worked in the Government Industrial and business offices and establishments. A two-year commercial office training course for those who have completed their basic education up to 16 years of age in Sweden is given below for reference :—

TABLE 4.3.

Subject.	Average weekly periods.	
	First year.	Second year.
<i>Compulsory subjects—</i>		
Swedish and business correspondence	5	4
English	5	5
Book-keeping	4	4
Commercial calculations	5	5
Commercial knowledge	2	3
Office practice	2	2
Economic Geography	2	2
Social Studies	..	5
Typewriting	5	5
Handwriting and embossing	1	..
Physical Education	2	2
Total	33	34*

\*The compulsory total for both the first and second years is 37 periods per week.

*Optional or extra studies—*

Additional English	..	..	..	..	2—3	2—3
German	..	..	..	..	3—4	3
Short-hand	..	..	..	..	2—3	2—3
Extra-typewriting	..	..	..	..	1	1
Machine calculations	..	..	..	..	..	1
Window dressing and poster writing	..	..	..	..	1—2	1—2

It will appear that the courses cover a broad area of the work in an office and include commercial calculations. Commercial knowledge, book-keeping, office practice, economic, geography and typewriting. In addition the trainees have to study languages, social studies and physical education. There is provision for optional or extra subjects for those who want to take-up such subjects.

4.56. In view of the general considerations regarding wider mobility and for correcting imbalances in its demand for various categories of personnel, as mentioned earlier in this chapter, the committee considers that in the long run post-secondary training course for the vocations of book-keepers, accountants, cashiers, general clerks, typists and taletypists should be of two years' duration leading to a diploma. During the first year, the trainees should be taught and trained in the following subjects—Hindi, English, Book-keeping and calculations, office organisations and procedure, commercial geography and commercial knowledge, civics, typewriting and physical education. In the second year, instructions in language and civics should continue but two-thirds or if necessary, three-fourths of the time may be devoted to the actual vocations in which the candidate wants to specialise. In view of the large requirements of these categories of personnels for the vocations of book-keepers cashiers, general clerks and typists in the initial stages, provision may also be made for post-secondary one-year certificate course in each of these vocations. Training to be imparted in the certificate course will necessarily be narrow with the aim of training for the specific vocations and not for variety of jobs of similar nature which is the aim of the diploma course mentioned above.

4.57. The skills and competence required of an accountant and a stenographer (who should also learn secretarial practice) are such that for these categories, there should be a provision for only two-years diploma course.

4.58. So far as the remaining vocations are concerned, there should be only a diploma course for purchase and stores assistant. Courses for training of salesmen and shop assistant wholesale and retail traders should be of only one-year's duration leading to a certificate. Some subjects e.g. languages, book-keeping commercial calculation, commercial knowledge and social studies will, be common to the trainees, office group of trainees and the trainees for position of purchase of store assistant may study them along with the trainees for office groups of vocations. However, these trainees will have to study separately other theoretical and practical subjects relating to purchase and store management and accounting.

4.59. Some specific suggestions regarding the subjects to be taught and practical training to be imparted to each category are given below.

(i) *General clerks.*—This is the largest group of workers in Government offices and commercial offices, business organisations and industries employ them in significant numbers. The work of a general clerk consists of receiving incoming letters, connecting them with previous correspondence, placing them in the proper file and putting them to senior officers for disposal. They have also to put up simple drafts. Senior clerks put them up suggesting course of action.

There is no arrangement for training of clerks in Government offices in the State. There is also no such arrangement in commercial offices. Persons appointed to work as clerk, pick up work in course of their duties. In view of the admitted inefficiency of work in the offices, it is desirable to have regular training programmes for clerks. Higher Secondary/Post-Secondary Institutions may conduct 2-years' diploma course as well as 1-year certificate course for training general clerks. The diploma course will be suitable for those who have to work in more responsible positions in the State Government Secretariat, offices of the heads of departments and big commercial offices. Certificate course will be suitable for those who will be employed in routine work in subordinate offices or smaller concerns.

The training course may consist of languages (both English and Hindi), commercial calculations, office organisation and office procedure, receipts of letters, despatch of letters, maintenance of registers and finding reference, drafting of letters, putting up simple notes and work relating to post office, telephones, banks and treasuries. They may also learn typing.

(ii) *Book-keeping and cashier's vocation.*—Elements of book-keeping and the vocation of cashier may be learnt in a certificate course of one-year during which the trainee should not only learn theory and practice but also the duties of a general clerk. The training programmes for the general clerk, book-keeping and cashier may be common for at least four months during which the trainee should learn office organisation and office procedure. After this period of common training, the trainees of book-keeping and cashier should receive specific training in book-keeping and cash and the general clerk should receive training in duties of a general clerk including office procedure, receipt of letters, despatch of letters, maintenance of registers and finding references, drafting of letters, putting up routine notes, dealings with public etc. The institutional training should be followed by six months' training on the job, during which period, the trainee should receive as apprentices thorough training in practice of book-keeping and cashier's work and the trainees for general clerk should receive practical training in office work.

In the two year diploma course, the first year will be devoted to the broad training programme referred to in paragraph 4.48. While the certificate course will prepare a trainee for the specific job of a book-keeper or a cashier, the diploma course will prepare him for more than one job including that of a general clerk-cum-book-keeper and a junior accountant.

(iii) *Accountant.*—The term accountant covers a wide range of jobs from maintenance of the accounts of payment, expenditure and income in an office to the professions of chartered accountants and qualified cost and works accountants who work in executive positions in industrial and business concerns as also under the Government or set up their own independent business. The minimum period for training of an accountant who does the initial work of accountant in an office should be of two years' duration leading to a diploma and only those who have aptitude of figures and satisfactory knowledge of mathematics should be admitted to the course. Syllabus of training should include language, mathematics relevant to accountants' work, office organisation and office procedure, detailed study of how Government and commercial accounts are maintained elements of cost accounts, machine calculations etc., income tax calculation, work relating to post office, banks etc. A two year institutional training should be followed by practical training for six months.

In order to qualify himself as a chartered or cost and works accountant a person has to pass stiff professional examinations after some years of articleship

(in case of a chartered accountant) and some years of practical experience in accounts work in any office (in case of cost and works accountant). This will be discussed in detail when place of commerce and management education in University education is taken up.

(iv) *Typists and tele-typists.*—It will be desirable to train the trainees for typists in office organisation and office procedure and referencing for an initial period of 3 to 4 months and in actual typing work for 8 to 9 months, for a certificate course in typing. They should also study languages during the period of the training. The trainee should, on completion of training, be able to type, atleast 30 words per minute in Hindi and 40 words per minute in English.

(v) *Stenography and secretarial practice.*—The combined courses of stenography and secretarial practice should be a two years course leading to a diploma. The courses should include study of languages, office organisation and office procedure, drafting of letters, simple noting, simple accounts, handling of telephone and etc. in addition to the actual contents of the courses of stenography and secretarial practice. A stenographer, on completion of his training, should be able to take down dictation at the rate of 80 words per minute in Hindi and English.

(vi) *Purchase and stores assistants, machine accounting.*—The courses for these vocations should be of two year's duration leading to a diploma. Courses of study should include study of language, mathematics relevant to purchase and store accounting, machine accounting procedure for purchase and storage, disposal of surplus and unserviceable materials etc. Training in this vocation can be meaningful only if theoretical training is related to practice of purchase and storage. It is, therefore, essential that the vocations of purchases and store assistants should be introduced only in an area where there are facilities for such practical training. Institutional training should be followed by about six months' practical training on the job.

(vii) *Salesman and shop assistants, wholesale and retail trade.*—These vocations are generally meant for those who want to get self employment. A few of the trainees may find employment with big traders and in departmental stores or in industries. Courses of study should include language, (particularly skill in oral expressions) Mathematics relevant to sale, customers services etc. Institutional training should be followed by practical training for six months.

4.60 The qualification for admission to all these courses, except those of salesman and shop assistants, wholesale and retail trade, should be a pass in secondary school examination. The qualification for admission to the courses for salesman and shop assistants, wholesale and retail trades should be study up to class VIII.

#### SECTION IV.

##### (iv) Social Service—Public Health and Medical Services.

###### HEALTH AND PARA-MEDICAL VOCATIONS.

4.61. The report of the Committee on Medical Education (Bihar, 1973) mentioned that, on the basis of the Mudaliar Committee's report which recommended one medical graduate for 2,000 population, Bihar will require about 30,000 medical graduates by 1980. The number of medical practitioners registered in the State is 11,000; the actual number of doctors available in the State are estimated to be about 10,000. The demand for medical services is so large, that even in the private medical colleges set up without adequate facilities, there is great rush for admission, in spite of the fact that they charge very high capitation fee for

admission. The cost of turning out a medical graduate is so high that it will not be possible for the State Government, with limitation of resources, to set up new medical colleges to meet the requirement of 30,000 medical graduates by 1980. Also many of the existing doctors are not willing to go to rural areas, specially backward areas. Solution does not, therefore, lie in allowing private medical colleges to be opened without adequate facilities for turning out medical graduates of indifferent quality. The Committee's observations in this respect are quoted below :—

“2.30. The solution to the problem in a society like ours therefore does not lie in somehow attempting to produce a very large number of graduates, with a veneer of University education whatever their knowledge, skill or competence may be. It does not also lie in refusing to face the challenge by saying that the existing situation is not amenable to any satisfactory solution and that these minimum health care requirements must await a distant and unforeseeable future. The unavoidable time-lag in producing an adequate number of properly trained basic medical graduate cannot be allowed to act as an absolute and effective obstacle to the crying needs of society, the directive principle of our constitution and the basic policies of Government with regard to welfare needs of the society. The solution lies in looking upon medical education not merely as a problem of graduate and post-graduate education but as a problem designed to provide a wide range of technically trained personnel of which the apex is formed by the teachers and research workers and the base is formed by a large variety of technically trained personnel of whom para-medical staff and medical auxiliaries form essential and important links. What is needed and demanded by the realities of the situation is a ‘Skill continuum’ representing a well balanced ‘mix’ of health care personnel or teams.”

4.62. According to the estimates prepared by the Health Department, the requirements of the medical auxiliaries and para-medical personnel required for the health programmes of the State during the Fifth Plan period (1974—79) will be of the following order :—

Nurses .. .. .	4,871
Auxiliary Nurses (females) and mid-wives.	5,489
Female Health Visitor .. .. .	582
Basic Health Worker .. .. .	4,680
Pharmacists .. .. .	2,325
Laboratory Technicians .. .. .	130
Operation Theatre Assistant .. .. .	375
X'ray Technician .. .. .	250

4.63. There is considerable scope for self-employment, particularly in the rural areas for many categories of these personnel. It is well-known that, in the absence of adequate medical facilities in the rural areas quacks with no training or very unsatisfactory training have been practising medicine and even performing operations. Well-trained auxiliaries and para-medical personnel will be a great asset in the rural areas. If these auxiliaries and para-medical staff are well-trained and teams of those workers are formed to work with the doctors who are available, the medical facilities available in the rural areas can be considerably multiplied and effectiveness of the medical graduates will increase considerably. Even in the urban areas, there is need for more medical technicians and para-medical technicians and para-medical personnel to work with the doctors practising medicine and surgery, pathology and X'ray expert. Pharmacists are required in considerable number by drug manufacturers. Dispensaries are required in drugs shops .

4.64. Except for training of Pharmacists, for whose training a school of pharmacy has been started at Patna and for training of nurses who are, at present, trained in four nursing schools whose outturn per year is 240 nurses and 17 schools for training auxiliary nurses and midwives, there are no regular facilities for training other categories of medical technicians and para-medical personnel. As will be clear from the statement enclosed (Annexure IV) some *ad hoc* programmes have been conducted from time to time for training certain categories of personnel. It will appear from the statement that the *ad hoc* programmes were drawn up mainly with a view to imparting narrow skill required of a particular category of personnel. Such narrow training sometimes results in surpluses in some categories, at a particular point of time, and at the same time, shortages of other categories of personnel. It is necessary that in view of the importance of these category of personnel, arrangements should be made for their regular training and courses should be such that surpluses in one category can be diverted in the category in which shortages occur by retraining them in a short period.

4.65. Some broad suggestions regarding training programmes of different categories of medical technicians and medical personnel are made below :—

(i) *Basic Health Worker / Health Visitor*.—It will appear from the training programme in the annexed statement, that the basic health worker is trained for a period of four months. The syllabuses of training include health and disease, public health administration and education and basic health services, malaria, small-pox, tuberculosis, family planning, environmental sanitation, first-aid, nursing vital statistics cholera, typhoid, diarrhoea, dysentery, hook-worm, malnutrition, health education. The syllabus is very comprehensive and it is impossible to cover it in a period of four months. Training of basic health worker should be such as to make him really useful in the matter of prevention of disease (including epidemics), detection of early forms of illness, counselling and guidance for the promotion and maintenance of health and introduction of services which may make the recovery of the patient smoother. The basic health worker should be in a position to administer medicines and injections prescribed by the physician, render first-aid and report the condition of the patient to the physician. Training of basic workers with a view to developing skills for performing these tasks satisfactorily has to be much more intensive. A basic health worker should have broad as well as intensive training in various aspects of health and medical problems so as to make him really useful as a general assistant to the medical graduate and of real service to the public in rural areas, many of whom have at present no access to trained personnel in health and medicine. The minimum period of training, should therefore, be two years after a pass in secondary school education with mathematics and science and after the initial requirements are met, the period may be extended even to three years. A diploma may be awarded on successful completion of training.

(ii) *Nurses (training of nurses and auxiliary nurses)*.—Training in nursing is provided according to the syllabus prepared in conformity with the regulations prescribed by the Indian Nursing Council. The minimum qualification for admission to this course is a pass in secondary school education and the duration of the course is 2 years for an auxiliary nurse and 3 years and 9 months for a nurse. Syllabus for the course of nursing includes study of anatomy and physiology, physics and chemistry, micro-biology, pharmacology, nutrition, psychology, principles and practices of nursing, community organisation and professional understanding. Training has to be conducted in hospitals where there are adequate facilities for practical training. Part-time lecturers from medical colleges and medical graduates from other places are engaged for part-time instructions in basic sciences. Complaints have been made that very few doctors are willing to work as

part-time lecturers and consequently the teaching of basic sciences is not satisfactory. This adversely affects the number of outturn every year. In view of the prevailing shortage of nurses and the need for teaching more nurses to meet the increase in requirements, it will be desirable to make a more satisfactory arrangement for teaching these subjects.

We are separately suggesting introduction of courses in anatomy, physiology, pharmacology and biochemistry at the post-graduate level in the Universities. If and when separate lecturers of post-graduate degrees in anatomy, physiology, pharmacology and biochemistry are available, they should be engaged as whole-time teachers for these courses. Till then, arrangements should be made not only with the colleges, but also with the universities and colleges in the neighbourhood for obtaining the services of competent teachers for teaching the basic sciences.

In view of the large requirements of the personnel for nursing, there is urgent need for opening more training centres. In the Fifth-Five-Year Plan, the Health Department proposes to open six new nursing schools. They should be opened without delay.

(iii) *Ward attendants*.—Complaints have been made that educated girls are still not coming forward in adequate numbers for being trained as nurses. In the circumstances, there is doubt whether large requirements of nurses and auxiliary nurses during the Fifth-Five-Year Plan period can be fully met even if new institutions for training them are opened. Suggestions have, therefore, been made that adequate numbers of educated girls are not available for being trained as nurses and auxiliary nurses, boys with Secondary School Examination Certificates may be trained as Ward Attendants to look after the patients and take up the nursing work. Their training may be for a period of one year and should cover all topics required for ordinary nurses. If and when adequate numbers of educated girls are available for being trained as nurses and auxiliary nurses the ward-attendants can be given further training to work as basic health worker who are also required in large numbers.

(iv) *Female Health Visitor*.—The duration of this course is for 2½ years and the minimum qualification for admission is a pass in the secondary school examination with English. There is need for training more nurses to work as health visitors.

(v) *Auxiliary nurses and midwives*.—The minimum qualification for admission is a study upto middle class (Class VII) and duration of training is two years. The requirements of auxiliary nurses and midwives during the Fifth Five-Year Plan are sizeable. Health Department proposes to open a number of schools for training nurses and midwives. They should be opened on a priority basis.

(vi) *Pharmacists*.—As already mentioned, pharmacists are required in hospitals, drug industries and drug shops. There is only one school of pharmacy conducting a two-year diploma courses in which 100 trainees are admitted every year. The minimum qualification for admission is a pass in secondary school examination with mathematics and science. Even a small portion of the Health Department's requirements of about 2,300 pharmacists during the Fifth-Five-Year Plan cannot be met by the one existing school. At least three more schools should be set up in the State without delay.



(vii) **Laboratory Technician (Pathology).**—The minimum qualification for admission to this course is a pass in secondary school examination with science. Duration of the course is for two years. The requirements of Health Department for laboratory technicians is not large but these technicians are also required by private practitioners. Since the duration of the course is for two years, a diploma should be awarded to the successful candidates at the end of the course.

(viii) **Operation theatre assistant.**—Operation theatre assistants are, at present, recruited from among dressers and trained for six months. It is felt that operation theatre assistant should have some minimum education. While dressers who have studied upto class VI may, after training for a period of six months, be appointed as operation theatre assistants, it is felt that secondary school certificate holders may also be trained as operation theatre assistants and the period of training should be one year. Besides receiving practical experience they should receive theoretical training also.

(ix) **X-ray Technicians or (Radiography).**—According to the present practice intermediate in Science are recruited and trained for one year for the position of X-ray Technicians. It will be better to designate this vocation as radiography and have a full 2-year programme of training leading to a diploma in that branch. Theoretical subjects of study should include physics, anatomy and physiology. They should also study equipment for diagnostic radiography, radiographic photograph and radiographic technique. In the second year, provision should be made for enabling the trainees to study special branches such as radiotherapy and physiotherapy.

(x) **Dental Hygienist.**—Dental Hygienist may work under hospitals or in general practice under the direction of a qualified Dental Surgeon. They clean, scale and polish teeth, apply solution to prevent decay and advise on oral hygiene. They should be trained in the practical and theoretical aspects of their work for one year and may be awarded certificate on successful completion of training.

(xi) **Dental technicians.**—Dental technicians are required for making Dental appliances. Although there is arrangement for training dental surgeons in only Dental College in the State, there is no arrangement for training Dental Technicians. There is need for training of dental technicians. This training will be mainly on the job with such theoretical training as are relevant to their training.

(xii) **Physiotherapy.**—Physiotherapy includes remedial exercises, massage, hydrotherapy and electrotherapy used for restoring muscles to their normal strength, helping joints to move freely, for teaching a patient who has lost his leg how to walk or help a person precisely paralysed to use remaining portion of his body to keep himself as active and independent as possible. The course in physiotherapy should be of 3 years' duration leading to a diploma. The qualification for admission to this course should be a pass in secondary school examination with Mathematics and Science. There is scope for employment including self-employment for *Physiotherapists*.

(xiii) **Dietitians**—Dietiticians are required in hospitals, catering institutions (hostels, restaurants, canteens etc.). They are also required as teacher in Domestic Science and in courses leading to qualifications in hotel caterings. The requirements of dietitians may not be large in the beginning but, with the development of catering services, hostels, restaurants and canteens there will be an increasing demands in future.

A dieticians course may be introduced, preferably, in one of the institutes which will conduct other para-medical course. This course should be opened at Patna and should be of 3 years duration leading to a diploma. In the beginning not more than 16 students should be admitted to this course. The minimum qualification for admission should be a pass certificate in secondary school examination with science including study of chemistry.

(xiv) Inservice training—In order to keep persons trained in various health and medical vocations abreast of developments in problems relating to health and medicine, there should be provision for inservice training particularly of the pharmacists and basic health worker and pharmacists should undergo inservice training for a period of three months on completion of every five years of service.

Government of India have appointed a committee to consider various aspects of medical education below the degree level. The report of this committee is expected before the middle of this year. Recommendations made in this section may have to be re-examined in the light of the recommendations of that committee.

#### SECTION V.

4. 66. Miscellaneous vocations—Miscellaneous crafts of vocations in which there is a scope for employment in the State are (i) Studio and Photographic services ; (ii) training in hotel management and catering ; (iii) home science ; (iv) advertising and (v) Library Assistant.

(i) Studio and Photographic services—Photography offers career in various branches either on a technical level or as professional photographer running their own studios or working in industrial concerns, hospitals or research laboratories. Duration of training should be two years and the minimum qualifications should be a pass in secondary school examination with science. This course may be introduced in two year higher secondary course (class XI and XII) in the schools located in important towns.

(ii) Hotel management and catering—With development of tourism, hotels are coming up in bigger towns of the State. Restaurants are being set up in increasing numbers. Hotel management and catering include a variety of jobs, including reception and book keeping, hotel management and crockery, restaurant and counter service and house keeping. Courses in hotel management and catering have to be conducted with close and active participation of the hotels. One institution each may be set up at Patna and Ranchi with the active participation of the hotels. Minimum qualifications for courses in hotel management, hotel reception and book-keeping should be a pass in secondary school examination. Candidates with good health and good oral expressions in Hindi and English should be admitted to this course which should be of one year's duration leading to a certificate. The minimum qualification required for other courses should be a study up to class VIII. Every course may be of one year's duration followed by apprenticeship training on the job for at least one year.

(iii) Domestic Science or home economics—Domestic science or home economics is a popular vocation for girls. A lady with training in domestic science or home economics can look after her own home than one who has not undergone such training. Home science is included as an optional subject of study in secondary course as well as in the course for University degrees, but, in the absence of institution imparting training in this subject, teachers qualified in home science are not available in adequate numbers. There is need for whole-time course of the domestic science both as a post-secondary course as well as an undergraduate course. There should be a two year course in home

science leading to a diploma. Those with diploma in home science may find employment in creches, hotels (house-keeping) or work as demonstration assistants in schools or colleges conducting course in domestic science. For teaching in schools and colleges, a degree or a post-graduate degree in domestic science respectively will be required. This will be discussed when higher education is considered.

(iv) Advertising.—With the growth of secondary and tertiary sectors, advertising as a profession will gain increasing importance. The job of advertiser including designing and execution of possible materials, brochures, catalogues and other media of publicity and sales promotion. The minimum duration of this course should be two years leading to a diploma and the qualification for admission should be a pass in secondary school education. The course can be introduced in Patna College of Art which conducts courses in commercial art.

(v) Library assistants—Library assistants will be required in increasing numbers in schools and colleges and public libraries. They will work as library assistants in big libraries. Small libraries which cannot afford to have fully qualified librarians can be managed by library assistants. Duration of training for the library assistants should be two years leading to diploma. Minimum qualification for admission should be a pass in secondary school education.

## SECTION VI

### ENGINEERING EDUCATION AND TRAINING AT THE DIPLOMA LEVEL ;

4. 67. Technical and Engineering education and training at the diploma level are imparted in 15 institutions in the State ; 3 of them impart education and training in mining technology and 12 impart training in civil mechanical, electrical and miscellaneous branches. The total numbers of admissions in different branches in these institutes in 1972-73 and 1973-74 are given below :—

	Year 1972-73.	Year 1973-74.
Civil .. .. .	430	540
Mechanical .. .. .	220	275
Electrical .. .. .	180	240
Mining .. .. .	100	120
Textile .. .. .	30	30
Ceramics .. .. .	30	30
Chemical .. .. .	15	15
Metallurgical .. .. .	15	15

The following new diploma courses are being introduced and admissions to these courses will be made in 1974-75 or 1975-76:—

	Numbers of students to be admitted.
Electronics .. .. .	30
Leather Technology .. .. .	30
Food Technology and catering .. .. .	30
Agricultural Engineering .. .. .	30

4.68. Below are given the numbers of Diploma holders borne on the live registers of Employment Exchanges as on 31st March, 1973:—

Civil	..	..	..	..	..	3,169
Mechanical	..	..	..	..	..	3,692
Electrical	..	..	..	..	..	1,765
Chemical	..	..	..	..	..	4
Metallurgical	..	..	..	..	..	13
Mining	..	..	..	..	..	77
Others	..	..	..	..	..	184
Total	..	..	..	..	..	8,904

4.69. From the figures borne on the live registers of Employment Exchanges as on 31st March, 1973, it will appear that quite a large number of Civil, Mechanical and Electrical Diploma holders are waiting for jobs. However, the numbers of Diploma holders in Chemical, metallurgical and Mining Engineering waiting for jobs are comparatively small.

4.70. As has been mentioned earlier, there will be considerable development in the mining sector of the State during the Fifth and the subsequent Plans. Developments in mining sector will offer scope for employment not only of Diploma holders in Mining Engineering, but also of Mechanical, Electrical and a few Civil Engineering Diploma holders. Modern mining operations involve considerable use of mechanical and electrical equipment and mechanical and electrical technicians are required for their installations and maintenance. There are, at present, three Mining Institutes two ) at Dhanbad (Dhanbad district) and Koderma (Hazaribagh district) with full time 3-year diploma course and one at Bhaga (Dhanbad district) with 4 Year part-time course leading to a diploma in mining and mining surveying. The part-time diploma course in mining engineering in Bhaga Institute is meant for those who are already working in the mines as regular employees or apprentices in mines. The Diploma course in Mining and Mine surveying is a sandwich course in which the students receive theoretical training at the Institute for a period of 30 weeks followed by practical training for a period of 13 weeks each year. The remaining period of the year is utilised for examinations, vocations etc.

4.71. The Mining Institutes of Dhanbad and Bhaga which are situated in the metallurgical coal-mining area are very suitably located for sandwich courses. Koderma is situated in mica-mining area, the mines of which are not mechanised and in which there is not much scope for development in the near future. The two other important coal-mining areas in Bihar which mines have been developed and will be further developed during the Fifth and subsequent plans are Bermo-Bokaro area in Giridih District and Karanpura area in Hazaribag District. It will be desirable to locate one polytechnic conducting a sandwich course not only in mining and mine surveying but also in mechanical and electrical engineering on sandwich basis in Bermo-Bokaro area or Karanpura area. Location of a polytechnic institute in one of these two areas will be suitable not only from the point of view of practical training of the students of the sandwich course but will also familiarise them with the working conditions in mines in which most of the products of this institute find scope for employment.

4.72. Civil Engineering Diploma holders are mostly employed in the P. W.D. and Irrigation Departments of the State Government. Electrical Engineering

Diploma holders are employed in large numbers in the State Electricity Board and large and medium industries. Mechanical Engineering Diploma holders are employed mostly in major industries like steel plants and machinery manufacturing plants as well as in medium industries. Increase of the sizeable numbers of unemployed diploma holders in these branches, there is no scope for immediate expansion of polytechnics conducting courses in these branches. There is, however, need for diversification of some courses. This will be discussed later in this section.

4.73. Diploma holders in different branches of Engineering are called upon the provided skill required by a group known as technicians and junior level Supervisory personnel, technicians and junior level supervisory personnel. The functions of technicians and junior level supervisory personnel, as defined by the Engineering Societies of Western Europe and the United States and as quoted in the report of Education Commission (1964-66), are reproduced below:—

“An engineering technician is one who can apply in a responsible manner proven techniques which are commonly understood by those who are experts in a branch of engineering or those techniques specially prescribed by professional engineers.

Under general professional engineering direction, or following established engineering technique, he is capable of carrying duties which may be found among the list of examples set below:—

In carrying out many of his duties, competent supervision of the work of skilled craftsmen will be necessary. The techniques employed demand acquired experience and knowledge of a particular branch of engineering combined with the ability of work out the details of a task in the light of well-established practice.

An engineering technician requires education and training sufficient to enable him to understand the reasons for and purposes of the operation for which he is responsible.

The following duties are typical of those carried by engineering technicians:—

Working on design and development of engineering plant and structure, erecting, drawing, estimating, inspecting and testing engineering construction and equipment; use of surveying instruments; operating, maintaining, repairing engineering services and locating defects therein; activities connected with research, development, testing of materials and components, soil engineering; servicing equipment and advising consumers.”

4.74. From the functions described above, it will appear that the technician or a diploma holder in engineering performs primarily two functions (i) that of a technician working on design and development of engineering plant and structure; erecting, drawing, estimating, inspecting and testing engineering construction and equipment, servicing equipment and advising consumers; (ii) and the other as a junior supervisory person supervising the work of skilled workmen. In both capacities, he has to acquire sufficient practical knowledge to be able to work on design and development of engineering plant and structure etc. and directing and guiding skilled workers to perform their functions. Unless a technician has sufficient practical experience, he will not be able to guide and direct the skilled workmen working under and with him.

4.75. Excepting in sandwich courses in mining and surveying, practical training in industry, design, development of engineering plant and structure, erection etc., is not compulsory in the diploma level course of various branches of engineering.

4.76. Although workshop practice is included in the engineering course, training in workshop practices in diploma level courses in the engineering polytechnic is either inadequate or not sufficiently production oriented. Some of the engineering polytechnics do not have adequate equipment and even those who have adequate equipment do not have experienced personnel to train the students in workshop practices. In absence of proper equipment, well qualified and experienced instructors, proper physical facilities and, because of lack of motivation, training imparted in workshop practice and drawing office is not systematic and up to the mark in spite of the fact that the existing curricula of Diploma education in Engineering require a fairly good deal of time to be devoted to workshop practice and drawing work.

4.77. Some big industrial establishments have their own training programmes for training diploma holders as junior supervisor in charge of a team of skilled workers or as technicians working on design and development of an engineering plant or structure, erection, drawing etc. but most of the industries have no such training programmes. India has been developing its own planning, development and design organisations in various fields including those for planning and development of coal mining, planning of steel plants and their erection, planning and designing machineries in machinery building plants planning, development and erection of refineries and fertilizer factories. The organisations for planning and development of coal mining, steel plants, fertilizer factories and designing of heavy machineries are located in Bihar. Some of diploma holders who have obtained theoretical knowledge as well as practical experience can be usefully employed in such organisations.

4.78. Sufficient practical training is of very great importance for students taking up Diploma level course in engineering, because of the nature of the work of the technicians or junior supervisory personnel which they have to take up on completion of their education. There is, however, no arrangement for systematic practical training of the students, excepting whatever training can be given in the workshop and the drawing office of the institution themselves and, as already mentioned, the facilities for imparting training at the institution themselves are inadequate. Many of the poly-technics are not situated near industrial establishments and sandwich courses cannot, therefore, be conducted in them. There are practical difficulties including want of sufficient co-operation from industries in introducing sandwich courses or arranging for practical training of the students of the polytechnics which are situated near the industries. Provision has now been made under the Apprenticeship Act, 1961 for training of the students of Diploma and Degree courses. It should, therefore, now be possible to make arrangements for practical training of the students of Diploma course of Engineering in industries and electrical establishments under the provisions of the Apprenticeship Act, 1961.

4.79. We recommend that practical training in the relevant branch of engineering should be made compulsory before a Diploma is awarded. It should be possible for the State Government to secure the co-operation of the industries and other concerns in making arrangements for practical training, by utilising, if necessary, the provisions of the Apprenticeship Act, 1961 for this purpose. Even where it is not possible for making arrangements for practical training of all the students, arrangements may be made to take them under the guidance of the teachers to selected industries for observational studies for a period extending from 15 days to 30 days. Observational studies should include talks on practical problems by personnel working in industries.

4.80. It has already been observed that there is dearth of experienced and qualified instructors for imparting training in workshop practice and drawing work. It is essential that every polytechnic should have adequate number of competent personnel skilled in workshop practice and drawing work. The existing pay-scales of the staff of the workshop and drawing office in the polytechnics are not sufficiently attractive to persons experienced in industries. In view of the importance of practical training including workshop practice and drawing pay-scales should be revised, wherever necessary, in order to attract persons with experience in industries.

4.81. As already mentioned the two mining institutes at Dhanbad and Koderma conduct course on sandwich basis. We have already recommended that the polytechnic to be set up in one of the two mining areas of Bermo-Bokaro and Karanpura should conduct course in mining, mechanical and electrical engineering on sandwich basis. It should be possible to run Diploma courses in mechanical and electrical engineering in polytechnics of Dhanbad and Ranchi on sandwich basis in collaboration with B.C.C.L. Ltd. and Bokaro Steel Plant in respect of the former institute and Heavy Engineering Corporation and other industries located in Ranchi in respect of the polytechnics at Ranchi. It should also be possible to conduct sandwich course in Barauni complex or in collaboration with Barauni Fertiliser Factory, Indian Oil Refinery and Barauni Thermal Power Plant. The Committee recommends that vigorous efforts should be made to conduct sandwich courses in all these places.

4.82. In order to enable the students to gain sufficient experience in workshop practice, efforts should be made to utilise fully the production capacity of the workshops attached to polytechnics. The workshops should receive orders from the Government departments for manufacture of the articles which can be conveniently manufactured by them and the concerned department of Government should be asked to place orders on the basis of the capacity of the workshops. The least that can be done is to enable the Polytechnics to manufacture all the articles which they themselves require for various purposes.

4.83. Practical training should include not only experience of operation and maintenance of the equipment but also planning design, drawing erection, etc. It may be advisable to arrange for practical training of at least some students by taking them to planning, design and development organisations like Metallurgical and Engineering Consultants Ltd. Planning and Development Division for Coal Mines, and Design organisation of Heavy Engineering Corporation, all of which are located in the State (Ranchi). Engineers and Diploma-holders working in these organisations should be requested to talk to the students of the polytechnics on various aspects of planning, development, design, erection etc.

4.84. The teachers of the theoretical papers of Polytechnics are Engineering Graduates without any industrial experience. As already mentioned even the staff working in the workshops of these Polytechnics do not have sufficient practical experience of industries. Arrangements should be made for giving practical experience to the teachers of the Engineering Colleges by deputing them to industries and to organisations concerned with planning, development, design, erection etc.

The Committee on re-organisation and development of Polytechnics Education in India (1971) and the All India Council of Technical Education recommended that first class Diploma holders with the Diploma Teachers Training Institute should be appointed as lecturers (last category of teaching staff) in Polytechnics. The Committee recommends that this should be accepted

by the State Government and first class Diploma holders with Diploma of Teachers Training Institute and preferably with 3-4 years of practical experience should be appointed as lecturers in polytechnics.

4.85. Students of Diploma course in Civil Engineering are mostly employed by P.W.D. and Irrigation Departments and only a few are employed elsewhere. Ordinarily, there should be no difficulty in arranging their practical training on construction of roads, buildings, bridges, embankments, canals etc. Even where contractors are employed, it may be stipulated in the agreement with them that they will arrange for practical training of a specified number of student trainees. This is mainly a question of co-ordination between the Department of Industries and Technical Education and the Works Departments. It should be possible to effect this co-ordination by the State Council of Vocational and Technical Education which we are proposing in this chapter.

4.86. Engineering polytechnics may be entrusted with the task of repairs of buildings and electric installations of their own buildings and even with the construction of buildings of simple nature. The teachers of engineering polytechnics should be able to take up such repairs and construction of simple buildings and electric installation with the help of the students.

4.87. The course of Agricultural Engineering should be conducted in polytechnics which are situated near Agricultural Polytechnics. Agricultural Engineering Diploma holders should be familiar with the engineering aspect of the equipment used in agricultural but also with agricultural technology. In fact, it will be worthwhile for the students of Diploma Engineering course in Agricultural Engineering to study problems relating to agriculture in an agricultural Polytechnic for about six months.

4.88. The special Committee on Reorganisation and Development of Polytechnic Education in India (1970—71) suggested introduction of diversified courses wherever need for such diversified course is established. The committee suggests that the need for the following diversified courses in the State may be examined.

#### **A. Civil Engineering—**

(1) Public Health Engineering—There may be need for this in Public Health Engineering Department and Local Bodies:

(2) Construction Technology—There may be need for this by the contractors:

(3) Estimating, detailing, drafting and Architectural Assistants—There may be need for these in Planning, Design and Architectural Organisations.

#### **B. Mechanical Engineering—**

- (i) Foundry technology;
- (ii) Design and drafting
- (iii) Automobile Engineering;
- (iv) Refrigeration and Air-conditioning; and
- (v) Farm machinery.



## 0. Electrical Engineering and Miscellaneous groups—

- (i) Manufacture of electrical machinery and components;
- (ii) Industrial electronics;
- (iii) Communication engineering;
- (iv) Ceramics and
- (v) Plastic technology.

There is need for specialisation in the various branches of civil engineering, automobile engineering, refrigeration and air conditioning, and farm machinery in the mechanical engineering group and manufacture of electrical machinery and components, communication engineering and plastic technology under electrical engineering and miscellaneous groups through out the State. There is need for specialisation in the foundry technology and design and drafting in the mechanical engineering group and industrial electronics and ceramics under the electrical engineering and miscellaneous groups in the mining and industrial belts of the State. A quick survey may be conducted and on the basis of established needs in these areas, some of these diversified courses may be introduced in some of polytechnics of the State. Training in specialisation should be given for a period of six months to one year on completion of the three year Diploma courses in the relevant branch so that the quality of the broad based programme of three year Diploma education is not adversely affected. Training in specialised branch should supplement rather than supplant the broad based three year Diploma course in the main branches of engineering.

4.89. As already mentioned, Bihar has large mining sector producing about 39 per cent of the mineral products of the country. It has also been mentioned that coal mines in the State will be developed on a big scale and there will be need for Managers, Engineers, Technicians and skilled workmen for mining operations and maintenance.

4.90. Indian School of Mines located at Dhanbad in which undergraduate and postgraduate courses in mining engineering and allied subjects are conducted is an All India institution in which admissions are made from all over India on merit. The students from Bihar competing for this course can be expected only to get a proportionate share of admission into these courses. Many States in which mining sectors are much smaller than in Bihar have introduced in their engineering colleges mining engineering courses leading to a degree.

4.91. In view of the importance of the mining sector in Bihar and employment potential, it is essential that undergraduate courses leading to a degree in mining engineering are introduced without delay in one of the Engineering colleges of the State. Bihar Institute of Technology, Sindri is situated in coal mining area and is most suitable for introduction of courses in mining engineering. The Committee recommends that undergraduate courses in mining engineering leading to degree with 30 admissions each year should be introduced in Bihar Institute of Technology, Sindri, from the academic session of 1975-76.

4.92. Vocational education—Scope for further study. There is tendency to regard vocational education as inferior not only to Engineering and professional education but to general education in Arts, Science and Commerce. Consequently only those students take up vocational education who have either no means to pursue higher education or who are unable to get admission in preparatory courses leading to technical and professional diplomas and degrees or other courses leading to degrees. One of the major reasons why vocational education is given inferior status is the fact that the vocational education becomes a blind alley

from a person, after once he has entered into, cannot come out and advance in life even if he does very well in his vocation.

4.93. It should be possible for a capable man who do well in this vocation to obtain higher technical and vocational qualification. In this connection a statement of the 'UNESCO' general conference is quoted below:—

"Technical and vocational education should be so organised that every person can continue his education until his potentialities have been developed to the full. Transfer from one field of technical and vocational education to others should be possible and access to all levels of both technical and vocational education and general education should be open to any capable person."

All India Council of Technical Education has also recommended flexibility in the various courses of technical education, so that there is provision for transfer from one course to another.

4.94. There should be provision for technical personnel working in industries and other establishments to qualify for higher awards in technical education through part-time courses. A certificate holder working in an industry should be able to qualify, through part-time course, for Diploma in the relevant branch of engineering. Such facilities exist, on a very limited scale, for certificate holders there is however, no such facility for Diploma holders to qualify for Degrees. There is real need for expanding facilities for Certificate holders ; working in industries who want to qualify for Diplomas and creating facilities for the Diploma holders working in industries to qualify for Degrees. In the Technical Institute run by Messrs Tata Iron and Steel Co.Ltd. such facilities exist for the training of the employees working in the Steel plant. Heavy Engineering Corporation Ltd. at Ranchi and Bokaro Steel Plant have their own technical institutes. Such facilities can be created at Ranchi and Bokaro in collaboration with Heavy Engineering Corporation and Bokaro Steel Limited respectively. Similar facilities should be provided in Barauni area and in the polytechnics in the coal field area. Facilities for Diploma holders to qualify for Degree through part-time courses should be provided in collaboration with B.I.T. Mesra, Ranchi, Regional Institute of Technology, Jamshedpur and Bihar Institute of Technology, Sindri and Bihar College of Engineering, Patna.

4.95. Admission to Medical College to be regulated in accordance with the regulations prescribed by the Indian Medical Council, it may, however, be examined whether persons who have received 2 or 3 years theoretical and practical training as basic health worker/health visitor may, after practical experience in the field, may be allowed to compete for admission to the medical colleges. This matter may be examined by Health Department who may, if they agree with the proposal, take it up with the Indian Medical Council.

4.96. Linking employment with vocational education qualification—Since the products of the vocational institutions will be educated and trained to meet the specific requirements or personnel of various categories, the certificates of diploma to be awarded by vocational institutions should be linked with the relevant employment positions, and only those who possess these qualifications should be allowed to compete for various jobs. For example, accountants, book-keepers, typists, general clerks, basic health workers, pharmacists etc. are to be recruited at the Government or semi-government bodies, only those who possess certificates or diplomas awarded by the vocational institutions in the respective trades and skill should be asked to apply for those positions. This will prevent recruitment of persons who do not possess skills of the jobs for which they are recruited and at the same time will also prove to be deterrent to unrestricted rush to colleges for degrees. Rules of employment should be amended wherever necessary.

4.97. In admission to the vocational courses also only who possess the minimum qualification for admission should be admitted. Since the vocational courses in the higher secondary classes (XI and XIII) are meant for secondary school examination certificate holders only, only should they be admitted to these courses. In no case, undergraduates or degree holders should be admitted to these courses. In vocational courses meant for school dropouts, those who fail to complete secondary school course or those who have completed secondary school course will be admitted. In these courses also undergraduates or degree holders should not be admitted.

4.98. For other groups of vocations. Those who are employed in other vocations after obtaining certificates or diplomas relevant to those vocations may, if they so desire, improve their qualifications by undergoing correspondence course or attending classes in some of the selected colleges. This will be discussed when the problems relating to higher education are discussed.

### **Vocational Guidance and counselling.**

4.99. The main object of vocational guidance and counselling is to help the students to understand their own abilities and limitations, to give them information about educational and vocational opportunities available and to help them in making realistic choices for further study or/ and vocations based on all relevant considerations.

4.100. In pursuance of the recommendations of the secondary Education Commission, School counsellors were appointed in some of the schools in the State to help the students in making their choices for further education or/ and vocations. This scheme did not, however, prove to be successful and has been wound up and the school counsellors have now been absorbed as regular teachers in the schools. One of the main \* \* \* \* \* reasons, why this scheme did not succeed was that diversification of courses of studies in schools including those for vocational education was introduced in class VIII and a student of about 13 years of age was asked to make his choice of subjects of study and vocation which he would take up on completion of his school education. This was too early an age for the student to make his choice. Many parents and guardians of the students themselves were not educated and were therefore, not in a position to assist or appreciate the abilities of their children or the advice of the counsellors. The 'prestige' enjoyed by academic courses compared with vocational courses was also responsible for the failure of the scheme.

4.101. Some staff have been appointed in some of the Employment Exchanges for vocational guidance but they too have not been effective. Bureaus of educational and vocational guidance are attached to some of the Universities but they also have not proved to be useful.

4.102. It has already been mentioned that one of the reasons for urge for higher education of academic nature is the desire of the parents of the students, specially, of the rural community and the first generation learners is to seek entry into the elite class through whitecollar jobs or/ and professional jobs or engineers, doctors etc. Also academic certificates and degrees are obtained not because they necessarily lead to employment but also because they are symbols of social status. In these circumstances, there are difficulties in purposeful and effective vocational guidance and counselling at the secondary school stage.

4.103. In view of the fact that we have recommended that there should be a 10-year general secondary education without diversification of courses, it is not necessary for the students of the secondary classes to make their choice of occupations in the early stage at school stage. This should not imply that there should be no guidance and counselling at the secondary school stage. It is, however, not necessary to have an organisation for vocational guidance and counselling at the school stage. The teachers of the schools, if properly trained, can prove to be the best guides and counsellors. It will, therefore, be desirable to train the Headmasters and one or two teachers in each school in vocational guidance and counselling to help the students to understand their own abilities in relation to further education including vocational education and training and with information regarding educational and vocational opportunities. State Institute of Education should arrange, in collaboration with the State Council of Vocational Educational and Directorate of Employment and Training, Department of Labour and Employment, training of the teachers of the secondary schools in vocational guidance and counselling. Each training colleges should have at least one teacher trained in vocational guidance and counselling. The B. Ed. course of the secondary teachers' training colleges should also include elements of vocational guidance and student counselling.

4.104. There should, however, be organisations of the State level to effectively guide and counsel students completing secondary school education to make their choices regarding further study or/ and vocations. The State Council should have a Vocational Guidance Officer assisted by an Assistant Vocational Guidance Officer ; in addition there should be a Technical Assistant for each major group of vocation. They should have full information regarding vocational education, prepare literature on opportunities available for vocational education and prospects of those who take up different groups of vocational education and make them available to the Employment Exchanges and secondary schools of the State. They should provide guidance to the teachers and students of the secondary schools who want their guidance regarding choice for further study and vocation.

4.105. The Directorate of Employment and Training under the Department of Labour and Employment should have a vocational guidance centre with a Deputy Director of Vocational Guidance assisted by Assistant Directors of Vocational Guidance in charge of (a) test construction, (b) occupational information, and (c) guidance clinic. The Deputy Director himself should be in charge of Training and Research and assisted by an Assistant Director. This organisation should collect information regarding occupations available in various economic and social activities in the States and job requirements of those occupations. It should, in consultation with the employers, conduct tests to find out the aptitude of the students for further education and vocations. The guidance clinic should provide guidance to students and other who may require help about vocational guidance. This organisation will also make arrangements for training of staff of the Employment Exchanges and teachers of the schools in student counselling and vocational guidance. The training programmes for teachers should be conducted in the training colleges in collaboration with the State Institute of Education and State Council of Vocational Education. If subsequently vocational guidance and counselling provided by this organisation become useful and popular, it may be necessary to appoint an Assistant Vocational Guidance Officer in each of the bigger Employment Exchanges and a Technical Assistant in each of the smaller Employment Exchanges.

State Council for Vocational and Technical Education—

4.106. It will be necessary to set up an organisation to co-ordinate activities relating to vocational institutions under different departments of the Government. This organisation may prescribe syllabuses and courses of studies, conduct examinations, and award diplomas and certificates. This may also prescribe conditions for recognition of the institutions for imparting vocational education and recognise them on the basis of these prescribed conditions.

4.107. This organisation may also be entrusted with the task of assessment of man-power requirements for different vocations and advise the State Government on planning institutions and courses of studies for these vocations on the basis of man-power assessment.

4.108. This organisation should have statutory powers. It may be called 'Bihar State Council of Vocational Technical Education'. The Council may consist of a whole-time Chairman and the following as *Ex-Officio* Members :—

- (1) Members representing the following Departments of Government—
  - (a) Education.
  - (b) Health.
  - (c) Labour and Employment.
  - (d) Industries and Technical Education.
  - (e) Agriculture, Animal Husbandry and Co-operation and Fisheries.
  - (f) Finance.
  - (g) Public Works.
  - (h) Irrigation and Power.
  - (i) Personnel.
- (2) One representative of the Labour and Employment, Government of India.
- (3) A representative of the National Council of Educational Research and Training, Government of India.
- (4) One representative of Bihar Industries Association.
- (5) One representative of Bihar Chamber of Commerce.
- (6) Three representatives of Public Sector Undertakings (including Mines sector) in Bihar.
- (7) Two representatives of Industries and Commerce other than Public Sector Undertaking.
- (8) Two representatives representing Agriculture and allied activities.
- (9) Two representatives representing Health and Medical Vocations.
- (10) Two representatives of Railways and other transport undertakings.
- (11) Two representatives of Banks and Insurance organisations.
- (12) Two representatives of the Trade Unions.
- (13) Seven representatives of the Institutions under Bihar State Council of Vocational Education.
- (14) Three experts on Vocational Education.

4.109. The Council will meet at least once in three months. It may invite experts on different vocations to participate in discussions without right of votes.

4.110. The Chairman and the members of the Board other than the *Ex-Officio* members may be appointed for a period of three years. They may be re-appointed for a further period of three years.

4.111. The Council may have the following sub-committees consisting of Chairman and not more than seven members :—

- (a) Executive Committee to deal with policy matters, administration and personnel.
- (b) Academic Committee to deal with recognition of the institution, courses of studies, examinations and evaluations and award of degrees and diplomas. This Committee may appoint different sub-committees to deal with different groups of vocations.
- (c) Finance Committee to deal with budget, income and expenditure.
- (d) Planning Committee to deal with assessment of man-power, planning of institutions and their locations.

- (e) Committee for arranging practical training—if necessary, the Council may constitute a separate sub-committee for each group of vocations for arranging practical training for the students and trainees of vocational institutions.

Experts on different vocations may be invited to participate in the meetings of committees without right of votes. Experts, representatives of employers and labour may be nominated on the sub-committees appointed by academic committees and the committee for arranging practical training.

4.112. The Council will have the following officers :

- (1) The Chairman.
- (2) Secretary / Registrar.
- (3) Finance Officer.
- (4) Academic-cum-Training Officer for each of the following groups of trades:—
  - (a) Agriculture and allied activities including Animal Husbandry, Forestry and Fisheries.
  - (b) Mining, manufacturing and small enterprises including construction and electricity.
  - (c) Commerce, Transport and communication including Railways, Banking and Insurance, Road and Transport Projects, other services including Public Services and Administration.
  - (d) Public Health and Medical Services.
  - (e) Elementary teacher education.

4.113. *Chairman*.—Chairman will be appointed by the Government and will be a whole-time officer. He will be paid such salary and allowances as the State Government may determine from time to time. His appointment will be for three years but, on expiry of his first term he may be re-appointed for a further period of three years.

He will be the Principal Officer of the Council. He will preside over all the meetings of the Council and those of the Committee. In his absence the representative of the Education Department, who will not be below the rank of Director of Education will preside in the meeting of the Council. In the absence of the Chairman from any meeting of a Committee, the committee will elect its Chairman for the meeting. Chairman of the Council will nominate Chairman of Sub-committees.

4.114. The Chairman will have full powers to ensure that functions of the Council are carried in accordance with the provisions of the law, rules and regulations. For this purpose, the Council will delegate such powers as may be necessary to enable him to function effectively as the Principal Officer of the Council. The Chairman shall be authorised to delegate to the Secretary/Registrar, Finance Officer or any officer of the Council such of the powers delegated to him as may be necessary for convenient transaction of the business of the Council. He shall also have the authority to withdraw powers delegated to them.

4.115. The Council shall also delegate such powers as may be necessary for convenient transactions of the business to each of the committees.

4.116. *Secretary/Registrar*.—The Secretary/Registrar will be the whole-time officer. He will be assisted by such members of Joint/Deputy/Assistant Secretaries/Registrars as may be considered necessary by the Council. Secretary/Registrar will be Secretary to the Executive Committee of the Council. He or a Joint/Deputy/Assistant Secretary/Registrar or the Academic-cum-Training Officer, nominated by the Chairman, may be the Secretary to the Academic Committee, Planning Committee and the Committee constituted for making arrangements for practical training of the students and trainees of the vocational institutions and to the sub-committees constituted by these committees.

4.117. Subject to overall control and supervision of the Chairman, the Secretary/Registrar will be in charge of the office of the Council.

4.118. *Finance Officer*.—The Finance Officer shall be a whole-time officer and will act as Secretary to the Finance Committee. He will be in charge of all financial matters including accounts and budgets.

4.119. *Academic-cum-Training Officers*.—Academic-cum-Training Officers will be in charge of the academic work including syllabuses and courses of students, standard of education, examination and evaluation and practical training of students trainees.

4.120. The Council may have the following functions and powers:—

- (a) To conduct surveys and to assess man-power requirements for different vocations in the different regions of the State; advise the State Government on all matters relating to vocational education including the types of vocational institutions, the number of institutions of each type and their location and enrolments in them;
- (b) to secure adequate provision for fulltime and part-time vocational education on the basis of man-power assessment;
- (c) to determine the structure of vocational education in the State;
- (d) to prescribe and maintain the standards of vocational education in the State;
- (e) to provide guidance and counselling in vocational education.
- (f) to lay down standards regarding numbers and qualifications of teachers buildings (including hostel accommodation), equipment, library, laboratory, play-ground and furniture, and other requirements of the vocational institutions;
- (g) to recognise vocational institutions on the basis of prescribed standards and to derecognise institutions for good and sufficient reasons;
- (h) to prescribe the curricula and syllabuses of vocational education;
- (i) to advise the State Government and the vocational institutions on development and introduction of new courses.
- (j) to prescribe and recommend text-books for vocational education;
- (k) to prescribe the minimum qualifications for admission of students in vocational education;
- (l) to inspect or to get inspections made of their vocational institutions;
- (m) to prescribe fees for students in vocational institutions and demand and receive fees from these institutions;
- (n) to receive grant from the State Government or any other source;
- (o) to prescribe stipends and scholarships and conditions for their grant;
- (p) to grant stipends and scholarships;
- (q) to hold examinations and conduct evaluations;
- (r) to award diplomas and certificates;
- (s) to arrange for practical training of the teachers and students and for this purpose require the departments of Government, Government offices, agriculturists and agricultural farms, dairy farms, industrial and commercial establishments, transport undertakings and hospitals to receive and impart practical training to the students and trainees of vocational institutions;
- (t) to prescribe, with the approval of the State Government, conditions of service including pay-scales of the employees of the Council;
- (u) to determine, with the approval of the State Government, the number and categories of the staff of the Council;
- (v) to appoint staff including Secretary and the Finance Officer;
- (w) to prescribe registers and forms to be maintained by the recognised institutions;
- (x) to ask for and receive information and data from the recognised institutions, from other educational institutions, from the departments of Government and their establishments; Transport undertakings, hospitals and individuals;

- (y) to receive and consider annual report on the working of the recognised institutions;
- (z) to frame rules and regulations, with the approval of the State Government, for proper discharge of the functions of the Council; and
- (aa) to discharge such functions as may be entrusted to it by the Government from time to time.

4.121. The State Government will make suitable annual grant to enable to perform its functions on the basis of annual budget prescribed by the Council.

4.122. Vocational institutions under different departments of the State Government will continue to be maintained by these departments, but each vocational institution will have a Governing body in which, besides the representatives of the concerned departments and experts and representatives of the vocations concerned and of local administration, the representatives of the Council, the head of the institution and teachers' representative should be represented. The Governing body shall consider the budget, programmes of development, matters relating to disciplinary arrangements for practical training and such other matters as may be conveniently disposed of by it. The Council will, however, have full control over academic matters including courses of studies, examinations and evaluations, award of degrees and diplomas, enrolments of the students and qualifications of the teachers of institutions.

4.123. Practical training of the students of the vocational institutions excepting those relating to health and medical services can be arranged under the provisions of the Apprenticeship Act, 1961. Most of the vocations other than those relating to health and medical services are covered by the term "designated trades" in Apprenticeship Act, 1961 in respect of which training is arranged by the Apprenticeship Adviser, appointed by the State Government.

4.124. Under the provisions of the Apprenticeship Act, 1961, there is provision for constitution of a State Council consisting of the representatives of the employers, representatives of the Central Government and representatives of the State Government and persons having specialised knowledge and experience of matters relating to industry and labour. The Council of Vocational Education represents all these elements and may be notified as State Apprenticeship Council under the provisions of the Apprenticeship Act, 1961. This will facilitate arrangements for practical training.

4.125. As already mentioned, the State Government have to appoint an Apprenticeship Adviser who has statutory powers in respect of arrangements for training under this Act. Director of Employment and Training under the Labour Department is designated as State Apprenticeship Adviser. He may be nominated as the representative of the Labour Department on the Council of Vocational Education and work as the convener of the committee of the Council to look after the arrangements of practical training of the students of vocational institutions.

4.126. The cost involved in setting up the State Council of Vocational Education has been estimated at Rs. 5.25 lakhs, inclusive of all expenditure. In addition a non-recurring expenditure of Rs. 1 lakh will be required. Details of the cost may be seen in Annexure V.

4.127. There is at present a Board of Technical Education functioning under the Industries Department to look after technical education at the Diploma level. As already mentioned, the Directorate of Employment and Training under the Labour Department looks after vocational education at the Certificate level. With the establishment of the State Council of Vocational Education, there will be no



need for the Board of Technical Education and some of the staff of the Board may be absorbed in the State Council of Vocational Education. Some of the staff of the Directorate of Employment and Training may also be deputed to work in the State Council of Vocational Education. If the saving effected by the abolition of the State Board of Technical Education and deputation of some of the officers of the Directorate of Training and Employment to the State Council of Vocational Education is taken into consideration, the net expenditure on the State Council of Vocational Education will be much less than Rs. 5.25 lakhs per annum.

4.128. Some of the functions and powers suggested for the State Council of Vocational Education are performed by the National Council and National Apprenticeship constituted under section 23 of the Apprenticeship Act, 1961 (Central Act). As already mentioned in paragraph 4.125, there is also a provision of the constitution of State Council and State Apprenticeship Council under section 23 of the Apprenticeship Act, 1961. Under proviso to section 23(3) of the Apprenticeship Act, 1961, the State Council is to perform such functions as are assigned to it by the National Council, and the State Apprenticeship. Government of India in the Ministry of Labour Employment and Rehabilitation may have to be approached to assign to the State Council of Vocational Education such of the functions which, according to the recommendations of the Committee, should be performed by the proposed Council and which are, at present, with the National Council and National Apprenticeship Council. In any case, in view of the similar provisions in the Apprenticeship Act, 1961, as now proposed for the State Council of Vocational Education, assent of the President to the proposed legislation will have to be obtained and before the assent of the President, the Ministry of Labour, Employment and Rehabilitation of the Government of India will be consulted and invited to give their comments.

4.129. In view of the importance of vocational education and the need for setting up institutions for imparting education and training in various vocations, it is necessary that the Council of Vocational Education, as suggested by the Committee should be set up without delay. The Council have to draw up detailed courses of studies for each vocation. It will take some time before legislation for establishment of the Council of Vocational Education is finalised. Steps may be taken up immediately for processing the proposals for enactment of the establishment of the Council of Vocational and Technical Education. It will, however, take some time before the Council is established. In the meantime however, if the Government so desires, this Committee can take up the task of drawing up syllabuses and courses of studies for each group of vocational and technical education, provided services of an officer from each department concerned with vocational education are made available to work as the convener under the guidance of this Committee, to the sub-committees appointed for recommending detailed courses of studies and training, for each group of vocational subjects. The Committee has at present, no officer, not even a whole-time Secretary and it will not be possible for it to undertake this task, unless the services of at least five officers of the departments concerned are made available to work as conveners of the sub-committees to be constituted for drawing up syllabuses and courses of studies,

## ANNEXURE I

(Hours per week)

Subject.	First year.	Second year.	Third year.	Total. hours.
1	2	3	4	5
Mother tongue and literature ..	2	2	1	200
Russian .. ..	1	1	1	120
Civics .. ..	1	1	1	120
Mathematics .. ..	2	2	1	200
Physics .. ..	2	2	1	200
Technical drawing ..	3	2	1	240
Materials .. ..	1	1	..	80
Technology .. ..	3	3	2	320
Machinery and Plant ..	..	2	2	160
Organisation and Planning ...	..	..	2	80
Technical training ..	18	21	28	3,400
Physical education ..	3	2	2	280
<b>Total</b> ..	<b>36</b>	<b>39</b>	<b>42</b>	<b>5,400</b>
<b>Non-compulsory subjects.</b>				
Third Modern Language ..	2	2	2	240
Laboratory Work .. ..	..	2	2	160
Sports and Games.. ..	2	2	2	240

This training is for both boys and girls.

COURSE.—Ministry of Education Bulletin : Operative from 1st September, 1962.

## ANNEXURE II.

Curriculum for 3 years full-time course for boys in an industrial centre in France.

(Hours per week)

Subject.	First year.	Second year.	Third year.
Civics, History, Geography .. ..	3	2	3
French .. ..	3	3	2
Mathematics .. ..	3	3	3
Art Education .. ..	2	1	1
Science and Hygiene .. ..	2	2	2
Physical education .. ..	4	4	4
<b>Total (Non-vocational) .. ..</b>	<b>17</b>	<b>15</b>	<b>15</b>
Technical drawing .. ..	2	2	3
Workshop and technology .. ..	20	22	22
<b>Total (Hours) .. ..</b>	<b>39</b>	<b>39</b>	<b>40</b>

In courses for girls, 2 hours' education in workshop practice and 1 hour in other subject (s) provides for the inclusion of 3 hours' housecraft training in each year of the course.

The workshop practice and the technical drawing are of course based on the needs of the particular skilled trade being followed.

## ANNEXURE III.

Curriculum of vocational for high school boys in U. S. A.

Subject.	No. of periods.*		
	First year.	Second year.	Third year.
Workshop practice .. ..	20	20	20
English .. ..	4	4	4
Mathematics .. ..	2	4	4
Science .. ..	2	4	2
Technical drawing .. ..	4	..	2
History and citizenship .. ..	4	4	4
Health Education and Military Training .. ..	4	4	4
<b>TOTAL .. ..</b>	<b>40</b>	<b>40</b>	<b>40</b>

\*The periods are of 45 minutes each thus making 3 hours per week.

## ANNEXURE IV.

Statement showing expenditure to be incurred in the establishment of the State Council of Vocational Education and Training.

Serial no.	Name of the post.	Pay per month.		Annual cost.
		Rs.	Rs.	Rs.
1	Chairman .. ..	2,500		30,000
2	P. A. to Chairman .. ..	600		7,200
3	P. A. to Chairman .. ..	500		6,000
4	Secretary/Registrar of the Council ..	1,200		15,000
5	P. A. to Secretary/Registrar .. ..	500		6,000
6	Financial Officer .. ..	1,250		15,000
7	P. A. to Financial Officer .. ..	500		6,000
8	Academic-cum-Training Officer (5 nos.) ..	1,000	each	60,000
9	Statistical Officer .. ....	1,000		12,000
10	Statistical Assistant (2 nos.) .. ..	500	each	12,000
11	Vocational Guidance Officer .. ..	1,000		12,000
12	Assistant Vocational Guidance Officer ..	700		8,400
13	Section Officers (5 nos.) .. ..	600	each	36,000
14	U. D. Assistants (10 nos) .. ..	500	each	60,000
15	Technical Assistants (5 nos.) .. ..	400	each	24,000
16	L. D. Assistants (10 nos.) .. ..	300	each	36,000
17	Typists (5 nos.) .. ..	300	each	18,000
18	Routine clerk (2 nos.) .. ..	300	each	7,200
19	Peons (12 nos.) .. ..	200	each	28,800
20	House rent .. ..	2,000		24,000
21	Travelling Allowance .. ..	..		..
22	Contingencies including paper, telephone, etc. ..	..		50,000
<b>TOTAL ..</b>		..		<b>5,23,600</b>

ANNEXURE  
Para Medical Staff

Serial no.	Name of training.	Arrangement.	Duration of course.	Annual batch entry.
1	2	3	4	5
1	Sanitary Inspector (regular Course) entry by advertisement.	At Public Health Institute, Patna. Continued upto 1962 and there after no training. But recently taken up not yet started.	9 months	One batch yearly
2	Sanitary Inspector (Condensed Course)	At Public Health Institute, Patna. It is an in-service training of Health Department staff working as Health Inspectors. Continued upto 1972-73. Then stopped.	6½ months	One batch yearly.
3	Health Inspector ..	At Public Health Institute, Patna. Continued upto 1972 September. It is an in-service training of Dresser, Trained Health workers of Block Health Sub-centres.	3 months.	Two batches yearly.
4	Basic Health Workers	At Public Health Institute, Patna. Started since 1966. It is an in-service training of Basic Field workers of Malaria Department staff.	4 months.	Three batches yearly.
5	Medical Laboratory Technician Training (Regular Course) Entry by advertisement.	At Public Health Institute, Patna. Continued up to 1971-72 then stopped.	One year	One batch yearly.
6	Medical Laboratory Technician Training (Short course).	At Public Health Institute, Patna, started since 1972 September. It is an in-service training of Malaria Technicians.	3 months	2 batches yearly.

## V.

## Training (only male).

Broad syllabus.	Total enrolment.	Annual outturn.	Certificate authority.	Remarks with requirement.
6	7	8	9	10
(1) Introduction, object, administration, Anatomy, Pyhsiology, Bacteriology, Imeniology, Parasitology, Entermology, Meteriology, Nutrition in Part-I. (2) P.H. Administration, communicable disease and Control, Sanitary Engineering, Water Supply, Disposal of waste, Hygeine, Sanitation Laur, Industrial Health, Health Education Mental Health Materinty and Child Welfare, Family Planning, Practical Training (In Part II).		100	Director, Public Health Institute.	As per syllabus and Army Medical Corps recommended by Director General of Health Services, Delhi.
Only Part II of regular Sanitary Inspector training.	100	100	Director, Public Health Institute.	As per syllabus and Army Medical Corps recommended by Direc or General of Health Services, Delhi.
Introduction, Elementary Hygiene—covering air ventilation, sunlight, water, wells, House of conservency, food milk, market etc. Personal Hygiene, Vital Statistics, communicable disease, Disinfection, Sanitary Laws and Practical.	50×2 per year.	100	Director Public Health Institute.	
Introduction, Health and disease, Public Health Administration and Education and Basic Health Service. Malaria, small-pox, Tuberculosis, Family Planning Environmental, Sanitation, First aid, Nursing, Vital Statistics, Chelera, Typhoid, Diasrhoea, Dysentry, Hookworm, Nutrition. Health Education and Field Training at Rajgir.	100 × 3 per year.	300	Director Public Health Institute.	As per syllabus recommded by Director General of Health Services.
Microbiology, Bacteriology, Pre-toxology, Helminthology, Histology, Serology, Haematology, Immnology, Disinfection, f Microscopical and chemical examination of Urine, stool and crebrozrinal fluid, Bjochemistry, Elem. Chemcstry and Physicis.	35	35	Director Public Health Institute.	Syllabus as recommended by All India Institute of Hygiene and Public Health Calcutta.
General Laboratory method, Clinical Pathology, Haematology, Parasitology, Bacteriology and Biochemistry.	35X2 per year.	70	Director, Public Health Institute.	Syllabus recommended by Health Directorate on the basis of 5 (remarks column).

Serial no.	Name of Training.	Arrangement.	Duration of course.	Annual batch entry.
1	2	3	4	5
7	Pharmacist (Regular Course). Entry by advertisement.	Pharmacy School, Agamkuan, Patna. Started since 1958. At present 1 Pharma course.	2 years' course	1 batch yearly
8	Training of non-Medical Assistants in Leprosy.	At Brambay (Ranchi). In service training.	6 months ..	2 sessions
9	Laboratory Technician (Pathology).	Bacteriological Lab., Medical College, Patna.	1 year ..	One session
10	X'ray Technician ..	At R.M.C.H. one year training in Radiology, six students are being admitted every year.	1 year (I.Sc.) ..	one session every year.
11	Operation Theatre Assistant.	At R.M.C.H., P.M.C.H. and D.M.C.H. No. of candidates 20—Bhagalpur Medical College.	six months from amongst employed Dressers.	One session every year.
12	Dressership ..	At every Medical College Hospital, Sadar Hospital and Subdivisional Hospital and Gardanibagh Dispensary.	6 months—Middle pass.	Two sessions
13	Physiotherapist ..	P.M.C.H. No. of students—5 ..	1 year course, qualification I.Sc.	.. One year
14	T.B. Health Visitor ..	T.B. Demonstration Training Centre, Patna—Last training given in 1968.	Nine months theoretical and three months field.	.. One
15	B.C.G. Technician ..	T. B. Demonstration Training Centre, Patna—Last training in 1973.	6 months	.. One
16	Dark Room Assistant	T.B. Demonstration Centre ..	3 months	.. One
17	Vaccinator ..	In all the four Regional Dy. Directors office.	1 month ..	Not fixed ..
18	V.D. Health Visitor	V.D. Clinic, P.M.C.H. ..	1 year ..	One ..

Broad syllabus.	Total enrolment.	Annual outturn.	Certificate authority.	Remarks with requirement.
6	7	8	9	10
1st year—English, Physics, Chemistry, Anatomy and Physiology, Botany and Zoology.	100×2=200	100	Through a Board.	Syllabus sanctioned by Pharmacy Council of Delhi, India
2nd year.—General Pharmacy, Dispensing Pharmacy, Pharmacology, Pharmaceutical Chemistry, Forensic Pharmacy and Pharmacology (There is proposal of B Pharma course for which everything is sanctioned and staff appointed. Going to be started from 1975 session. Hence from 1975 both I Pharma and B Pharma will continue.				
Regarding Leprosy including survey, treatment, Laboratory, diagnosis.	60×2	120	Local training authority.	
As per Medical Lab. Technician Training at Public Health Institute in Serial no. 5.	22	22	Local authority.	
Training in Radiology	6 every year.	6	Local authority.	
Mainly in sterilisation of instruments etc. and to assist M. O. in O.T.	20 every year.	20	Local authority.	
Sterilisation of instruments of general nature and dressing of wounds.	As Director, Health—annual— one every 20 bed.	As per Health Manual— one forevery 20 beds.	Local authority.	
Training in imparting assistance to patients suffering from bone diseases or other who like to be given treatment in by..... The ..... and physical exercises.	5	5	Local uthority.	
Regarding Epidemiology, Bacteriology Treatment, Home visiting etc. of T.B.	25	25	As per requirement of T.B.Clinic.	Director, T.B. Centre.
Tuberculia Testing, B.C.G. Vaccination at the Centre and field work.	6	As per requirement of B.C.G. Scheme.	Director, T.B. Centre.	
X'ray film training and development and drying of X'ray film.	As per requirement.		Director, T.B. Centre.	
Small Pox, Vaccine Lymph, control of Small Pox, Cholera, well disinfection, vaccine lymph and art of vaccination.	As per requirement in a batch of 50 R. D.D.H.S.			R.D.D.H.S.
Regarding Epidemiology, Bacteriology, Treatment, Home visit of V.D.	As per requirement	..	Local authority.	



Serial No.	Name of Training.	Arrangement.	Duration of course.	Annual batch entry.
1	2	3	4	5
19	General Nursing and Midwifery.	Twice in a year ..	.. 3 years 9 months.	236 ..
20	Lady Health Visitor (minimum qualification Matriculation).	Two times in a year ..	.. 2 years 6 months	60 ..
21	Auxiliary Nurse Mid- wife (minimum qualifi- cation Matriculation).	Two years .. ..	.. 2 years ..	1,075 ..

Broad syllabus.	Total enrolment.	Annual outturn.	Certificate authority.	Remarks with requirement.
6	7	8	9	10
(1) <i>Basic Science</i> —Anatomy, Physiology, Chemistry, Physics, Microbiology, Pharmacology, Nutrition and Psychology, Fundamentals of Nursing elements of nursing administration and health teaching administration and health teaching.	623	156	Bihar Nurses Registration Council.	
(2) <i>Nursing</i> —Medical and Surgical Nursing, Maternal and Child Health Community Nursing, Emergency Nursing.				
(3) <i>Community Organisation</i> —Sociology and Economics, personal and environmental health, health and social services of India.				
(4) <i>Professional understanding</i> .—History of Nursing, Professional Adjustment and Professional Trends.				
<i>Midwifery</i> .—Reproductive system, embryology, Physiology of pregnancy. Ante-Natal Care preparation for delivery, care of New Born, Post-Natal examination (Multiple pregnancy), abnormal pregnancy, abnormal labour, abnormal and normal puerperium.				
<i>Infant</i> .—Asphyxia neonatorum, abnormalities of puerperium birth injury, feeding (artificial feeding). Digestive disturbances, infection of new born Haemolatic diseases, pre-maturity, still birth.				
<i>Drugs</i> .—Used in Midwifery, Maternal and Health Services.				
(i) Nursing Anatomy and Physiology, Microbiology, First-aid and Bandaging, Personal Hygiene, Nutrition, Home Visiting.	300	60	Bihar Nurses Registration Council.	
(ii) Child Health communicable diseases, Public Health Nursing, Economics, Civics, Social Health, Practical Cookery, Health Problems, Nutrition, Dental Hygiene, Tuberculosis, Industrial Nursing and Record-Keeping.				
Elementary Anatomy, Physiology, First-aid Bandaging, Personal and Community Health, Introduction to Nursing care.	2,150	1,075	Bihar Nurses Registration Council.	
General care of the sick, Health teaching, medical and surgical nursing, Paediatric Nursing, Health Problems and Midwifery.				

## CHAPTER V.

**Teacher Education and Training.**

5.1. Teacher education and training are of very great importance, both from the point of view of employment and of maintenance and improvement of educational standards which are essential for improving the chances of employment of educated persons. We have already emphasised, in the preceding chapter, teachers' role in improving the quality of education. Teacher education, though forming part of vocational education, is treated in a separate chapter because of its importance. Although education of secondary school teachers is treated as higher education in the State, it is considered in this chapter for the sake of convenience.

5.2. There are two streams of formal teacher education in the State: one for training teachers to be employed in Elementary (Primary and Middle) Schools; and the other for training teachers for secondary schools and supervisors and inspectors for elementary schools. In the first course, which is of two years' duration leading to a certificate in teachers education Secondary School Certificate holders or those holding equivalent qualifications are trained in 84 training institutes set up and maintained by the State Government and 12 training institutes set up and maintained by non-Government agencies. About 10,000 trainees are admitted every year to the two-year course and about 6,000 to 7,000 trainees come out successful every year. In the second course, which is of 10 months' duration, graduates are trained for teaching in the secondary schools. This course leads to Bachelor's Degree in education. This course is conducted in two colleges under the Patna University and 5 colleges maintained by the Government and a few colleges (their numbers have varied from time to time) maintained by non-Government agencies and affiliated to other Universities of the State. About 1,000 graduates are admitted in the six colleges, two under Patna University and four under the Government to this course and 800 to 900 get Bachelor's Degree in Education (B. Ed.) every year.

5.3. A number of sub-standard institutions with practically no facilities or very inadequate facilities were set up in the State when the scales of pay of secondary school teachers, and particularly those of trained teachers were revised on the basis of the recommendations of the Education Commission (1964—66). The level of teacher education and training imparted in them were wholly unsatisfactory. In fact, complaints were made that, in many institutions trainees were enrolled only in name, and they were admitted to the examinations on payment of lump-sum money to those who had set up these institutions. Examinees relied on unfair means with the help of those who had set up these institutions and accepted lump-sums from them for their success in the examinations. This made mockery of teacher training programmes. An enquiry committee appointed by the Government recommended that such sub-standard institutions should not be recognised either by the Education Department or affiliated to the Universities. These institutions, except one or two have since disappeared.

5.4. A teacher who is badly or inadequately trained or/and is not properly motivated will have adverse influence on the education and character of children whom he teaches. It is, therefore, essential that sub-standard institutions with inadequate facilities should not be allowed to be set up. In view of the importance of teacher training programme, no fees are charged for admission to teachers' training institutions; in fact, trainees admitted to the primary and middle school teacher training institutions are paid stipends. Since no fees are charged and the cost of establishment and maintenance of a teachers' training institution is quite heavy, it is not possible for any private agency, except some organisations which have large funds for education, to set up and maintain such institutions. Government have, by and large, taken initiative and have to continue to take

initiative in setting up and maintaining teachers' training institutions. No private agencies, excepting organisations which have adequate funds ear-marked for such training institutions and which can set up and maintain training institutions according to the standards prescribed by the Government, should be allowed to establish and run teacher's training institutions. No institution should be recognised by the Government or affiliated to the University unless it has all the facilities in respect of accommodation (including teaching and hostel accommodation, library, laboratory, teaching staff) with adequate funds to ensure regular payment of the salaries of the staff and its maintenance should be recognised by the Government or affiliated to the University.

5.5. During the Fifth Five-Year Plan of the State education, provision has been made for appointment of about 43,000 teachers for primary and middle schools; in addition, about 20,000 part-time teachers will be appointed on honorarium basis for imparting non-formal education to those who, because of poverty or other reasons, drop out from the schools or did not attend school at all. About 3 lakhs additional students will be enrolled in the Secondary Schools (in classes VIII and IX) during the Fifth Five-Year Plan period and about 10,000 additional teachers will be required for the secondary schools during this period. With ever increasing number of school going children, the requirements of teachers will progressively increase every year.

5.6. It is estimated that about 20,000 teachers trained for teaching in primary and middle schools are waiting for jobs. It should be possible to meet the requirements of primary and middle school teachers of 43,000 during the Plan period with the trained teachers who are waiting for jobs and additional outturn of teachers of about 30,000 by the end of the Fifth Plan period. A number of teachers will, however, retire every year and replacement for them may have to be found out by creating additional places in the training colleges. Additional places should, however, be created only after proper assessment. If a trainee, on completion of his training has to wait for jobs for years, he not only gets frustrated but is likely to forget many of the things he has learnt during the period of training and lose enthusiasm for teacher's job. It is, therefore, not desirable to train persons for teachers' jobs, much in excess of the requirements of teachers.

5.7. Some persons already trained in secondary school teachers' training colleges are waiting for jobs and it is expected that requirements of about 10,000 additional teachers for the secondary schools during the Fifth Five-Year Plan period may perhaps be met without creating additional training facilities. We are recommending later in this chapter that the period of training of secondary teachers should be extended. If this recommendation is implemented, it will be necessary to create additional facilities for training secondary school teachers. Moreover, steps have to be taken from now to meet the requirements of the additional teachers for secondary schools during the sixth Plan. With the increasing populations, larger numbers of children will have to be enrolled in secondary schools. Steps may be taken to make proper assessment of the requirements and to provide, if necessary, additional facilities for enrolment for teacher training colleges.

5.8. Experts on teacher education are of the view that it is desirable to have large training institutions. This view finds support in recommendations of many committees and commissions not only of this country but of other countries also. Education Commission (1964—66) has suggested that, with a view to ensuring economy and efficiency, training institutions should be of a fairly large size and the minimum size of a new institution should not be less than 400 students. The Committee recommends that additional training places, if required on the basis of assessment, should be created by expanding the existing training institutions, instead of establishing new ones with inadequate facilities. A few selected higher secondary institutions may also be allowed to conduct Elementary teachers training courses.

5.9. A study made by the State Institute of Education, Bihar in 1966, indicated that of the 104 elementary teachers' training colleges then maintained by the State Government, only about 35 possessed facilities in respect of accommodation, library, teaching aids, staff etc. which might be considered tolerable and the facilities in the remaining 69 institutions were unsatisfactory; in some of them it was very unsatisfactory. Only a few had facilities for imparting training in crafts. Even the crafts for which facilities existed in some of the training institutes were traditional and not forward looking. The trainees did not get adequate opportunities to do enough practical work in the crafts they are to perform training. There has been no appreciable improvement in the training institutions since the survey made in 1966.

5.10. No such survey has been made of the colleges for the training of the graduates for teaching in secondary schools. Facilities in them also are not, however, adequate and satisfactory. In fact, some of them do not possess even their own buildings.

5.11. The Committee recommends that, in view of the importance of training institutions in training right type of teachers and thereby improving the quality of education, adequate facilities in regard to accommodation, play field, library, laboratories, teaching aids, staff, etc. should be provided without delay to these institutions and no additional training places should be provided in them without providing additional facilities required.

5.12. Isolation of training institutions from the main stream of University education and from one another has been held, to a great extent, responsible for the relatively low standard of teacher education and it has been suggested that this isolation must be removed in order to improve the status and quality of teacher education. One of the suggestions made by the Education Commission (1964-66) is that education should be brought into main stream of academic life of Universities. It has also been suggested that primary and middle school teacher training institutions may be upgraded to the collegiate standard and a phased programme may be prepared for the purpose.

5.13. As already mentioned large number of teachers have to be appointed during the Fifth Five-Year Plan in the State. With increasing numbers of children and the need for providing to them free and compulsory education up to 14 years of age, large numbers of teachers will continue to be appointed for many years to come. The expenditure on primary and middle schools in the State is already heavy, and it will not be possible to raise the status of primary and middle school teacher training institutions by upgrading them to the collegiate standard in the foreseeable future. The Committee, however, agrees that the teacher training institutions for primary school teachers need to be upgraded from their present status which is equivalent to that of a secondary school. The pay-scales of the Principals and teachers of the training colleges who are drafted from the Bihar Educational Service (Inspecting Branch) and Bihar Subordinate Educational Service (Inspecting Branch) respectively are the same as those of the Principals and Headmasters and teachers of the secondary schools who also belong to the Bihar Educational Service (Teaching Branch) and Bihar Subordinate Educational Service (Teaching Branch) respectively. Primary and middle school teacher training institutions are post-secondary institutions as they conduct a post-secondary course, and the status of these training colleges and of the staff working in them should be higher than that of those working in secondary schools.

5.14. There is another draw back in the staffing pattern of the primary and secondary school teachers' training colleges which very adversely affects the quality of teacher education imparted in these training institutions. As already mentioned,

Principals and teachers of the primary and middle school teacher's training colleges are drafted from the Bihar Educational Service and Bihar Subordinate Educational Service (Inspecting Branch). Members of the B. E. S. (Inspecting Branch) work as inspecting officers of primary, middle and secondary schools as well as Principals of the Training Colleges. Members of the Bihar Subordinate Educational Service work as Block Development Education Extension Officers as well as teachers in teachers' training colleges for primary and middle school teachers. Interchangeability between the supervision, inspection and extension work on the one hand and teaching work in the training colleges on the other is based on the assumption that the persons who obtain practical experience during inspecting or extension work can prove to be good teachers. This assumption has not materialised. Views have been expressed that, after the introduction of this system, the standards of education and training imparted in these colleges have sharply deteriorated. Most of the inspecting officers and extension officers are unwilling to work as teachers in the training colleges and when they are sent to work as teachers, they do so unwillingly and take no interest in teaching work. They try to return to inspection branch as soon as they can manage to do so. It also very often happens that persons who themselves have not studied the subjects which they have to teach in the training colleges are posted to teach these subjects. There is shortage of teachers of mathematics and science in training colleges. It is only recently that science teachers have been posted to many of the training colleges.

5.15. In order to improve the quality of teacher education and training imparted in the primary and middle school teachers' training colleges, right type of teachers who know the subjects they have to teach and who can take interest in teaching and training should be posted to teach in those colleges. Since the present system of drafting teachers from the inspection branch of the B. E. S. and B. S. E. S. has failed to provide the right type of teachers, this system should be discontinued and replaced by a more suitable arrangement. The status and pay-scales of the Principals and the teachers of these training colleges should be higher than those of the secondary schools. Higher secondary, vocational or academic courses in classes XI and XII to be added to selected secondary schools will also require teachers of higher calibre who should have good honours degrees or second class masters degree in the disciplines which they will have to teach. The two-year teacher training in the teachers' training colleges for primary and middle school teachers will also require teachers of calibre higher than those teaching in the secondary classes or those working as Block Development Extension Officers. In order to attract the right type of persons, the basic qualifications of the teachers of the training colleges should be higher than those of the secondary schools. Teachers of these training colleges should have, at least, a good honours degree in the subject which they have to teach in addition to a B. Ed. degree in education. They should have the status and the pay-scale of what is now known as the Upper Division of the B. S. E. S. 30 per cent of the posts in the training colleges should be upgraded to the scale of pay of what is known as Junior Officers' posts. This may be designated as Junior Education Service (Teaching Branch). This scale of pay should be above that of the Upper Division of the B. S. E. S. and below that of the B. E. S. Class II. All these 30 per cent of the posts should be filled up by promotion from among the qualified teachers of the training colleges possessing honours or 2nd class M. A. degrees. Those members of Bihar Subordinate Educational Service, who possess the minimum qualifications and who have proved their competence as teachers in the training colleges and are willing to go over to the new cadre of teachers may also be recruited. The Principals of the training colleges may continue in Bihar Educational Service, but they should get a special pay of Rs. 150 a month. 75 per cent of the posts of Principals should be filled up by promotion from among those who are working as teachers in the Junior Education Service in the training

colleges and the remaining 25 per cent of the posts may be filled up by direct recruitment, on the advice of the Public Service Commission, from among those who possess the qualifications prescribed for appointment of a teacher in a training college and who have successfully worked as teachers for ten years in the teachers' training colleges or higher secondary institutions. The principals will continue to have the rights for promotion to class I of the Bihar Education Service.

5.16. The above proposals will not bring the primary and middle school teacher education in the main stream of University. It will, however, raise the status of teachers' training colleges preparing teachers for primary and middle schools, the teachers of which, as already mentioned, are at present considered as equal to those of the secondary schools. Although the elementary teacher education colleges will not come under the main stream of university by adopting the above suggestion, they need not, because of this, remain isolated all the time from the University. We recommend that there should be regular inservice training of the teachers of these training colleges. Inservice training programmes should be conducted by the State Institute of Education in collaboration with the secondary teacher training colleges. Many of the programmes will be conducted in the secondary school teachers' training colleges by the staff of those training colleges. Since the secondary school teachers' training colleges will remain in the main stream of University education, the teachers of the primary and middle school teachers' training colleges will not remain all the time isolated from the main stream of University education as well as from other categories of training colleges.

5.17. *Training programmes for the training teachers of the primary and middle schools.*—Programmes of training for the teachers of middle and primary schools should be related to what is expected of the teachers of that level. A good teacher is—"One who knows his pupils, who has a sound grasp of the subject he teaches, and understanding of a range of methods most likely to facilitate the learning of concepts, principles, facts, skills and attitudes at the different stages of children's conceptual development. He will also know how to motivate children and to evaluate whether meaningful learning has been achieved. The training programmes in the training colleges should be designed to exemplify the conceptual inter-connections between educational theory and the nature of different subjects, as well as demonstrating how this knowledge could impinge on educational practice." The teaching of general and professional courses, namely, principles of primary education, educational psychology and child development, school management, health, education and community life should, according to the recommendations of the Education Commission (1964-66) be related to Indian conditions and illustrations, wherever necessary, should be from the Indian conditions. The Commission has, however, observed that there is shortage of literature in these subjects in India and, in the absence of adequate literature as applicable to Indian conditions, the teachers of these subjects in training colleges deal with generalities and platitudes. The Commission has recommended that these deficiencies must be removed and research and development programmes organised to produce the needed educational literature. Some work is being done in this direction by the National Council of Educational Research and Training. There is need for research programmes in this respect to be developed in the Universities of the State and the State Institute of Education.

5.18. Programmes of training of teachers for primary and middle schools were prepared in the fifties. These training programmes were revised in 1972-73, but the revised syllabuses have not yet been introduced in the training colleges. It has already been mentioned that, although syllabuses for school education were prepared in the fifties and have not since been revised, books prepared by the National Council of Educational Research and Training, based on recent development in the field of education, have been introduced in the primary and middle

schools. The teachers trained in the teachers' training colleges in accordance with the old syllabuses find difficulties in teaching the students of primary and middle classes on the basis of books prepared by the National Council of Educational Research and Training and adapted for use in Bihar Schools. The result is that many teachers continue to teach mathematics and science in the primary schools and middle schools on the basis of what they are taught in the training colleges through the syllabuses prepared in the fifties which do not contain all the contents incorporated in the books prepared by the National Council of Educational Research and Training. There is, therefore, urgent need for revising these syllabuses and bringing them up-to-date.

5.19. A committee appointed in 1972-73 recommended revision of syllabuses but they have not been introduced as yet. Teacher education and training in primary and middle school teachers' training colleges are, therefore, at present conducted in accordance with the training programmes prepared in the fifties. Below are given the courses of studies of the training colleges prepared in the fifties and those recommended in 1972-73 which have not yet been introduced :—

Courses of studies prepared in 1950.		Courses of studies recommended in 1972-73.	
	Marks		Marks
<b>A. Practical subjects</b>		<b>Practical subjects</b>	
1. Crafts ..	300	(i) Crafts ..	200
2. Practical teaching ..	200	(ii) Practice teaching (including preparation of teaching aids).	200
3. Community Life and Extension service.	100	(iii) Community Life and Extension service.	100
4. Physical training ..	50	(iv) Physical Health Education	50
5. Art and Music ..	50	(v) Art and Music ..	50
Total ..	700	Total ..	600
<b>B. Theoretical subjects</b>		<b>Theoretical subjects</b>	
1. Principles of Education and History of Education.	100	(i) Principles and Problems of Elementary Education.	100
2. Educational Psychology ..	100	(ii) Educational Psychology and Child Development.	100
3. School management and principles of community life.	100	(iii) School management, health education and principles of community life.	100
4. Methodology (General and Special).	100		
5. Detailed study of the curriculum and its subject-matter from classes I to VII— Mathematics and Social Studies and General Science.	150	<b>Subject-cum-methodology</b>	
6. Advanced Hindi for Hindi-speaking pupils and National Language for non-Hindi-speaking pupils.	100	(i) Mathematics..	100
7. Study of Regional Language (Sanskrit, Urdu, Maithili, Santhali, Oraon, Mundari and Ho).	50	(ii) Social Studies ..	100
		(iii) General Science ..	100
		(iv) Mother Tongue ..	100
		(v) Regional Language ..	100
		Total ..	800
		<b>GRAND TOTAL</b> ..	<b>1,400</b>
<b>GRAND TOTAL</b>	<b>1,400</b>		



5.20. Programmes of study and training in the elementary teachers' training colleges should include principles and theory of education, educational psychology, child development and health problems of children, contents of different school subjects, methods of teaching these subjects, relationship between school and community, training in a craft, practice lessons and independent teaching. Accordingly, the committee recommends the following courses of studies and practical work in the elementary teachers' training colleges:—

**A. General and Professional courses—**

	Marks.
(1) Principles and problems of primary education .. .. .	100
(2) Educational Psychology and child development .. .. .	100
(3) School organisation and administration .. .. .	50
(4) Health education, civics and community education.. .. .	100

**B. Contents and methodology course—**

(1) (a) <i>First language—</i> Mother tongue—one of the following languages: (Hindi, Urdu, Maithili, Santhali, Oraon, Mundari, Ho, Bengali and Oriya).	100
(2) (b) <i>Second language—</i> Regional language (Hindi)—(those whose mother tongue is Hindi will study any other language of the State, namely, Urdu, Maithili, Santhali, Oraon, Mundari, Ho, Bengali or Oriya).	100
(3) Mathematics .. .. .	100
(4) General Science .. .. .	100
(5) Social studies (History, Geography and Civics) .. .. .	100
(6) Craft and art education—theory .. .. .	50

**C. Practical experience—**

(1) Seminar course on student teaching .. .. .	100
(2) Student teaching under guidance of the teachers of training colleges.	100
(3) Practical craft and art experience .. .. .	100

**D. Optional subjects—**

- (1) A student may choose one of the following languages for study:—

English, Russian, French, German, Chinese, Japanese or any other Modern Indian language which he has not taken as mother tongue or second language.	100
---	-----

**E. Activities—**

(1) Physical education .. .. .	50
(2) Community service .. .. .	50

---

Total .. .. .	1,400
---------------	-------

---

5.21. In order to give an adequate theoretical and practical training it would have been desirable to extend the duration of the course to three years and award a diploma in teacher education to the successful candidates. In view of the large requirements of teachers of this category, it may not, however, be desirable, for the present, to extend the period of training to three years. The institutional training of two years duration may, therefore, continue as at present and a student trainee may be awarded a certificate of having completed the theoretical portions of Primary Teachers' Training programmes after successful completion of the two years' course. This will entitle him to an appointment as an apprentice teacher on a fixed stipend which will be lower than the minimum of the pay-scale of a regular teacher. An apprentice teacher should be appointed to work in schools with not less than three teachers and preferably in schools in which teaching is done up to existing class V or existing class VII or newly approved class VI or class VIII. Such schools should also be preferably within a radius of 10 kms. from the nearest teachers' training college. A teacher of the training college should be deputed to keep in touch with the apprentice teacher and the school in which he is working and supervise his work at least once a month. The headmaster in which the apprentice teacher will work may also be asked to keep a record of the performance of the apprentice teacher. Final evaluation of the teaching work of the apprentice teacher should be done by the training college concerned in consultation with the headmaster of the school and the supervisory education officer of the area concerned. If the performance of the apprentice teacher is satisfactory, he should be given a final certificate of having successfully completed the practical work relating to teacher training programme. This will entitle him for appointment as a regular teacher. This procedure will turn out teacher trainees who are maturer than those who are appointed straightway as teachers at the age of about 18 years on completion of two years' primary teachers' training programme. If an apprentice teacher does not successfully complete his apprenticeship within one year, his period of apprenticeship may be extended to two years. If, however, he does not successfully complete even after two years, he will forfeit his entitlement to appointment as a regular teacher.

5.22. Since the subjects to be studied within the two years period are quite comprehensive, a training college should work for a minimum period of 230 days in an academic session of one year.

The contents of the school subjects to be studied should be neither the repetition of the courses of secondary classes nor those of the primary or middle classes, although they should relate to the contents of the courses of the classes (i.e., primary and middle classes) in which the teacher trainee has to teach after completion of his training. He should, however, study them in depth and should acquire adequate knowledge of up-to-date developments in the subjects concerned and method of teaching relating to them. Perusal of the existing courses of the training colleges indicates that, very often, courses are repetition of those in secondary classes and are not related to the new developments in the knowledge relating to different subjects which the school students ought to study. It is of the highest importance that the revision of detailed syllabuses for training colleges should be taken up without delay. It will be advisable to associate in this task experts from National Council of Educational Research and Training. The revised syllabus must take note of the modern trends in the teaching of languages, mathematics, science and social studies.

5.23. Teachers of the training colleges should undergo in service training at regular intervals in order to keep themselves abreast of the developments in various subjects. A teacher should undergo an inservice training for a period of about two to three months on completion of seven years after his initial recruitment and every five years thereafter. The State Institute of Education in collaboration with the secondary teachers' training colleges should make arrangements for inservice training.

5.24. Some of the training institutes do not have suitable schools attached to them for practice lessons to be given by the trainees. It is necessary that suitable schools should be attached to each training college in order to enable the student trainees to give practice lessons under guidance of their teachers.

Methods used in practice lessons should be discussed in seminars to be attended by student trainees and the teachers.

5.25. Instead of relying only on lectures, the teachers of the training colleges should also follow other methods and techniques of teaching such as lecture-cum-discussion, group discussion, seminar, problem solving method, assignment and presentation, etc. Student trainees should be encouraged to use library for self-study. A teacher who picks up the habit of self-study during the period of training is likely to continue it and not become stale. Self-study and use of library should, therefore, be encouraged during the period of training. Each training college must have a good library containing upto-date and standard books on all the subjects included in the syllabus as well as other books of wider interest like Encyclopaedia, year books and standard journals. Education and training in the training college should be student centred and each student trainee should receive individual attention. For this purpose there should be adequate number of teachers in training colleges. The ratio of teachers to students may be 1:15.

5.26. Student trainees should be encouraged to organise and participate in the community service in the neighbourhood of training colleges.

5.27. There should be adequate arrangement for physical exercises and for organising games. The trainees should be trained in physical exercises, games and drills suitable for children of the primary and middle schools.

5.28. Each training college should be made responsible for proper development of and raising the quality of teaching in the primary and middle schools situated within an area of 10 kilometres of its location. These schools should be placed under the training college concerned for this purpose.

5.29. Some examinations conducted by organisations other than the Secondary School Examination Board are recognised as equivalent to secondary school examination, and, candidates who are successful in the examinations compete with those who had obtained secondary school examination certificate for entry into the primary teachers training colleges. The courses of studies included in these examinations are not the same as those prescribed for the secondary school examinations, and, in any case, they do not include all the subjects recommended by the Committee for study in the secondary classes. The Committee has recommended that mathematics and science should be compulsorily studied in the secondary school classes. Study of science includes experimental work in the laboratories. Most of the candidates who appear in the examinations conducted by the organisations other than the Secondary School Examination Board do not study in any institutions but are supposed to prepare themselves by self-study and cannot, therefore, take up science which requires experimental work in the laboratory of an institution. Serious irregularities have been detected in the examinations conducted by some of these organisations so much so that candidates appearing at the examinations conducted by these organisations were found to have taken questions and answer books to their houses and persons other than candidates were found to have written the answer books. In the circumstances, it is difficult to place reliance on the certificates granted by such organisations. Since a bad teacher will adversely affect the education of all the children he teaches, it will be against the interests of education that persons who obtain certificates of having

passed examinations from such organisations should be appointed as teachers. In the circumstances, the Committee recommends that only those who have passed the secondary school examinations should be admitted to the teachers' training course.

5.30. According to the present practice, a certain percentage of seats in the primary teachers training colleges as well as in the teachers training college has been reserved for those who have passed examinations in Sanskrit of Sanskrit University. The courses of study for these examinations do not include study of all subjects recommended by the Committee for inclusion in the courses of study for secondary classes.

The Committee has recommended that Sanskrit or any other classics need not be studied at the primary and middle school stage and as a compulsory subject even at the secondary stage in which it should be studied only as an optional subject. In the circumstances, it is not necessary to reserve any places for those who have studied Sanskrit, for admission in the elementary teachers' training colleges. In ordinary course, it should be possible for some who have studied Sanskrit as an optional subject at the secondary stage to be admitted into these training colleges and get appointment as teachers in primary and middle schools.

5.31. *Educational Training Programmes for Secondary School Teachers.*—As already mentioned, a graduate or a post-graduate is admitted to 10 months' training course for training secondary school teachers. During this period a trainee has to study—(i) Philosophy and Sociology of Education, (ii) Psychology of Education, (iii) Education in India, (iv) Methods of teaching in any of the two subjects which are taught in the secondary schools. There is also provision for study of primary education and pre-primary education methods for those who would like to serve as supervisory personnel. In addition, the trainee has to take 40 practical lessons, 20 each in two method subjects and also learn a craft during this period. The trainee has also to participate in extra-mural activities and other sessional work. It is apparent that the 10 months' period of training is too short for a trainee to study in depth the professional subjects relating to education, methods of teaching and at the same time practise teaching work in a systematic manner and with proper techniques and learn a craft. Knowledge and experience acquired during such a short period are bound to be shallow and superficial.

5.32. In most advanced countries, the trend is to admit secondary school certificate holders to a 3 or 4 years' teacher training programme. Education Commission (1964—66) considered the question of extending the duration of period of secondary teacher training programmes to 2 years, but observed that, on account of financial and practical point of view, this did not seem feasible. The Commission, however, suggested that it is possible to make better use of days in academic year from existing level of 100—190 days to 230 days. The Commission also suggested that in order to break the isolation of the training colleges from the universities education should be recognised as a social science or an independent discipline and introduced as an elective subject at the under-graduate and post-graduate stages.

5.33. The suggestion of the Commission for utilisation of 230 days during an academic session for the secondary teacher training programme does not appear to be feasible. In the present disturbed atmosphere in this State the educational institutions including training colleges have not been functioning even for 180—190 days and there is no likelihood in the near future of a training college working for 230 days in an academic session. We are also of the view that, even with the working of the secondary school teachers training colleges for 230 days, there will be no substantial improvement in the quality of their training programmes.

As already mentioned, teacher-education programmes involve study of professional subjects, methods of teaching of school subjects (involving knowledge of contents of those subjects also), practice of teaching lessons under guidance and supervision of training college teachers followed by independent teaching practice. During this very period the teacher has also to learn a craft. Even if the period of training is extended to 230 days it will not be possible for a trainee to acquire, in depth, knowledge of any branch. We do, however, appreciate that extension of the duration of the training programme will have financial implications. Teacher training programmes, at the same time, are of such great importance that additional expenditure on these programmes will be worthwhile and will bring adequate returns. Moreover, keeping in view the financial constraints, the measures we are suggesting for improvement of secondary school teacher training programme will not involve large additional expenditure.

5.34. Education may be included as an optional subject in the undergraduate courses as suggested by the Education Commission (1964—66). Courses of studies of education at the undergraduate stage should include the three broad areas—Sociological, Philosophical and Psychological foundations of education as suggested by Education Commission (1964—66). During the period of undergraduate courses the student may be inducted to what is termed as “laboratory work” relating to practice lessons under guidance of teachers working in the training college. It will be desirable to introduce the undergraduate course of education initially only in the training colleges. Students need not, however, be asked to take up regular teaching lessons during the period of training. On successful completion of undergraduate course, the students of this course, like those of other undergraduate courses, will be awarded Bachelor’s degree in Arts, Science or Commerce, as the case may be. Those of the successful students who want to qualify for B. Ed. degree and teacher’s profession may be admitted to one year (with minimum of 230 working days) B. Ed. course. During the first six months (with six weeks of vocation) of this course, the students should continue the study of methods and techniques of teaching the school subjects, they have studied during the undergraduate/higher secondary courses and also continue to do the laboratory work of practice teaching in the schools attached to the training colleges under guidance of teachers of these colleges. Seminars should be conducted during which the methods and techniques used by trainees should be discussed and suggestions for improvement made. The student trainee should also learn how to solve problems relating to school management and administration and the relationship between school and the community. He should further, as suggested by the Education Commission, learn during this period nature of forces—social, political, religious, economic and technological which are tending or are necessary to transform the Indian society and the role of education in such transformation. He will also learn a craft during this period. During the remaining six months of the term, the student trainee should systematically perform practice teaching in selected schools under the guidance of headmasters or selected teachers of those schools. The schools to be selected for this purpose should have good reputation and good headmasters under whose guidance the trainee can work as an apprentice teacher. The student trainees of B. Ed. classes at present give isolated lessons of their choice in practice teaching. This neither helps them very much in improving their techniques of teaching, nor does it benefit the students taught by them. The arrangements suggested by us will benefit both the student trainees and the students whom they teach.

5.35. Concurrently, those graduates or post-graduates who have not studied education in their undergraduate courses may be admitted to 18 months B. Ed. course (with two months’ vocation). During the first 12 months (with the minimum of 230 working days) they will study the professional course, which the

students taking up education in their undergraduate course will have to study. In addition, they will learn that the students trainees of the first stream will learn during the first four months of their training for B. Ed. course. On completion of the institutional training, the student of the first stream as well as second stream will be examined in theoretical papers.

5.36. The students of the second stream, on completion of the first 12 months (with six weeks vocation) course, will like the student trainees of the first stream work for the next six months as apprentice teachers to practise systematic teaching in the selected schools and under selected headmasters and teachers.

5.37. It has already been mentioned that, at present, even those graduates who have not studied school subjects in their undergraduate course are admitted to B. Ed. course. Since the student trainees of B. Ed. course have to select at least, two subjects included in the school course for the purpose of study of method of teaching of those subjects, such trainees find difficulty, in absence of adequate knowledge of the contents of the school subjects, in understanding their techniques and method of teaching of those subjects. It also happens that persons who have studied particular disciplines like languages and social sciences are admitted in large numbers than those who have studied subjects like mathematics. This creates imbalance in the outturn of the numbers of teachers required for teaching different disciplines in the schools. Care has, therefore, to be taken to see that adequate number of graduates who have studied different disciplines relevant to school education are admitted to the B. Ed. course. It will be desirable to fix the quota of persons with different disciplines to be admitted. This quota should be fixed on the basis of the broad requirements of teachers for secondary schools in different disciplines.

5.38. Although psychology is not taught in the schools, it occupies an important place in study of education. A few students with psychology as one of the subjects in their undergraduate course may, therefore, be admitted to the B. Ed. course. They may be required to work as teachers in the primary and secondary school teachers training colleges.

5.39. *The two streams for the B. Ed. course.*—One for those who have studied 'education' in their undergraduate course and the other for those who have not studied education in their undergraduate course have been suggested as a substitute for a separate post—higher secondary B. Ed. course of 3 or 4 years' duration,—in view of heavy financial implications of the latter course. It will, however, be desirable, if and when funds are available, a separate B. Ed. course for 4 years, duration should be introduced in the training colleges. Even now it will be desirable to introduce in one of the training colleges as a pilot scheme.

5.40. *Post-graduate course in education.*—The present post-graduate course in education leading to Master's degree in education is of one year's duration, whereas the post-graduate course in other disciplines is of two years' duration. The master's degree in education is, therefore, not really equivalent to master's degree in other disciplines. One year's master's degree in education preceded by a ten months' bachelor's degree in education does not serve any useful purpose, excepting perhaps, enabling a person to compete for jobs in training colleges. The course of studies of master's degree in education of Patna University includes study of—

- (i) philosophy and sociology of education;
- (ii) educational psychology;
- (iii) history on educational thought and practice;

- (iv) educational measurement and evaluation ;
- (v) methodology of educational research ;
- (vi) and (vii) two elective subjects consisting of specialised studies relating to— psychology of learning and teaching; psychometrics, educational statistics, primary education, teachers education; educational finance and planning; educational administration; curriculum comparative education and advance methodology of school subjects; and
- (viii) Dissertation.

It is difficult to study any of these subjects in depth during the short period of ten months. The Committee recommends that master of education course should also be of two years' duration. At present any person who has obtained a B.Ed. degree, after his B. A. (in any discipline) may be admitted to this course. We are recommending later in this chapter that only those who have master's degree in any discipline relevant to school education (including psychology and sociology) other than education and have also obtained a bachelor's degree in education should be appointed teachers in secondary teachers' training college. In view of this as well as in view of the fact that master's degree in education is not an essential qualification for school teachers, only those who have obtained at least a second class master's degree in one of the disciplines relevant to the school education (including psychology and sociology) and also obtained good marks in B. Ed. should be admitted to the master's degree in education.

5.41. The theoretical study in the B. Ed. course should include the following:—

A. Academic course relating to education—

- (i) History of educational thought and practice including contemporary educational issues. Emphasis has to be placed on the history of Indian educational thought and practice and contemporary Indian educational problems.
- (ii) Principles of education—school and society—sociology of the school.
- (iii) Educational psychology—principles of learning and teaching—dynamics of behaviours.
- (iv) Health education including first-aid course.

B. Professional course—

- (i) Methods of teaching.
- (ii) Techniques of teaching of two school subjects which the student has studied or has been studying in undergraduate courses or has studied in higher secondary courses/intermediate courses.
- (iii) Student counselling and vocational guidance.

C. Practical Work—

- (i) Laboratory work under guidance of training college teachers in practice teaching of the subjects whose methodology the student trainee has studied.
- (ii) Seminar course on student teaching.
- (iii) Learning and practice of a craft.

D. Activities—

- (i) Physical education—the student trainee should learn the physical exercise suitable for students of secondary schools.

Courses of study at undergraduate level for those who take up education as one of the optional subjects will include study of theoretical subjects included in group A, professional course included in group B and techniques of teaching of the

school subjects included in group C. In the first six months of the one year B. Ed. course during which those students who have taken in education at the undergraduate level will study in the campus of the college, in depth, techniques of teaching of school subject together with the laboratory work relating to practice teaching, seminar course on student teaching and in addition, learn and practice a craft. During the remaining six months they will work as apprentice teacher in the selected schools. In the laboratory work, the student trainee will observe, under guidance of the teachers of the training colleges, children in the schools and how they are taught. Then they will do practice teaching under the guidance of training college teachers. Seminars will be held in which teachers and student trainees discuss the methods and techniques used in practice teaching. During the six months' period of regular practice teaching as an apprentice teacher in selected schools, the student trainee will teach two subjects under the guidance of the Headmaster of the selected schools or senior teachers selected by him.

5.42. The present system in which there is very little of guided practice teaching and the student trainees practise giving isolated lessons to school children without adequate theoretical and observational practice is not very satisfactory. Guided teaching experience is necessary for development in student trainees necessary confidence and competence to teach school students and application of techniques and methods they have learnt. These practical teaching lessons have to be conducted under the guidance of the teachers of the training college while student trainees remain in the campus of the colleges. This has to be followed by continuous teaching practice in selected schools.

5.43. The student trainees should be examined in the theoretical papers at the end of their institutional training. The method of evaluation to be adopted in such examinations will be discussed when the general problem of examination and evaluation will be considered.

5.44. *Evaluation of practical work, including practice teaching work.*—The teachers under whose guidance the student trainees will practise teaching work will evaluate their performances in the schools, while the Headmasters and the senior teachers, if any, appointed by the Headmaster, will evaluate the performance of the trainees during the period of apprenticeship. Final evaluation of the work of the student trainee as apprentice teacher should, however, be done after observing final lesson by a teacher nominated by the University and the records of evaluation maintained by the Headmaster under whom the student trainee has worked as an apprentice teacher.

5.45. Some of the training colleges do not have good schools attached to them in which trainees can give practice lessons. Secondary teacher training colleges should have some good secondary schools attached to them. It should be one of the responsibilities of the training colleges who utilise the schools for practice lessons to improve the quality of education to be given in the schools. This will benefit the training colleges, the student-trainees as well as the schools.

5.46. *Training of teachers of vocational institutions.*—Vocational institutions will have two types of teachers, one for the academic subjects, namely, languages, mathematics, science, civics, geography, etc. and the other for teaching the vocational subjects. Only teachers who have received training and obtained degrees in education should be appointed to teach the academic subjects. So far as vocational subjects are concerned, the teachers should be trained in the Central training institutes and industries, as already recommended in Chapter IV.

5.47. *Staffing pattern of secondary teacher in training colleges.*—It is necessary that the secondary teacher training colleges should have well qualified teachers



with proficiency in the subjects they have to teach. Education Commission (1964—66) drew attention to the fact that nearly 40 per cent of the staff in the secondary teacher training colleges had only B. A. degrees in addition to degree in education. The Committee understands that some teachers in some of the training colleges in the State have been appointed only on the basis of their M. Ed. degrees, although they possess only B. A. degrees in other disciplines. Teachers of the training colleges must possess double master's degrees i. e. master's degree in education as well as in the disciplines which they have to teach in the training colleges. For example, those who have to teach principles of education and sociology of the school should have a good second class post-graduate degree in one of the social sciences. Similarly, teachers of the training colleges who have to teach the method of teaching a subject must have a master's degree in the subject concerned in addition to master's degree in education. A teacher of a training college with double Master's degree may be given two advance increments on initial appointment to compensate him for the double Master's degree he is required to possess. As already suggested in the case of elementary teachers' training colleges, in order to enable the teaching staff to give effective guidance and pay individual attention to the student trainees, there should be adequate numbers of teachers in the secondary teachers training colleges also and the ratio of teachers to student trainees should be 1 : 15.

5.48. Teacher training colleges should not only be concerned with the methods and techniques of teaching school subjects, but also be familiar with the developments in the contents of those subjects. It may sometimes be advisable to appoint teachers who may not possess degree or postgraduate degree in education but who have achieved distinction in the post-graduate degrees in disciplines like educational psychology, sociology, science and mathematics and are fully familiar with the new developments in the contents of these subjects. Sometimes it may be useful to invite such teachers working in Universities or other colleges to do part-time teaching in training colleges.

5.49. *Professional training of teachers of higher education.*—According to the prevailing practice, teachers of under-graduate and post-graduate courses are not required to undergo any training programme. The University Grants Commission has a scheme in which teachers of particular disciplines are brought together under guidance of competent teachers and scholars to study new developments in respect of those disciplines. There is, however, no preparation of any kind for the new teachers required to teach in the undergraduate and post-graduate classes.

5.50. There has been decline in the standards of higher education. Most of the teachers teaching in under graduate classes and even in the post-graduate classes rely on lectures on the traditional pattern and dictating notes. The newly appointed lecturers follow the system they have learnt from their own teachers. We shall discuss the importance of tutorial work, seminars, problems solving approach and project work in higher education. Since the methods of tutorials, seminars, problems solving approach and projects are not being used by teachers in most of the colleges and the Universities of the State, there is need for inducting and familiarising the teachers with these methods of teaching so that the quality of higher education is raised. While it is not necessary to have a separate training college for the teachers of higher education, it is necessary that each University should have some arrangements by which teachers already working in the colleges and the Universities and newly appointed teachers become familiar with the improved methods of teaching through orientation courses. Each University should organise such orientation courses in different subjects. Heads of departments and other experienced teachers who are familiar with the improved methods of teaching and new

developments in their disciplines may, with the help of U. G. C. wherever necessary, conduct orientation courses. Seminars also may be conducted in important colleges to which Head of University Departments and other experienced teachers may be invited.

5.51. A newly appointed teachers should undergo induction programmes under the guidance of the Head of the Department or an experienced teacher before taking up regular teaching work.

5.52. State Institute of Education, State Institute of Science and State Institute of English, references have already been made to the roles of State Institute of Education, State Institute of Science Education, and State Institute of English in the matter of in-service training of teachers and raising the quality of education.

5.53. State Institute has to work as a link between the schools and training colleges and the departments of education. On the basis of evaluation of the contents of subjects and how they are taught in the schools, the State Institute of education in consultation with the training colleges, will prepare programmes for training and the training colleges will implement them with the assistance of the Institute. Science Institute and Institute of English (in case they continue to be separate organisations) will perform this role in respect of Science education and teaching of English respectively. State Institute of education will also, on the basis of evaluation, suggest changes, wherever necessary, in the text-books. The Institute will also carry on research and extension work.

5.54. It will appear that the role of State Institute (s) in teacher training as well as in improvement of school education is very important. State Institute (s) have, therefore, to be properly staffed and equipped to undertake these roles. These institutes are, at present, staffed by deputation of officers from the inspecting and supervisory branches of the Bihar Education Service. This system of managing the Institutes by deputation of officers from the Bihar Education Service has not been working satisfactorily. Sometimes those who are not found suitable in their respective branches are posted to State Institute irrespective of whether they have the necessary educational background and aptitude for working in the Institute (s).

5.55. In view of the importance of the roles of State Institutes in the training of teachers and improvement in the quality of school education, each Institute should have adequate numbers of staff to perform the task allotted to it. The educational qualifications and practical experience required for performing the job of each post should be prescribed. Only persons possessing those qualifications and experience should be posted. It may be advisable to recruit suitable staff from the training colleges and Universities, for various positions in the State Institute (s) by open advertisement. There should be a separate cadre for the staff of the State Institute (s) of education and that of the Secondary Teachers' Training, Colleges under the Government.

5.56. It will also be advisable to have a State Council of educational research and training in place of the three institutes—Institute of Education, Institute of Science Education and Institute of English, with the following sections:—

- (1) Training, research and extension.
- (2) Languages (including Hindi, English and other State Languages).
- (3) Mathematics.
- (4) Sciences [(a) Physical and (b) Biological].
- (5) Social Sciences (History, Geography, Civics and Psychology).
- (6) Work experience.

- (7) Text-books and evaluation ;
- (8) Educational technology.

The State Government should have a separate Directorate of Training. The *Directorate* of Training may be the *ex-officio* Director of the State Council also. He should, however, be assisted by a joint Director of Training who will be the immediate head of the Council working under the broad guidance of the Director of Training. Each section should be properly staffed. The Committee would suggest the following staffing pattern :—

*Training, research, and extension*—One professor, one reader and two teachers.

*Languages*—This section should be headed by a Professor and assisted by one Reader and a Professor and assisted by one Reader and two Lecturers for Hindi and one Reader and one Lecturer for English and one Lecturer for each of the other important State languages.

*Mathematics and Science*—These two sections should be headed by one Professor and assisted by a Reader for Mathematics, one Reader for Physical Sciences, and one Reader for Biological Sciences. In addition, there should be 2 Lecturers for Mathematics, one lecturer each for Physics, Chemistry, Botany and Zoology.

*Social Sciences*—This section should be headed by a Professor and assisted by one Reader and one Lecturer each for History (including Civics), Geography and Psychology.

*Work Experience*—This section should be headed by a technical person of Reader's status and assisted by a Lecturer with experience of vocational education.

*Text-books and Evaluation*—This section should be headed by a Reader and assisted by 2 Lecturers.

The Readers and Lecturers of other sections will also deal with text-books and evaluation of subjects to which they are concerned.

*Educational Technology*—This section should be headed by Reader having knowledge and experience of educational technology and assisted by one Lecturer.

In addition, each section will have adequate staff at the lower level of the rank of Instructors, Research Assistants and Technicians.

5.57. *Teacher's morale and commitment*.—While training (pre-service and in-service) is important in maintaining and raising the quality of education, it is also necessary that the teacher's morale should be high and he should be committed to the objectives of education and social goals. He should also have adequate social status.

5.58. Education Commission (1964—67) recommended that following steps should be taken, among others, for improving the status and morale of the teachers:—

- (a) There should be parity in the teachers of the Government institutions and those of other Government employees of equivalent status;

- (b) there should be parity between the salaries and terms and conditions of service of teachers of the Government institutions and equivalent non-Government institutions ;
- (c) the teachers should have right to participate in the social and public life including participation in elections ;
- (d) teachers' organisations should not only function on 'trade union lines' for protecting the interest, of their members but should also take up programmes of academic work, organise inservice training and produce literature needed by teachers.

The Commission referred to, in particular, to the evils of private tuition of pupils by teachers for additional earnings and recommended that this should be stopped and if backward children require additional assistance, this should be done on institutional basis and extra classes, if any, should be conducted in the institution itself and the teachers conducting these classes should be given additional remuneration.

5.59. The salaries and the service conditions of teachers of primary and middle schools in Bihar are now the same as those of other Government services of equivalent status. The State Government have also accepted, in principle, the demand of parity on salaries between the teachers of non-Government schools and Government schools but decided, in view of paucity of funds, to implement it on the basis of a phased programme.

5.60. The teachers' organisations, however, have continued to function more or less on trade union lines and are mostly concerned with protection and improvement of the service conditions of their members. Sometimes, they resort to even agitational methods for this purpose. Teachers' organisations have yet to take up educational programmes or organise inservice training for their members. Complaints have been made that many teachers selected for some of the inservice programmes do not turn up because, by doing so they will lose additional earnings from private tuition and active co-operation of teachers' organisations in securing adequate number of teachers for such inservice programmes is not available. It is, however, a healthy sign that some active members of the teachers' organisations have been trying to focus the attention of teachers organisation on the important role they have to play in improving educational standards and modernising society.

5.61. There is need for the officers of the Education Department to take initiative in securing co-operation of the teachers organisations in formulation and implementation of educational programmes.

5.62. The evil of private tuition by teachers' particularly of secondary schools, has assumed serious and alarming proportions. One of the very undesirable consequence of private tuition is that teachers who carry on private tuitions, neglect teaching in the schools. Complaints have been made that some teachers carry on private tuition and run parallel classes in 2 or 3 shifts at their residences. The teachers who conduct such parallel classes at their residences cannot be expected to take up serious teaching work in school classes. The system of private tuition results in inequality of opportunity because children of poor parents who are already handicapped because of their home environment cannot afford to engage private tutors. Instructions issued by the Education Department provide that a teacher can take up private tuition with the permission of the head of the institution and giving such permission the latter have to take into consideration the interest of school teaching and to ensure

that private teaching by any teacher does not affect school teaching. These instructions are, however, observed only in breaches. Since the system of private tuition has very adverse impact on school teaching, it is necessary to take prompt and effective steps to stop this evil. As suggested by Education Commission, if additional teaching work is required for backward students, it should be conducted in the institution itself under the supervision of the head of the institution and the teachers should receive additional remuneration. Parents of such children who are in a position to pay additional fees may be asked to pay additional fee on a moderate scale but the parents of poor children should not be required to pay any additional fee and the cost of additional remuneration in their case has to be met by Government grant. Education Department should start a campaign for stopping private tuition in the manner it is being conducted now.

5.63. Teachers are participating in political activities in increasing numbers and they are represented in legislatures. Some of the teachers are active workers of political parties. There are reasons to believe that political activities including participations in elections and membership of the legislatures have been affecting adversely teaching work by those who participate in those activities. Teachers who are now working as members of the legislature, attend the sessions of the legislature without taking leave from the educational institutions in which they have been working with the result that during the period they are away from the institution, teaching work suffers. While making recommendations regarding teachers right to participate in public and political activities, Education Commission had recommended that when they contact election they should proceed on leave during the election campaign and relinquish their teaching duties temporarily if the requirement of the public office interferes with their proper discharge. In accordance with this recommendation and in the interest of proper educational standards, it is desirable that teachers who have to be away from their institutions on account of their political or public duties including attendance in the legislature should take leave from the institutions so that temporary teachers may be appointed and teaching work does not suffer.

5.64. In view of their important role in the society, the teachers should evolve their own code of conduct. The code of conduct should ensure, among others, that education of students is not neglected and there is constant endeavour to raise the educational standards.

5.65. State Board of Teacher Education in view of the importance of teacher education, there is need for a body at the State level to formulate standards of teacher education, to oversee that these standards are followed in the training institutions, to co-ordinate and improve standards of teacher education at different levels, to advise the State Government and Universities in the matter of teacher education and to arrange, in co-operation with the Education Department of the State Government, State Institutes of Education and the Universities for evaluation of training programmes and making recommendations for improvement, wherever necessary.

5.66. The Committee understands that a decision to constitute a State Board of Teacher Education has been taken by the State Government but it has not yet been implemented. The State Board should be set up at a very early date. The State Board may consist of (1) representatives of the State Department of Education, (2) State Institute of Education, (3) Universities, (4) Training Colleges (5) representatives of the primary and secondary school teachers, (6) representatives of the U.G.C, and National Council of Educational Research and Training and (7) other educationists. The Committee should meet at least once in a quarter of year. Director of Training of the State Education Department may work as Secretary to the Board.

5.67. *Training for pre-school education.*—As already mentioned in Chapter 3 pre-school education which is not included in the formal educational structure of the State is not within the terms of reference of this committee. However, in view of its importance, especially for the children of the poorer sections of the community and also because of its employment potential, training institutes for training the teachers for pre-school education should be set up in the State. To start with, such training institutes should be set up in the cities and towns of Patna, Ranchi, Bhagalpur, Muzaffarpur, Gaya, and Jamshedpur. For the time being only ladies should be trained in these institutes. 40 ladies may be admitted to a one-year course in each of these institutes. In order to train teachers for the training institutes, provision should be made for specialisation in this branch in teachers' training programmes in Patna Women's Training College.

Shri Ramanand Sinha—*Chairman.*

*Members.*

Shri S. C. Roy.

Dr. R. C. Mehrotra.

Acharya D. N. Sharma.

Dr. S. K. Mukherjee.

Dr. Y. K. Sinha.

Dr. Gopal Tripathy.

Dr. J. P. Choudhary.

Shri C. P. Singh.

Shri Deonarain Sinha.

Shri B. P. Singh.

Shrimati R. Nandi.

## SUMMARY OF CHAPTER I.

### Summary of Conclusions and Recommendations.

1. Job-oriented Education implies that education should prepare students for the economic and social needs of the community expressed in terms of various occupations. The demand for Job oriented Education presupposes that the main objective of education is utilitarian and education should prepare persons for various skills required by the community for its economic and social activities and that education should be a part of overall planning for economy of a country. However, education is not only an economic need but also a social and political need (1.1.—1.3).

2. Educational planning has to take into consideration the socio-economic conditions and features of a community and the manpower requirements for various economic and social activities. Accurate or even approximate assessment of manpower requirements for periods adequate for educational planning and technological changes poses difficulties (1.4).

3. In a developing country like India, although education is a major priority, it has to be considered in close relation with other important needs vital to the development of the country as a whole. Education has, therefore, to be considered in relation to overall economic and social planning of the State. In planning education in the State, its contributions to economic social activities and fulfilment of national goals are very important considerations (1.5—1.7).

4. Education has to compete with other very important and urgent demands for funds. In a comparatively poor State like Bihar, adequate provision has to be made for economic and social activities which may lead to increase in the net domestic product and creation of more jobs. There is need for establishment

of proper relationship between economic and social activities and invest in education so that tempo of increases in economic and social activities results in increase in productivity and the net domestic product and more jobs, and education provides the educational standards and skills required for the economic and social activities (1.8—1.10).

5. Although there is no machinery at the State level for collecting, and making available manpower requirements for various sectors of economy of the State, the figures of unemployed persons on the live registers of the Employment Exchanges in the State broadly indicate the availability or non-availability of job opportunities for various categories of educated persons. Occupationwise figures which are available indicate that agriculture and allied activities are the most important economic and social activities in the State contributing about 54 per cent of the net domestic product; followed by mining, manufacturing and small enterprises contributing about 16 per cent; commerce, transport and communication contributing about 14 per cent to the net domestic product and other services including education, professions, domestic services, public authorities and real estate and ownership of dwelling contributing about 14 per cent to the net domestic product (1.11—1.17).

6. About two-thirds of the population of the State are below the poverty line. The economy of the State remained virtually stagnant during 1960. According to a study the most important among the contributing factors to the virtual stagnation of the economy is the vulnerable agriculture sector in the State. In spite of some major industrial *complexes* in the State and sizeable mining sector, there has been no corresponding development of small scale industries with the result that the numbers of persons employed in mining and manufacturing industries are comparatively small (1.18—1.20).

7. Density of population of Bihar is quite high with 322 persons per sq. -km. against 188 for the whole of India. Only about 10.04 per cent of the populations live in urban areas. There is heavy pressure on land and land holdings are small. The vast majority of the cultivators in the State are small and marginal farmers subsisting on low earnings (1.21—1.24).

8. In the report of Bihar Unemployment Committee, 1960 recommendations were made for increase productivity in all sectors of economy including agriculture, secondary and tertiary sectors and transfer of surplus farm population to non-agricultural occupations. Capital for development of secondary and tertiary sectors has to be generated by increase in productivity in all sectors of economy, and particularly, agriculture. This has been recognised in the schemes of the Fifth Five Year Plan of the State which has laid emphasis, particularly, on raising productivity in agriculture, development of small-scale and medium scale industries and providing infrastructures in the shape of irrigation, electricity and communication. Emphasis has also been placed on the development of health measures and education. Emphasis on development of agriculture and small-scale industries which are mostly self employment sectors will create opportunities for self employment. Educated young persons of the State have not been keen on taking self employment due to various factors including the tradition bound social structure (1.25—1.32).

9. In the context of the economic and social education of the State, planning Job-oriented Education will include the following important objectives and strategies :--

- (aj) Education should be related to the social and economic needs and activities of the State ;

- (b) It should prepare young men and women with various skills and abilities and motivate them to contribute to increase in productivity in all sectors including agriculture, mining which occupies an important stage in the economy of the State industries, and particularly small-scale industries which provide considerable scope for employment including self-employment and tertiary sectors of trade, commerce, transport, banking, insurance and other services including administration;
- (c) It should promote the quality of entrepreneurship so as to enable an adequate number of young men and women to engage themselves in self-employment which is the largest sector of employment in the State;
- (d) It should prepare young men and women who can successfully compete for jobs under the Central Government (post in civil administration and the defence services), in major and medium public and private sector undertakings including railways, banks, insurance companies, etc.;
- (e) It should prepare adequately trained and motivated teachers for schools, colleges and universities;
- (f) It should prepare young persons to meet the requirements for health services and other social services; and
- (g) It should help in modernising society and the various productive processes.

## SUMMARY OF CHAPTER II.

### Education in Bihar—The Present Position.

10. (a) According to the recent decision of the State Government the existing structure of school education will now be divided into primary classes (I—IV), Middle classes (V—VI), upper middle classes (VI—VII) and secondary classes (IX—X).

(b) Collegiate education in Arts, Science and Commerce of four-year duration is sub-divided into two years of Intermediate Classes and two years of Undergraduate Classes leading to a Bachelor's degree. Post-graduate courses in Arts, Science and Commerce are of two years' duration leading to a Master's degree. Post-graduate teachers' training degree is of ten months duration leading to a Bachelor's degree in education. The State Government have accepted, in principle, the national pattern of 10+2+3 education, according to which, on completion of 10 years school education, there will be a public examination, to be followed by two years' of higher/post-secondary education with two streams—one vocational and the other academic; the academic course being a preparatory course to 3-year general degree course and the vocational course being a terminal course.

(c) Vocational education in mostly engineering and some non-engineering trades is imparted in the Industrial Training Institutes. The only other important vocational education is the two-year training course for teachers leading to a certificate course.

(d) Post-secondary three-year Diploma course in Engineering is imparted in polytechnics for the training of technicians and junior supervisory personnel. Degree courses in Engineering in various branches of engineering are of four years' duration after two years intermediate course in science. Post-graduate courses in engineering are conducted in some of the Engineering Colleges.



(e) Three Agricultural Colleges in the State provide for three-year degree course after intermediate course in science and two-year post-graduate courses in agriculture, and two Veterinary Colleges provide for four-year degree course after two-year intermediate course and two-year post-graduate degree course in courses veterinary science.

(f) Medical education of five years' duration after intermediate in science is provided in four Government Medical Colleges and five non-government medical colleges. Some of the Government Medical Colleges also provide for post-graduate course in medicine and surgery.

The only School of Pharmacy at Patna conducts two-year Diploma course in Pharmacy (2.1).

11. Figures of different types of institutions and enrolments in them indicate that there has been a disproportionate increase in the number of Arts, Science and Commerce colleges and enrolments in them, in spite of the fact that the number of unemployed under-graduates and graduates have been increasing over the years and have assumed a serious proportion. There are many reasons for this increase including the fact that there is unjustified preference for white collar jobs, whereas, agriculture and household industries with low productivity are regarded as residual professions. Many weak and non-viable colleges have been opened not on the basis of actual requirements but in order to provide jobs for unemployed post-graduates. Adoption of unfair means in examinations for success is also partly responsible for this increase.

While there has been some degree of planning in respect of elementary schools, vocational and technical school and technical and professional colleges, there has been no such planning in respect of arts, science and commerce colleges. The increase in the numbers of these colleges and enrolments in them has no relationship with the economic and social activities of the State (2.2—2.5).

12. While the numbers of secondary schools and colleges and numbers of enrolments in them have increased sharply, efficiency of the schools and colleges has deteriorated. This is borne out by the results of public examinations held in 1973 and 1974, held under strict supervision. Employers have also complained that the efficiency of the school certificate-holders, under-graduates and graduates has deteriorated and many of them are unemployable (2.7—2.10).

13. Secondary and post-secondary education specially in art, science and commerce has no relationship with the man-power requirements of the State. Although the self-employment sector of agriculture and small-scale industries are the most important from the point of view of economy and job potential, educated persons are not attracted to them.

Educated young men and women of the State have not been able to secure numbers of jobs under the Central Government (including officer's cadre of the Armed Forces) Central Government undertakings, industries in the State, Banking and Insurance concerns proportionately to the population of the State (2.11—2.13).

14. Education in the State has not been able to make significant impact on social structure and traditions. There is need for changes in the educational system so as to make it more efficient, more job-oriented and as an effective agent for modernisation (2.14—2.15).

## SUMMARY OF CHAPTER 3.

**School Education in Bihar—Structure—Curricula—Suggestions for Reform.**

15. A minimum level of education (for children upto 14 years of age) is a constitutional obligation and social need in the country and the state. The progress in this respect is not satisfactory. Care has to be taken to see that the contents and the quality of the minimum level of education imparted upto 14 years of age such as to promote modernisation and productivity and to enable a person to function as an enlightened citizen (3.1.—3.3).

16. As recommended by a high level commission appointed by 'UNESCO' in its report 'Education to be' general education must be broadened so that they definitely include languages, social economics, technical and practical knowledge and education at primary and secondary levels become theoretical, technological, practical and manual at the same time.

Education Commission (1964—66) recommended that education should be related to productivity, and should strengthen social and national integration, hasten the process of modernisation and strives to build character. The Education Commission also recommended that all good and purposeful education should include 'literacy' or study of languages; humanities and social sciences; numeracy or study of mathematics and natural sciences, 'work experience' and 'social service' (3.4.—3.6).

17. Subjects which are studied in the existing courses of elementary schools (classes I to VII) include languages, Mathematics, social studies, general science and activities. However, courses for the existing classes (VIII to XI) are diversified and mathematics is not compulsorily taught in classes X and XI. In classes (VIII and IX) and (X and XI) there are number of groups of subjects from which a student can pick up three subjects for study, besides compulsory subjects.

The State Government have now approved a new pattern of 10-year school structure in which languages, mathematics, social sciences, Everyday science, and work experience are to be compulsorily studied up to class VIII, but there is diversification of courses in classes IX and X. Depending upon the subjects selected by a student he may study more of science subjects than another student who may study more of social sciences, a third student may study more of commercial subjects, and a fourth student may study more of agriculture and allied sciences (3.7—3.11).

18. Diversification of secondary, as contained in the existing syllabuses of classes VIII to XI has not proved successful and only few students took up vocational courses (3.12).

19. Education Commission (1964—66) recommended that non-vocational general education should be provided for the first 10 years of school education. The national committee for 10+2+3 national pattern of education has endorsed the recommendation of the Commission and recommended compulsory study of 2 or 3 languages, Mathematics, Physical and Biological Sciences, Social Sciences, (History, Geography and Citizenship) and work experience which are core subjects, in addition to moral and physical education (3.13).

20. A survey made by Unesco reveals that one of the most recent trends in reforms is to have more comprehensive schools with a uniform programme of study with only a few optional subjects (3.14 and 3.15).

1. From the point of view of employment of school leavers it is desirable to include mathematics and science as compulsory subjects in the secondary course. A Secondary School certificate-holder with adequate knowledge of Mathematics and Science has greater scope for employment and entry into a large number of vocational courses. In the new pattern of secondary education approved by the State Government, study of everyday science which includes Physics, Chemistry, Biology, Astronomy and Geology, which will be compulsorily taught will not enable a student to acquire satisfactory and tolerably adequate knowledge of science. Science is to be compulsorily taught in Elementary classes (I to VIII) and a secondary school certificate-holder who is recruited as a teacher for elementary school must have satisfactory knowledge of science to teach the students (3.1.65—3.17).

22. Some secondary schools do not have competent teachers and well-equipped laboratories for teaching science. All schools should be well-equipped and well-staffed for science education. Additional tuition should be given to those students including children of the poorer sections of the community who are backward in mathematics and science. As an interim measure, those who pass in other subjects but fail in science may be declared to have passed without science. They will, however, be not admitted to the vocational courses, admission to which is limited to those who pass secondary school examination with science subject. They should not also be admitted to the higher secondary courses which are preparatory to under-graduate courses (3.18—3.19).

23. The Committee recommends that there should be no diversification of courses in school education, excepting that, in the secondary classes of IX and X, in addition to the compulsory subjects there should be only one optional subject from number of subjects including languages, classics, science subjects, social sciences, art, music and vocational subjects. The compulsory subjects to be studied in classes IX and X should consist of mother tongue or a second Indian language for those whose mother tongue is Hindi, English, Mathematics, History and Citizenship, Geography including human geography, Physical sciences, Biological sciences and work experience. Students should have training in physical education and moral education through activities. (3.20—3.22).

24. In drawing up detailed contents of the courses of studies, the objective should be to attend definite standards at the end of each sub-stage. The courses of study from classes I—X should be continuous. The courses of study for different subjects should be drawn up by experts of each subject (3.23—3.24).

25. While the curricula for the existing classes I—VIII of the elementary school were drawn up in 1950 and have not since been revised, text-books prepared by the National Council of Educational Research and Training, Government of India, with necessary adaptations, have been introduced in these schools. Neither the Bihar Text-Book Corporation, nor the State Institute of Education, Institute of Science Education and English Institute is adequately staffed for preparation of text-books or even for proper adaptation of the books prepared by the National Council for Educational Research and Training. They should be adequately staffed for this purpose. Writers of different subjects should be invited by open advertisement to write books on the basis of approved curricula (3.25—3.26).

26. The purpose of study of three languages at the secondary stage should be acquisition of skill in oral communication, writing and reading in Hindi which is the regional language as well as the national language and in mother tongue for those where mother tongue is not Hindi, working knowledge of second language which will generally be English and which is not only the associate

official language of the Union Government but also the language of business, commerce and industries, and acquaintance with the second Indian language. Skill in oral communication and writing in Hindi and English is important from the point of view of employment (3.27—3.28).

27. The standard of English taught in the schools of the State is very low. In view of the importance of English from the point of view of employment under the Central Government and in business, commercial and industrial concerns, it is necessary to improve the standard of English at the secondary stage. There is dearth of teachers with competence in English. So long standard of English in the secondary level continues to be low, the dearth of teachers with competence to teach English will continue. The existing teachers should be trained and, for this purpose, the State Institute of Education and State Institute of English (in case it continues to be a separate Institute) should be strengthened. There is reluctance in the teachers to undergo in-service training. Teachers appointed to teach English should not be confirmed in their posts unless they undergo in-service training (3.29—3.31).

28. Mathematics is also important from the point of view of employment of school leavers. In spite of the recommendations of the Education Commission (1964—66) courses in Arithmetic and Algebra have not been integrated and mathematics is still taught in the traditional manner into arithmetic, algebra, geometry and trigonometry and separate subjects. School courses in mathematics should be revised on a priority basis in the light of the recommendations of the Education Commission.

29. Some schools do not have competent teachers in mathematics. A survey should be conducted to find out which schools do not have competent teachers in mathematics and to ensure that every school has competent teachers in that subject. Teachers already working in the existing schools receive in-service training in teaching mathematics in the light of modern development in that subject. (3.33—3.37).

30. As recommended by the Education Commission (1964—66), science in elementary schools should aim at developing proper understanding of the main facts, concepts, principles and processes in the physical and biological environment, and, at the secondary level, as a discipline of the mind and a preparation for higher education. In the schools of the rural areas, Science should bring out impact of physical sciences and biology on agriculture and, in the schools of the industrial areas its impact on industrialisation.

One of the objects of science education should be to develop an inquiring mind among the school children and scientific attitude among the students.

A survey should be conducted in the schools to find out whether all of them have got competent science teachers. State Institute of Science Education should be strengthened on a priority basis for re-orienting science teachers in the new methods and approaches to teaching. (3.38—3.40).

31. The aim of education in social science is to enable the students to acquire knowledge about their social environments. History, Geography and Citizenship may be taught through activities as study of social environment in classes I and II and as integrated subject of social studies in classes III and IV. History, Geography and Citizenship should, however, be taught as separate subjects from lower middle classes (classes V—VII) in a systematic manner. In higher classes (classes VII to X) History and Citizenship should be taught as one subject and Geography including human geography as a separate subject. The courses of History at the secondary level (classes IX and X) should

include development of Indian civilisation from the ancient times through the medieval times up to modern times together with broad reference to contemporary development of civilisation in other countries. The modern Indian History should be studied in greater depth together with references to important developments in the world like French Revolution, Russian Revolution, Chinese Revolution, Independence of America, Emergence of U. S. A. and U. S. S. R. as super powers, League of Nations and the U. N. O.

Citizenship should include development of clean habits as well as good manners in the early stages of school education. In the higher classes, the students should be inducted to the duties and responsibilities as well as the rights of citizens. In addition, the students should be taught as to how a citizen is governed from village to the national level. Emphasis should also be placed on national integration, secularism, social commitment to the idea of progress, modernisation and equality of opportunity.

Teaching of geography should begin at the early stage of school education with study of district, State and the country and map work connected with it. The concept of the world as a whole should be represented by means of a globe.

In the higher classes, study of geography should include fundamentals of geography, general geography of the world and the regional geography of India with special reference to Bihar, the economic features of the country and the State including importance of problems of population, agriculture, different crops, water resources and irrigation, minerals, industries, communication, etc. (3.41—3.50).

32. Skill acquired during work experience is very useful in the jobs which school leavers take up. It is the foundation for the technical skill leading to increase in productivity. Manual work in the school should not, however, become drudgery. As recommended by Education Commission (1964—66), in the lower classes of primary school work, work experience may begin as simple hand-work with the object of training children to make use of their hands and thereby helping intellectual and emotional growth. In the senior classes it should take the shape of learning of a craft which develops technical thinking and creative capacity of the pupils. The main criterion for selection of a craft to be taught in a school should be the availability of raw materials in the area concerned and availability of teachers and equipment. The craft should be one which is not languishing in the area and for which there is no future but which is likely to continue for some years. (3.51—3.53).

33. In spite of the craft being included as a compulsory subject in the syllabuses of classes I—VII of the existing classes, there are very few schools in which students are taught crafts. One of the reasons for this is the lack of teachers trained in and with skill in crafts.

In the schools of the rural areas of the State, agriculture, horticulture and craft based on agriculture will be most important and relevant. Primary schools do not have even buildings, let alone lands for crafts relating to agriculture and based on agriculture. In such primary schools, paper cutting, card-board cutting and folding, modelling in clay, spinning or simple hand work can be taken up. Those children whose parents have agricultural land can be given home projects for developing flower garden or kitchen garden. Home projects will require close liaison between the teachers and the parents of the children.

Many of the middle schools in the State possess lands. Farming can be taken on a modest scale in such school with simple equipment which does not entail heavy work on young children. Children can also be taken to farms of

those progressive farmers who adopt improved methods of farming. Students should be given a share in the products of their labour (3.54—3.56).

34. In the secondary schools in which there is no adequate lands for farming arrangements for teaching other crafts relevant to the areas should be taken up. Arrangements may be made to set up a small workshop by school complex for a group of schools. Arrangements may be made for utilisation of the workshop of the Industrial Training Institutes for the students of those schools which are located near them (3.57).

35. Physical education contributes not only to physical fitness but also promotes mental alertness and the quality of leadership, team spirit, submission to prescribed rules and sense of fair-play. Syllabuses for physical education should be drawn up for students of different age-groups and should take into consideration the fact that many schools have no play-grounds (3.58-3.59).

36. Every student may participate actively in sports and games or junior wing of the N. C. C. or social service camp. Students of senior classes may take up social service in their villages or Mahallas. Senior students may be encouraged to take up informal teaching of school drop-outs and for this work they may be paid honorarium (3.60-3.61).

37. Although pre-school education is not included within the formal education structure and does not fall within the terms of reference of this Committee, it is very important for the children of poorer sections of the community. Pre-school education will improve efficiency of the school system. The main difficulty in providing pre-school education on a large scale is want of resources and lack of trained personnel. It can be provided on a phased basis—the first segment to be covered should be the children of parents living in slum areas in the cities and those of marginal farmers and agricultural labourers in rural areas. The State Government should arrange training of teachers for pre-school education (3.62-3.63).

38. Co-curricular activities play important part in the development of personality in the students. Students whose personality is developed can adapt themselves better than those whose personality is not developed to the requirements of various jobs (3.64).

39. Teachers are the most important for improving efficiency of the schools. Appointments of teachers should be made on merit preferably by an independent body. Headmasters of the school is the leader of the team of teachers and his selection should be made from among the teachers of proved competence, integrity and character (3.66).

40. All schools should have adequate facilities in respect of accommodation, play ground, library, laboratory and equipment (3.66).

41. Wastage in school education can be checked, to some extent, by giving incentives of mid-day meals, free supply of text-books and stationery to the poor students. However, good teachers are also necessary for reducing the wastage. Single-teacher schools should be replaced by two or more teacher schools to reduce wastage (3.67-3.68).

42. Even with all those measures, wastage may continue. It is, therefore, necessary to make arrangements for non-formal education of schools drop-outs in combination with elementary education, if necessary (3.69).

43. There are some good schools in the State. The standard of those schools is high because of the leadership provided by the Headmasters of those schools, enthusiasm of the teachers and co-operation of the parents of the children and the public. It should be possible, with the co-operation of the teachers and parents, to bring about improvement and increase efficiency of other schools (3.70).

44. One of the reasons for deterioration in the efficiency of school education is want of proper evaluation of performance of students. While there should be one public examination at the end of secondary course of the school education, school complexes should conduct evaluation for promotion from one class to another. School complexes should be formed to cover all the schools within the State. Every school should maintain a comprehensive card for each student in which details about the students and his performance should be noted (3.71—3.74).

45. With the improvement in efficiency of the schools, it should be possible to secure public co-operation and obtain resources for the development of the schools. Low level of efficiency of school system affects very adversely the children of the disadvantaged classes. It is, therefore, necessary that efficiency of common schools should be improved (3.75-3.76).

46. It is necessary to make arrangements to impart education to the children of poorer parents when they are free. In the rural areas, they are generally free in the afternoon or the evening. Arrangements should, therefore, be made to impart them non-formal education preferably between the hours of 4 P.M. to 6 P.M. in the schools or in other convenient places in the village. Service of retired teachers, young men trained in teachers training colleges and waiting for jobs, school leavers, undergraduates and graduates as well as senior students of high schools can be utilised for this purpose on payment of suitable honorarium (3.77-3.78).

47. While it is not necessary to formally restrict the number of enrolments in the secondary schools in spite of large unemployment of secondary school certificate holders, it is necessary to restrict unplanned expansion of secondary education and establishment of weak and non-viable schools which cannot become viable within a specified period should be amalgamated with viable schools.

It will also be in the public interest to enrol in and promote to the secondary classes only those who have aptitude for secondary education and who are adequately prepared for this level of education. In case of backward students and the children of the poorer sections of the community, teaching should be adjusted to the pace of learning of the individual student. Concentration on improvement of teaching in secondary school with adequate attention to individual student may result in larger number of students becoming successful in the secondary school certificate examinations than at present. It will also make them more suitable for employment (3.79—3.86).

48. In the areas inhabited by scheduled tribes, it may be necessary to set up Ashram type schools where children coming from long distances can reside. Provisions for scholarship for the students of scheduled castes and scheduled tribes and the children of poorer parents who show promise should be made on a liberal basis (3.87).

49. Evaluation and external examination at the end of secondary course will be considered in the chapter relating to evaluation and examinations. It may be mentioned at this stage that the secondary examination should be held in two stages so that a student may not have to carry heavy load at one time.

## SUMMARY OF CHAPTER IV.

**Vocational Education.**

50. According to the national pattern of 10+2+3 educational structure, there will be two streams of education on completion of 10 years of secondary schooling, namely—(i) academic, and (ii) vocational (4.1).

51. The need for vocational education arises from division of labour which is the characteristic of modern economy, particularly in an industrial country. However, new technologies applied to agriculture and improved methods applied to transactions in office business also require various vocational skills (4.2).

52. Based on the broad divisions of economic and social activities in the State, vocational education and training in the State can be considered under the following heads.—

- (i) Agriculture including allied activities, animal husbandry, forestry and fisheries.
- (ii) Mining, manufacturing and small enterprises including construction and electricity.
- (iii) Commerce, transport and communication including railways, banking and insurance, road and transport projects.
- (iv) Social services including education and public health and medical services.
- (v) Other services including public services and administration, etc.
- (vi) Miscellaneous.

Some of the items listed in the broad divisions are overlapping, e.g., training of clerical personnel, accountants, typists, shorthand typists will be common to almost all the divisions referred to above (4.3).

53. Since the end of second world war, training and development of skilled manpower, as a national resource is considered to be a national responsibility in which the educationists, employers and Government have all to actively participate (4.4).

54. Contents of vocational education include practical training as well as theoretical teaching mainly related to the understanding of science and technology relevant to the vocation concerned and also humanities and social sciences which are necessary for understanding of complex social and economic relationships.

In view of the changing technologies, vocational education should aim at training the pupils with a view to equipping them to adapt themselves to variety of jobs and developing their capabilities continuously in view of developing production methods and working conditions.

55. Vocational education can be imparted at the work place itself or in an educational institution which should maintain close relationship with industries and other establishment for practical training. Vocational training should be arranged for secondary school certificate holders as well as for drop-outs (4.6-4.7).

56. Agriculture and allied activities.—vocational education in agriculture and allied activities for improving in skill of those engaged in them is essential for increasing agricultural production and development of secondary and tertiary



sectors for transfer to them of surplus labour from agriculture. The present arrangement for education for agricultural and allied activities in the State consists mainly of educating and training agricultural and veterinary graduates and for training a few village level workers (4.8-4.9).

57. Education Commission (1964—66) recommended establishment of (i) agricultural universities with the integrated programme of research, training and extension and (ii) agricultural polytechnics for agricultural technicians such as farm mechanic, farm manager, laboratory assistants, craftsman, and assistants in agricultural credit and insurance organisation and technicians to work in the rural areas as field representatives of fertilizers and pesticide manufacturers (4.10-4.11).

58. A Committee appointed by the Government of India under the chairmanship of Dr. Mohan Singh Mehta to work out the details of agricultural polytechnics recommended that agricultural polytechnics should impart instructions through work experience and should be concerned with technical literacy, the acquisition of which does not necessarily require, as a pre-condition, ability to read and write. The Committee recommended that some of the skills to be imparted should include the use of fertilizers, pesticides, water management, and also engineering aspects like repair, maintenance, and operation of agricultural equipment like tractors, pumps, tube-wells and spares (4.12-4.13).

59. While training in agricultural vocation should aim primarily at providing skill for self-employment, the Committee recommends that agricultural polytechnics should also conduct a two-year diploma and one year certificate course for training agricultural technicians as recommended by the Education Commission (1964—66.) The State Government should consider appointment of only diploma and certificate holders as dealers in fertilizers so that they can advise the farmers about the use of fertilizers in different types of soil (4.14).

60. With the increasing population, modernisation of agriculture will be necessary to increase productivity and it may be necessary even for farmers and their sons to acquire knowledge and obtain training up to diploma and certificate level. It may be desirable to recruit diploma/certificate holders in agriculture with the actual experience of farming as extension workers in future (4.15-4.16).

61. Agricultural polytechnics must have adequate land for imparting intensive practical training to trainees. Some elementary teachers, training colleges, secondary schools and Basic Schools under the Education Department have sufficient land for agriculture but they are not being utilised. Agricultural polytechnics may be started in the same campus or near these institutions. It may be necessary, in course of time, to open a number of agricultural polytechnics. It will, therefore, be worthwhile reserving some surplus land in each district/sub-Division likely to be available consequent upon the enforcement of ceiling on lands, for location of polytechnics. Depending upon the felt need in each area training may be imparted in various branches of agriculture and allied activities in various branches as noted in para 4.18 (4.17-4.18).

62. The training of farmers and their sons in polytechnic should only be practical with such theoretical contents as they can be absorbed. For school drop-outs the one year certificate course should be about 2/3rd to 3/4th practical work and 1/3rd to 1/4th theoretical work, mainly related to farm accounts, and related mathematics and science. For diploma course, the practical and theoretical course should be about half and half (4.19).

63. There is scope for locating one training centre in Singhbhum, Palamau and Hazaribagh each and Monghyr and Santhal Parganas (combined) for training

of secondary school certificate holders and school dropouts in various aspects of forestry, namely, silviculture, forest management, soil conservation, utilisation of timber and forest conserves including felling and logging, conversion of timber, storage of timber, seasoning and preservation of timber etc. (4.20).

*SECTION II—Vocational education for mining manufacturing and small enterprises including construction and electricity.*

64. Although Bihar's mineral production constitutes about 39 per cent of the mineral production of India, and has a very rich industrial potentiality, manufacturing industry in Bihar accounted for only 15.70 per cent of the total State income in 1968-69 as against 23.1 per cent for all India. (4.22).

65. Coal mining is the most important mining industry in the State. There will be considerable development of coal mines in the Fifth and subsequent Plans requiring a large number of skilled personnel. (4.23 and 4.24).

66. Expansion of Bokaro Steel Plant will continue in the Fifth Plan and there will be corresponding development in iron-ore and limestone mines. (4.25—4.27).

67. Ancillary and subsidiary industries are developing and will continue to develop near the heavy industrial complexes of Jamshedpur, Bokaro, Ranchi, Sindri, Barauni and Dehri-on-Sone. Some new medium and small-scale industries will be set up in the Fifth and subsequent Plans. (4.28—4.30).

68. There are 30 Industrial Training Institutes in the State for training craftsmen with 13,000 places for training (inclusive of the numbers of trainees of the first and second year of two years courses of training) and the annual outturn of the trainees is about 5,000. There are 13 Engineering trades of two years duration and 11 Engineering trades of one year duration. In addition, there are 6 one-year non-engineering trades in which training is imparted in the Institutes. (4.31).

69. Institutional training imparted in Industrial Training Institutes is followed by apprenticeship training in the establishment of the employers for periods depending upon the trades. Many trainees trained in the trades are still unemployed. (4.32).

70. The contents of the courses of Engineering Trades include theoretical and practical training and related mathematics and science. There is provision for teaching of language only in the curriculum of stenography. (4.33).

71. Some of the big establishments prefer recruiting secondary school certificate holders with mathematics and science and passing in first or high second division rather than the products of the Industrial Training Institutes. In order to improve the scope of employment of persons trained in the I.T.I., it will be essential to bring about improvement in the contents and methods of training. The syllabuses of trade education and training should include theory and practice of relevant trades, related mathematics and science as well as language and civics—relevant to the job of an employee in an industry. (4.34-4.35).

72. For satisfactory teaching of the trainees of the trades, teachers preferably with 4-5 years' practical experience in the industry should be recruited. In view of the difficulty in recruitment of such teachers on a comparatively lower salary prescribed for them in the institutions, inservice training of teachers already recruited/to be recruited in industries should be given. Wherever possible, part-time teachers with adequate theoretical and practical experience of working in

industries should be employed. Workshops of the training institutes should not only be well-equipped, but there should also be adequate arrangements for maintenance with which instructors and trainees should be associated. (4.36-4.37).

73. In paragraph 4.38 which gives the list of trades in which there is scope for employment in the State. Training in these trades should be taken up on the basis of survey of employment potential in different areas. in the existing institutes or, if necessary, in the new training centres to be opened preferably in the existing secondary schools which have adequate facilities in respect of accommodation, laboratory and land for workshop. Some of the new trades will be suitable for those who have passed the secondary school examination and others will be suitable for school dropouts. (4.38—4.43).

74. In view of big expansion programmes of coal mines, new training centres, one in Bermo-Bokaro area of Giridih district and the other in Karanpura area of Hazaribagh district for training in trades relevant to coal mining and other industries in the areas should be set up without delay. (4.44).

75. While apprenticeship training is conducted satisfactorily in some industries, it is not satisfactorily conducted in others. There is need for bringing about improvement in this respect. Proper training of apprentices in the mines and selection of semi-skilled and skilled personnel by the mines from among them may be taken with the concerned ministry of the Government of India and Public Sector mining concerns. (4.45-4.46).

76. Adequate facilities for training on the job during the period of apprenticeship may create necessary confidence among the trainees to take up self-employment in case they do not get paid jobs. (4.47).

77. Courses of studies for non-engineering trades like those of accountants, book-keeping, typing and stenography should include study of language, civics or citizenship and where necessary, mathematics and science related to the vocation concerned, in addition to the detailed knowledge of the vocation. (4.48-4.49)

78. Effective consultation between the Directorate of Employment and Training and Mines and Industries is necessary to ensure purposeful and effective training during the period of apprenticeship. The form of Vocational Council of Education which is being recommended to be set up should also be utilised for this purpose. (4.50).

**SECTION III—Commerce, Transport and communication including railways, banking and insurance, road transport projects, other services including public services and administration.**

79. There are no institutional arrangements for training of persons for the following groups of vocations in spite of demands for persons with skill and training in them:—

- (1) Accountancy, Book-keeping and Cashier ;
- (2) General Clerk ;
- (3) Typists and Tele-typists ;
- (4) Stenography and Secretariat practices ;
- (5) Purchase and Store Assistants ;
- (6) Salesman and Shop assistants ;
- (7) Wholesale and retail trade.

(4.52).

80. Estimates prepared for commercial man-power by the Institute of Applied Man-Power and Research, New Delhi indicate that the requirements of book-keepers and cashiers, clerical workers, salesmen and shop assistants will be considerable during the Fifth Five-Year Plan. Stenographers, Typists and Accountants will also be required. (4.53-4.54).

81. These vocations are very suitable as two year diploma course and one-year certificate course in classes XI and XII of post-secondary/higher secondary schools. Even pending survey of employment potential training in these vocations can be taken up in divisional, district and subdivisional headquarters as noted in paragraph (4.55).

82. In view of wider mobility and for correcting imbalances in the demands for various categories of personnel, the committee recommends that the post-secondary vocations of book-keepers, accountants, cashiers, general clerks, typists and tele-typists should be of two years' duration leading to a diploma. During the first year of the training, the trainee should be taught and trained in Hindi, English, Book-keeping and calculations, office organisation and procedure, Commercial Geography and Commercial knowledge, Civics, typing and physical education. In the second year, instruction in language and civics should continue but 2/3rds to the 3/4ths of the time may be devoted to the actual vocations in which the candidate wants to specialise. In view of the requirements of persons for the vocations of book-keepers, cashiers, general clerks and typists in the initial stages, provision may also be made for post-secondary one-year certificate course in each of these vocations. Training to be imparted in one-year certificate course will necessarily be narrow and there will be difficulties in inter-changeability between one course to another. (4.56-4.58).

83. There should be only two-year diploma course for purchase and stores assistants courses for training of salesman and shop assistants. Wholesale and retail trades should be of only one year's duration leading to a certificate. (4.59).

84. Some specific suggestions regarding vocational education and training for the vocations of general clerks, book-keepers and cashiers, accountants, typists and tele-typists, stenographers and secretarial practices, purchase and stores assistants, salesman and shop assistants, wholesale and retail traders have been given in paragraph (4.60).

85. Public Health and Medical Services—Health and paramedical vocations—In view of the difficulties of cost and time involved in training of medical graduates and the need for adequate medical and health services, specially in the rural areas, there is, as pointed out in the report of Committee on Medical Education, Bihar (1973), genuine need for skilled personnel and technicians in health and medical services to work with medical graduates. (4.61).

86. Estimates prepared by the State Health Department indicate large requirements of nurses, auxiliary nurses and mid-wives, basic health workers and pharmacists. There are also requirements of female health visitor, laboratory technician (Pathology), operation theatre assistants and X'ray technicians. Some of these categories of personnel like pharmacists are also required by the drug manufacturers and drug shops and X'ray Technicians are also required by private practitioners. There is also scope for self-employment of these personnel. Except for the training of pharmacists, nurses, auxiliary nurses and mid-wives, there is no systematic training for other categories of personnel. The out-turn of even nurses, auxiliary nurses, mid-wives and pharmacists from the existing training institutes is inadequate. (4.62-4.64).

87. Institutions should be set up for two-year training for basic health workers/health visitors, laboratory technician (Pathology) and radiography or X-ray Technicians, for one year's training of operation theatre assistant and for dental hygienist and three years' training for physio-therapists and dietiticians. After the initial requirements will have been met, duration of basic health workers'/health visitor's course may be extended to three years. All these institutions should be set up near the hospitals in which practical training can be given.

There is need for more institutions for training of nurses, auxiliary nurses and mid-wives and pharmacists. They should be set up without delay. There should be provision for inservice training for all categories of the personnel at an interval of every five years in order to keep them abreast of developments in their respective branches. (4.65).

88. There is scope for employment and self-employment in the vocations of (i) studio and photographic services, (ii) hotel management and catering, (iii) home science, (iv) advertising, and (v) library assistants. Provision for two-year vocational education in photography and studio services, two-year course in domestic science or home economics two-years course in advertising and two-years course in library assistants and one-year course for hotel management and catering may be made.

Courses in hotel management and catering should be introduced at Patna and Ranchi in collaboration with hotels. The course for advertising should be conducted in Patna College of Art which conducts a course in commercial art. (4.66).

#### 89. SECTION VI—*Engineering Education and training at the Diploma level.*

Provision exists for engineering education and training at diploma level in Civil, Mechanical, Electrical, Mining, Textile, Ceramics, Chemical and Metallurgical Engineering in the polytechnics of the State. Diploma courses in electronics, leather technology, food technology and catering and agricultural engineering will be introduced in the polytechnics in 1974-75 or 1975-76.

A number of Civil, Mechanical and Electrical Engineering Diploma holders are unemployed. There are much smaller numbers of unemployed Diploma holders in Metallurgical, Chemical and Mining Engineering. (4.67—4.69).

90. As already mentioned, there will be considerable development in mining sector in the State. In addition to the two full-time mining institutes at Dhanbad and Koderma (Hazaribagh District) and part-time institute at Bhaga (Dhanbad) which conducts sandwich courses in mining engineering, there is need for another diploma level institute in mining, mechanical and electrical engineering in Bermo-Bokaro-area or Karanpura mining area for conducting diploma level engineering course on sandwich basis in all the branches. (4.70-4.71).

91. In view of large number of unemployed diploma holders in civil, mechanical and electrical engineering, there is no immediate need for expansion of courses in these branches, but there is need for diversification as will be discussed later. (4.72).

92. Diploma holders are required to work as technicians in various branches including design and development and engineering plant and construction, erection, design, etc. and at junior supervisory personnel guiding and supervising

skilled workers. In both capacities a diploma holder has to acquire sufficient practical knowledge. Practical training is not compulsory in diploma course except in mining engineering. Workshop practice included in the engineering course is not systematic and up to date in absence of proper equipment and experienced instructors. (4.73-4.75).

93. Some big industrial establishments have their own training programmes for training technicians and junior supervisory personnel, but most of them have no such programme for training. Sufficient practical knowledge is of very great importance for diploma holders because of the nature of their work as technicians and junior supervisory personnel. In absence of sufficient co-operation from industries for practical training of diploma holders, provision of Apprenticeship Act, 1961, which is now applicable to the training of diploma holders also should be utilised for their practical training.

Even where it is not possible for making arrangements for practical training, arrangements may be made to take students to selected industries for observational studies for a period of 15 to 30 days. Observational studies should include talks on practical problems like personnel working in industries. (4.77—4.80).

94. Besides sandwich courses in the new polytechnics to be set up in mining areas, sandwich courses may be conducted in the polytechnics of Dhanbad and Ranchi in collaboration with industries there. Sandwich courses may also be conducted in collaboration with industries in Barauni area (4.81).

95. In order to enable the students to get sufficient experience in workshop practice, capacity of the workshop teaching of polytechnics should be fully utilised. (4.82).

96. Practical training should include not only experience of operation and maintenance of equipment but also of planning, design, drawing and erection. (4.83).

97. First class diploma holders with diploma in teachers' training institute and preferably with 3-4 years of practical experience should be appointed as lecturers in polytechnics. (4.84).

98. Practical training of students of diploma courses in Civil Engineering should be arranged in collaboration with Works Department. There should be stipulation in the agreement with the contractors for giving practical training to the students. Engineering polytechnics may be entrusted with the task of repairs of buildings and electric installations and with the work of constructions. (4.86).

99. The courses of agricultural engineering should also include elements of agricultural technology. (4.87).

100. Based upon the need in different areas, diversified courses may be conducted in the branches mentioned in paragraph 4.88 for a period of six months to one year on completion of three-year broadbased course. (4.88).

101. In view of the large mining sector in Bihar, a degree course in mining engineering should be introduced in the Bihar Institute of Technology in Sindri. (4.89-4.91).

102. There should be scope for study up to diploma level for certificate holders in vocations and for degree level in engineering for diploma-holders working in industries or other establishments. For this purpose part-time courses should be available in the polytechnics training located near mining industries and other industrial establishments and in the training institutes of H.E.C., Ranchi and Bokaro Steel Ltd. (4.92—4.94).

103. Rules of employment of the Government should be amended to provide for linkage of vocational qualifications with requirements of qualifications for employment positions and only those who possess the required vocational qualifications should be allowed to compete for relevant jobs (4.96).

104. Only those who possess minimum qualifications (and not higher qualification) for admission should be admitted to the vocational courses (4.98).

105. Those who are employed in other vocations like non-engineering vocations (those of the clerks, typists, accountants, etc.) may improve their qualifications by undergoing correspondence course or attending evening classes which may be conducted in some of the selected colleges (4.98).

106. *Vocational Guidance and Counselling.*—Vocational guidance and counselling should be available to the students. For this purpose there should be a vocational guidance cell in the proposed Council of Vocational Education and an organisation under the Directorate of Employment and Training of the Labour Department. In addition, selected teachers of secondary schools should be trained in vocational guidance and counselling. The secondary teachers programmes should also include vocational guidance and counselling (4.100–4.106).

107. *State Council for Vocational and Technical Education.*—It will be necessary to set up a statutory State Council of Vocational Education for co-ordinating the activities relating to vocational education under different departments of Government, prescribing syllabuses and courses of study, conducting examinations and awarding diplomas, certificates, prescribing conditions for recognition of institutions for imparting vocational education and recognising them on the basis of the prescribed conditions. The constitution of the proposed Council and its functions have been recommended in paragraphs 4.107–4.129. It is necessary to set up the State Council of Vocational Education without delay. Pending the establishment of the State Council of Vocational Education, the Committee on Job-Oriented Education may take up the functions of prescribing outlines of syllabuses of study for different vocations, provided services of an officer from each department concerned with vocational education are made available to work as the convener of the sub-committee to be constituted for drawing up syllabuses for each group of vocational education and training.

## CHAPTER V.

Teacher education and training are of very great importance both from point of view of employment and of maintenance and improvement of educational standards. (5.1).

108. There are two streams of formal teacher education in the State : one for training teachers to be employed for teaching in elementary (primary and middle) schools; and the other for training teachers for secondary schools and supervisors and inspectors for elementary schools. There are 84 Government elementary teacher training colleges and 12 non-Government training colleges from which about 6,000 to 7,000 trainees come out successful every year. About 800 to 900 graduate trainees successfully complete secondary school teachers' training every year.

109. A number of sub-standard institutions with practically no facilities or very inadequate facilities were set up in the State for training elementary and secondary school teachers. Such training institutes were responsible for adoption of unfair means. The State Government, on the basis of the report of a Committee decided that no such sub-standard institutions should be allowed to be set up. These institutions, excepting one or two, have since disappeared. In view

of the importance of teacher education, such sub-standard institutions should not be allowed to be set up. Government should take initiative in setting up training institutions, where necessary, and provide adequate facilities in them (5.3-5.4).

110. It is estimated that about 43,000 teachers for primary and middle schools will be required during the Fifth Plan. These requirements may be met from the teachers already trained and waiting for jobs and to be trained in the Fifth Plan period.

Steps may, however, be taken during the Fifth Plan itself for expansion of the training institutes by creating additional places in them, for meeting the additional requirements of the Sixth Plan. Additional training places required on the basis of estimates should be created by expanding the existing training institutes instead of establishing new ones with inadequate facilities (5.5-5.8).

111. Study made by the State Institute of Education, Bihar, in 1966, indicated that many elementary teachers' training colleges do not have adequate facilities in respect of accommodation, library, teaching aids, staff, etc. Similar situation exists in many secondary teachers training colleges. The Committee recommends that adequate facilities in regard to accommodation, library, laboratories, teaching aids, staff, play-ground should be provided in all the training colleges (5.9-5.11).

112. In view of the large requirement of teachers for elementary schools during the Fifth and subsequent Plans it is not possible to remove the isolation of elementary teachers' training colleges by bringing them into direct contact with the Universities. However, status of the elementary teachers' training colleges and of the teachers working in them should be higher than that of the secondary schools (5.12-5.13).

113. The system of drafting teachers of elementary teachers' training colleges from the Bihar Educational Service and Bihar Subordinate Educational Service (Inspecting Branch) has not worked satisfactorily. The Committee recommends that the teachers of the elementary teachers' training colleges including Principals should form a separate cadre and the lowest grade of teachers in these colleges should be in the Upper Division posts of Bihar Subordinate Educational Service with 30 per cent posts in the proposed Junior Educational Service (Teaching Branch) to be created. Principals of training colleges should get a special pay of Rs. 150 a month and should continue to have the right of promotion to Class I of the Bihar Educational Service.

The minimum qualification of a teacher of elementary training college should be an honours degree in the relevant discipline (5.14-5.15).

114. There should be provision for in-service training of the teachers of training colleges in the secondary teachers' training colleges on the basis of programmes to be drawn up by the State Institute of Education (5.16).

115. Programmes for training for the teachers of middle and primary schools should include ; (a) general and professional courses, (b) contents and methodology of the subjects which are taught in the elementary schools, (c) seminar courses on student teaching, (d) student teaching under the guidance of teachers of training colleges, and (e) practical teaching on craft and work experience. In addition, the student trainee should study a foreign language or modern Indian language, besides, the first language and the second language which have to be compulsorily studied. There should also be provision for physical education and community service. Details of the subjects to be studied may be seen in paragraph 5.20 (5.17-5.20).



116. Duration of institutional training may continue to be two years in elementary teachers' training colleges as at present, but the institutional training should be followed by one year's apprenticeship training on the basis of stipend to be given to the trainee in a school within 10 kms. of a training college which will supervise the teaching work of the apprentice (5.21).

117. An elementary teachers' training college should work for a minimum period of 230 days in an academic session of one year.

A student trainee should study in depth the contents of the relevant subjects. The detailed syllabuses of the subjects mentioned in paragraph 5.20 should be drawn up without delay (5.22).

118. A teacher of a training college should undergo in-service training on completion of seven years after his initial recruitment and every five years thereafter (5.23).

119. Every training institute must have suitable schools attached to it for enabling the student trainees to give practice lessons under the guidance of teachers (5.24).

120. Instead of relying on lectures only, teachers of training colleges should follow other methods such as lecture-cum-discussions, group discussions, seminars, problems solving methods, assignment and presentation of papers and discussions, etc. Student trainees should be encouraged to use library for self study. The ratio of teachers to students should be 1:15. Student trainees should be encouraged to organise and participate in community services in the neighbourhood of the training colleges (5.25-5.27).

121. Each training college should be made responsible for proper development and raising the quality of teaching in the primary and middle schools situated within an area of 10 kms. of its location (5.28).

122. Persons passing some examinations not conducted by the Secondary School Examination Board are not required to study all the subjects recommended by the Committee for study in secondary classes. Many irregularities have been reported in the examinations conducted by such organisations. Persons passing such examination should not be admitted to elementary teachers' training colleges.

No places should be reserved in elementary teachers' training colleges for those who pass only Sanskrit examinations and not secondary school examinations (5.29-5.30).

123. A period of ten months for secondary teachers' training programmes is too short for a student to acquire in depth knowledge about principles of education, contents and methodology of teaching as well as practical experience of teaching. As recommended by the Education Commission (1964-66), education may be included as an optional subject in the undergraduate course to be introduced in the initial stages only in the training colleges. Those who study education as an optional subject in the undergraduate course and obtain Bachelor's Degree may be admitted to one-year B. Ed. course (with six weeks of vocation). In the first four and half months they should practice teaching lessons under the guidance of teachers of training colleges and also learn nature of forces social, political, religious, economic and technological which are tending or are necessary to transform the Indian society and the role of education in such transformation. The trainee will also learn a craft during this period. During the

remaining six months of the term, the student trainee should work as an apprentice to practise systematic teaching in selected schools under the guidance of the headmaster of selected teachers of the schools.

Concurrently, these graduates or post-graduates who have not studied education in their undergraduate course may be admitted to 18 months B. Ed. course (with two months vocation). During the first ten months they should undergo institutional training in professional subjects, contents, and methodology, practice teaching lessons under the guidance of teachers and learn a craft. During the next six months after two months' vocation, they should, like the students of the first stream, practise systematic teaching work as apprentices in selected schools (5.31—5.36)

124. Only those should be admitted to the training colleges who have studied, during their undergraduate course/higher secondary courses, subjects relevant to school education (5.37-5.38).

125. A four-year training course after secondary examination may be introduced in the pilot scheme in one of the training colleges (5.39).

126. Courses for Master's Degree in Education should be of two years' duration and only those who have Master's degree in any other discipline should be admitted to this course (5.40).

127. Courses of study for B. Ed. degree should include—(1) History of educational thought and practice including contemporary educational issues and Indian educational problems, (ii) Principles of education, (iii) Educational psychology, (iv) Health education, (v) Methods and techniques of teaching of two school subjects, (vi) Student counselling and vocational guidance, (vii) Practical work relating to practise teaching under guidance, (viii) Seminar course of student teaching, and (ix) Learning and practise a craft. In addition, a trainee should learn physical education suitable for students of secondary schools.

Those who take up education as optional subject in the undergraduate course will study in that course subjects from items (i) to (vi). Adequate attention should be paid to guided practice teaching for which necessary guidance has to be given by the teachers of the training colleges.

Student trainees should be examined in theoretical papers at the end of their institutional training.

Evaluation of practice teaching work should be done jointly by the headmaster under whom the apprentice teacher has worked and a teacher nominated by the University (5.41-5.44).

128. Every secondary teacher of the teachers' training colleges should have suitable schools attached to it for practice lessons. It should be the responsibility of the training college to improve the quality of education to be imparted in the schools (5.45).

129. Teachers of academic subjects in vocational schools should have B. Ed. degree. Teachers of the vocational and technical subjects should be trained in the Central training institutes and industries (5.46).

130. Teachers of secondary teachers' training colleges should have double Master's degree—one in the relevant discipline and the other in education. The

ratio of teacher and trainee should be 1:15. It may sometimes be advisable to appoint teachers who may not possess degree or post-graduate degree in education, but who have achieved distinction in the post-graduate degrees in disciplines like educational psychology, sociology, science and mathematics (5.48).

131. Teachers of universities and degree colleges should not undergo institutional training but the universities should conduct orientation courses for them (4.49-5.51).

132. There should be a State Council of Education in which the State Institute of Education, State Institute of Science Education, and Institute of English should be merged with Director of Training of the Education Department (proposed by the Committee) as *ex-officio* Director and a Joint Director in its direct charge. The State Institute should have the following sections:—

- (1) Training, Research and Extension, (2) Languages, (3) Mathematics, (4) Sciences, (5) Social Sciences, (6) Work experience, (7) Text-Book and Evaluation and (8) Educational Technology.

Each section should be adequately staffed as suggested in paragraph 5.56 (5.55-5.56).

133. As suggested by the Education Commission, teachers' organisation should not only function on "trade union lines" but should also take up programmes of academic work, organise in-service training and produce literature needed by teachers (5.57-5.61).

134. Private tuition by teachers should be stopped. Additional tuition, if any, should be given in school premises under the supervision of the head of the institution with additional payment to the teachers (5.62).

135. Teachers who have to be away from their institutions on account of their political or public duties including attendance in the legislature should take leave from the institution so that temporary teachers may be appointed in their places and teaching work does not suffer (5.63-5.64).

136. A State Board of Teacher Education should be set up to formulate the standards of teacher education, to oversee that these standards are followed in the training institutes and to evaluate training programmes, etc. (5.65-5.66).

137. Training institution for pre-school education should be set up in selected towns (5.67).