PROCEEDINGS

OF THE

THIRTY-FOURTH MEETING

OF THE

CENTRAL ADVISORY BOARD OF EDUCATION

HELD AT NEW DELHI ON 11 AND 12, OCTOBER, 1968

PART II

MEMORANDA AND NOTES ON ITEMS 3, 4 & 5 OF THE AGENDA

MINISTRY OF EDUCATION & YOUTH SERVICES
GOVERNMENT OF INDIA
1969

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INTRODUCTORY NOTE

The thirty-fourth meeting of the Central Advisory Board of Education was held at New Delhi on 11 and 12 October, 1968 under the chairmanship of Dr. Triguna Sen, the Union Education Minister. The main items discussed were : (1) the Fourth Five Year Plan in Education (due to commence in 1969-70) : (2) the implementation of the National Policy on Education; and (3) the implementation of the recommendations of the National Integration Council. Part 1 of the proceedings which is being issued separately contains the summary of discussions and the resolutions passed by the Board. The memoranda and notes placed before the Board on the main items of the agenda to serve as background material for the discussion have been included in this part These include the report of the Steering Committee of the Planning Group on Education (Planning Commission) on the Educational Development in the Fourth Plan, the report of the Planning Group on the report of the Steering Committee on Education in the Fourth Plan (Planning Commission), and the main conclusions of the Advisory Panel on Education of the Planning commission at its meeting held on 4th and 5th of October.

Reports which were included in the agenda paper but which have been printed (separately) have not been included in this publication.

NEW DELHI
Dated, 1 *March*, 1969

J. P. NAIK
Secretary,
Central Advisory Board of Education.

ITEM 3 : FOURTH FIVE-YEAR PLAN IN EDUCATION

ITEM 3-(i) EDUCATIONAL DEVELOPMENT IN THE FOURTH PLAN (1969-74)

Report of Steering Committee of the Planning Group on Education

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I

INTRODUCTION

The Planning Commission set up an over-all Planning Group on Education under the chairmanship of Dr. B.D. Nagchaudhuri, Member (Science), in March, 1968, for undertaking preparatory work of formulating the Fourth Five Year Plan. The Group was asked to formulate proposals in regard to the size, content and strategies in the various sectors of educational planning. The first meeting of the Planning Group decided to set up a Steering Committee under the chairmanship of the Union Education Secretary (1) to examine the material already available; the Draft Outline of the Fourth Plan, the Report of the Education Commission, the reports of the various committees that had discussed the Education Commission report, etc.,(2)to identify areas in which further work was necessary and specify problems which required further investigation; (3) to prepare guidelines for preparing educational development programmes to be communicated to the State Governments after obtaining the approval of the Planning Commission, and (4) to prepare a tentative draft plan in education for the consideration of the Planning Group on Education. The Steering Committee consisted of the following :

1. Shri G.K. Chandiramani, Secretary — *(Chairman)*
   Secretary
   Ministry of Education

2. Dr. O. P. Gautam, — *(Member)*
   Dy. Director-General (Education)
   I.C.A.R.

3. Prof. P. K. Doraiswami — ,,
   Director-General
   Health Services

4. Dr. P. J. Philip — ,,
   Secretary
   University Grants Commission

5. Dr. A. R. Verma — ,,
   Director
   National Physical Laboratory

6. Shri J. P. Naik — ,,
   Hony. Adviser
   Ministry of Education

7. Shri D.P. Nayar — *(Secretary)*
   Senior Specialist (Education)
   Planning Commission

The Committee associated other experts and the officers of the concerned Ministries/organisations when their subjects were discussed.

2. The Steering Committee held 8 meetings to consider various aspects of educational development. The detailed guidelines to the State Governments—prepared in the light of the "Approach to the Fourth Plan", approved by the National Development Council (relevant extracts given in Annexure I)—were finalized. These were subsequently sent to the State Governments by the Ministry of Education with the concurrence of the Planning Commission (reference Annexure II). The papers on various aspects of education considered by the Steering Committee, revised in the light of the discussions held are given as Annexures III to XIII.

II

PRESENT POSITION—A CRITICAL REVIEW

Expansion of Educational Facilities

1. There has been phenomenal expansion in the facilities for education as summed up in Table 1.

TABLE—1

Number of students at schools & colleges

(Figures in lakhs)

Stage and Age-group	1950-51 (Actuals)	1955-56 (Actuals)	1960-61 (Actuals)	1965-66 (Likely Achievement)	1968-69 (Anticipated)
1 2	3	4	5	6	7
I Primary (6-11) Classes I—V					
Enrolment	191.5	251.7	349.9	514.5	568.0
Percentage of age-group . . .	43.1	50.0	62.8	78.5	79.2
II Middle (11-14) Classes VI-VIII					
Enrolment	31.2	42.9	67.1	105.4	130.5
Percentage of age-group . . .	12.9	115.9	22.5	30.9	34.7
III Secondary (14-17) Classes IX-XI					
Enrolment	12.6	19.8	30.2	55.1	64.2
Percentage of the age-group . .	5.6	7.9	11.1	18.0	19.0
IV University Education** (17-23)					
Enrolment	3.1	5.5	7.4	12.3	16.9
Percentage of the age-group . .	0.8	1.2	1.5	2.3	2.9
V Technical Education . Admission capacity)					
Diploma(No.)	5,900	10,480	25,000	49,900	48,000
Degree(No.)	4,120	5,890	13,820	24,700	24,000

There is very great variation in different States in regard to class systems, the age of entry, etc. For purposes of convenience the broad pattern prevailing in the country, has been taken. Primary stage has been taken to mean classes I-V, corresponding to the age-group 6-11 middle stage to mean classes VI-VIII, corresponding to the age-group 11-14, secondary stage to mean classes IX-XI, corresponding to the age-group 14-17, and the university stage corresponding to the age-group 17-23. There is a considerable number (about 20% in the case of primary stage) of students who belong to the over-age and under-age groups but it is hoped that as the education system settles down and as children start going to school at the right age, the over-age and under-age children will tend to disappear. The enrolment expressed as percentage of the population of the corresponding age-group is a fair measure of the task accomplished and the task remaining to be done.

**Excludes enrolment in classes XI and XII (in U.P. which are affiliated to U.P. Board. The enrolment in these classes has been included in secondary classes.

Educationally Less Advanced Area

4. This general expansion of educational facilities however, is not t in formaly spread.There are regional imbalances in regard to the overall e pansions and in relations to various sectors of education. So far as elemeientar education (age-group 6-14) is concerned the problem is mostly concentitrate in the three educationally less developed States of Bihar, Rajasthann an Madhya Pradesh. By 1968-69, they will be accounting for 48 per cent e of th non-attending children. This position would be worse than what it v was 1960-61 when the non-attending children in these States were 32 peier e of the total non-attending children in India.

Backward Sections of the Population

5. Educational facilities have not spread uniformly among the vavario sections of the population. The backward sections of the community ssuch scheduled castes and scheduled tribes, and the population in ruralul an hilly areas have not availed themselves of all the educational facicilitie available to them.

Girls' Education

Girls' education has lagged considerably behind that of boys as cacan h seen from Table 2.

TABLE—2

Proportion of enrolment of boys and girls (1951-69)

(Percentagges)

Year	Classes I-V		Classes VI-VIII		Classes IX-XI		University Stagge	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girl
1	2	3	4	5	6	7	8	9
1950-51 . .	71.9	28.1	82.9	17.1	86.8	13.2	88.4	11.
1965-66 (Provisional)	63.8	36.2	73.2	26.8	77.7	22.3	76.6	23.
1968-69 . . (Estimated)	62.8	37.2	70.1	29.9	75.5	24.5	76.0	24.

Though the gap between the enrolment of boys and girls is narrowing ththere s still considerable difference between the two.

Adult Literacy

6. The adult illiterates have not been given sufficient attention. I. H percentage of literates increased from 17 to 24 during 1951-61 and the numb of illiterates also increased from 298 million in 1951 to 334 million in 1 The number of illiterates in the age-group 15-44, however, was 131 millio In 1958-69, it is expected that the number of illiterates in the age-group 15-

would be about 150 million. Adult education is a crucial sector where all studies have shown that it is possible to get a quick return in economic terms. Its neglect, therefore, has seriously affected the development effort of the country.

Teachers Education

7. The rapid expansion of educational facilities has outstripped the resources of trained teachers, buildings and equipment. As Table 3 below will show, in spite of increasing provision for training of school teachers, the number of untrained teachers has been increasing.

TABLE—3

School teachers—trained & untrained

(in lakhs)

Year	Teachers	Trained teachers	Untrained teachers	Percentage trained
1	2	3	4	5
1950-51	7.50	4.30	3.20	57
1955-56	10.29	6.23	4.06	61
1960-61	13.83	8.95	4.88	65
1967-68	20.47	15.19	5.28	74

In certain subjects, acute shortages have been experienced at the secondary stage. For example in science and mathematics, the present shortage is estimated at 40% of the requirements. Similarly, technical institutions are short of staff by 30-40 per cent. Shortages are experienced in other stages of education as well. Apart from numbers, the equality of training has considerably deteriorated.

Buildings

8. On the basis of figures collected from the States in 1964-65 it was estimated that 50 per cent of the schools at the primary and middle stages had no buillings of their own or were housed in totally unsuitable accommodation. At the secondary level and in training institutions, 30 per cent of the existing schools and institutions were in this unsatisfactory state. They estimated the backlog as follows :

Institutions	Backlog in lakh sq. ft.
Primary and middle schools	4695.0
Secondary schools	468.0
Primary teacher training institutions	28.0
Secondary teacher training institutions	0.64
Hostels for training institutions	77.0
Total	5268.64

Since then the position may have deteriorated further because although new schools continued to be opened during the interregnum 1966-69, the e plan provision for expenditure on buildings during these three years was proportionately inadequate Similarly in technical institutions, although precise data on the above lines are not available, there are indications of shortage in buildings.

Equipment

9. As regards equipment, there is hardly any equipment worth the name in most of the primary and middle schools. At the secondary stage it was estimated in 1964-65 that about 60 to 70% of the secondary schools were without adequate laboratory equipment. As regards universities and colleges, the U.G.C. have repeatedly pointed out the inadequacy of equipment. Even in technical institutions there is shortage of equipment both indigenous and foreign.

Textbooks

10. There is a dearth of proper textbooks. The National Council of Educational Research and Training is making some efforts in this regard. As regard university textbooks, attempts have been made to produce cheap editions of foreign textbooks with the assistance of the USA, UK, and the USSR. Apart from the problem of textbooks there is almost a complete absence of children's books. The States have tried to meet the problem of textbooks through nationalisation but this is still in an experimental stage. Various difficulties have been encountered, especially in regard to the availability of paper and printing presses. The position in regard to libraries, both institutonal as well as public, is very unsatisfactory.

Scholarships

11. Expenditure on scholarships, stipends and other financial concessions through Government sources has been rising in recent years. It rose from Rs. 2.75 crores in 1950-51 to Rs. 24.06 crores in 1963-63 and is estimated to increase to Rs. 35 crores by the end of the Third Plan. Of the total enrolment at various stages of education, scholarship holders at the end of the Third Plan are estimated to form 2.8 per cent at the middle stage, 8 per cent at the secondary stage and about 18 per cent at the post-matric stage, including technical education institutions.

Manpower Shortages

12. The educational system is not linked with manpower needs with the result that critical shortages have been experienced during the last three Plans in certain fields such as of professional, technical and related workers, sales workers, transport and communication workers, craftsmen and production workers etc. These result from imbalances in the educational system.

Science Education

13. There is too little emphasis on science. Owing to difficulties of staff and equipment, the quality of science teaching at all stages is not at satisfactory. At the elementary stage, including the middle it is practically not existent. At the secondary stage although general science is said to be available, for all students, its standard is extremely low. By 1965-66, the number of students studying science as an elective subject is expected to rise to 20 0 lakh

out of 55 lakhs of students. At the university stage it is estimated that by 196566 as against the original target of 42.5 per cent, only about 39 per cent of the students will be enrolled in science courses.

Vocational Education

4. There is also the imbalance between general and vocational education. In other countries besides there being considerable emphasis on the inculcation of basic skills at the elementary stage, about 40 per cent of the students go to vocational schools at the secondary stage. In India, crafts, nominally introduced in a number of elementary schools, is very badly taught and the resultant educational value is very little. At the secondary stage, by 1965-66, only about 6.5 lakh children would be in vocational schools (including teacher training) corresponding to general secondary schools in which enrolment would be about 55 lakhs. At the post-matric level, enrolment in arts, including commerce and oriental learning courses, accounted for 34 2% of the total enrolment in 1950-51. This has increased to 52.2% in 1962-63. The percentage of students enrolled in science and professional educational courses has on the other hand decreased from 65.8 per cent in 1950-51 to 47.8 per cent in 1962-63.

Educated Unemployment

15. This accounts for the increasing numbers of the educated unemployed on the live register of the employment exchanges. In spite of shortages in certain categories as mentioned above, the number of registrants with qualifications of matriculation and above rose from 1.5 lakhs in June, 1953 to 7.80 lakhs in June, 1963 and to 11.7 lakhs in June, 1968. Although part of this increase is due to the larger awareness of the public about the utility of employment exchanges yet it clearly shows the increase in the number of unemployed educated people. Though the proportion of educated registrants to the total number of registrants is falling the absolute numbers are rising and pose a serious social and economic problem.

Orientation of the Educational System

16. As a result of the deliberations regarding the orientation of the educational system to the new emerging needs it was decided to convert the elementary schools to the Basic pattern, to diversify secondary education and increase its duration so as to make it a terminal course for the large majority of students and to increase the duration of the university course from 2 to 3 years for the first degree. As regards Basic education, the percentage of Basic schools to the total number of elementary schools is estimated to have increased from 15.1 per cent in 1951 to 26.5 per cent in 1965-66. The quality of these schools is extremely varied and the large majority of these schools are not very different from the ordinary schools. Though 75 per cent of the training institutions will be converted to the Basic pattern by 1965-66, the quality of programmes offered in these training institutions and the condition of buildings and equipment available needs considerable improvement.

17 As regards diversification at the secondary education stage, as has already been stated, it hardly exists. Out of the 3700 diversified courses provided in multipurpose schools, the number of technical, agricultural, commerce, fine arts and domestic science courses was only 1700 and the other courses were in the humanities and sciences. These courses neither give the student sufficient vocational skills as to enable him to settle down in a job nor do they prepare him adequately for university education with the

result that the colleges prefer students who have taken up science rather than those who have gone in for diversified courses. The implementation of the other recommendations of the Secondary Education Commission *viz.* that of increasing the duration of secondary education has been largely confined to the institutions in Madhya Pradesh, West Bengal, Rajasthan, Punjab and Bihar. Taking the country as a whole the number of higher secondary schools at the end of the Third Plan is expected to be only 5,315 out of a total of of 22,385 high/higher secondary schools or about 24 per cent.

18. At the university stage, the three-year degree course has not been accepted by the State universities of U.P. and the Bombay University. In most other universities also where it has been introduced it has not led to a three-year integrated course as was the original intention but only to a combination of 1+2.

Wastage in Education

19. Even the utilisation of the resources of men and money is not satisfactory as is shown by the fact that considerable wastage takes place all along the line in education. At the primary stage 60% of the students, who enter class I, do not get even permanent literacy because they drop out before reaching class IV. This wastage figure has remained almost steady over the last 10 years. The quality of education imparted also leaves much to be desired. It also appears that there is hardly any impact of this education on agricultural practices and the running of panchayats and cooperatives which are the basic institutions of our national life and for the satisfactory organisation of which, necessary attitudes have to be inculcated at this stage.

20. At the secondary stage and the university stage more than 50 per cent students fail in the public examinations. Again, a majority of the students pass in the third division. In 1962-63, for instance, 71% of B.As., 43% of B.Sc.s 50%of M.As., and 15% of M.Scs. passed in the third division. As the prospects of employment for the third divisioners are very limited, as is shown by the recent survey of the pattern of graduates employment carried out by the D.G.E.&.T., they add to the number of the educated unemployed. In technical institutions a recent survey carried out by the Education Division revealed that the wastage was 25 per cent at the graduate level and 50% at the diploma level.

Financial Resources

21. Although expenditure on eduction increased from 1.2 per cent of the national income in 1950-51 to 2.9 per cent in 1962-63, and the Government share of expenditure increased from 56% of the total expenditure in 1951-52 to 68% in 1961-62, the total amounts provided fell far short of the requirements. It is also significant that the percentage of development resources allocated to education have remained practically stationary during the three Plans, being 7.6% in the First Plan, 6.6% in the Second and 7.5% in the Third.

22. The problems have been further accentuated during the three annual Plan years of 1966-69. During this period, the outlays for education could not maintain the tempo of developmental activity, which consequently was slowed down, very greatly. In many States, at the elementry stage, it was not possible to appoint an adequate number of additional teachers, with consequent slowing down of expansion of enrolment, overcrowding in existing

school unemployment of trained teachers and curtailment of training facilities or teachers. Comparatively speaking, expansion of facilities at the secondary stage received greater attention from the State Governments than that o primary education. The expenditure under university education exceeded the original allocations largely due to the setting up of new universities and colleges. No worthwhile programmes were taken up under adult education. The emphasis in technical education has been mostly in consolidation In view of the prevailing unemployment among engineering personnel, the Central Government has recommended to all States to reduce admissions in engineering colleges and polytechnics. The programmes of mid-day meals at the primary stage were continued at almost the same level as was reached in 1965-66. No significant programmes were taken up for the expansion of girls' education, or the reduction of wastage and stagnation etc. The programmes of qualitative improvement fared even worse and were either eliminaed altogether or were maintained at a very low level of effectiveness.

III

PRIORITIES AND STRATEGY FOR FOURTH PLAN

Approach

23. The broad approach to the Fourth Plan has been indicated in the Planning Commission document on the subject and in the detailed guidelines to the States sent by the Ministry of Education with the concurrence of the Planning Commission. Briefly, the main direction of educational development in the Fourth Plan will be to promote social justice, link education effectively with economic development and increase returns from investments made by plugging wastage and improving the quality of education.

Priorities

24. It is impossible to lay down precise priorities between different sectors of education as they are mutually dependent. Technical education rests on the base of general education. The various stages of general education support the upper stages and in turn are dependent upon them for teachers and so on. It is, however, possible and necessary to identify the important tasks in each area. That is proposed to be done in this Section. The relative priorities of these tasks will vary from State to State and, even in the State, from district to district.

(a) In *elementary education* the most important task is the provision of facilities for universal education. This involves three programmes, the provision of facilities to backward areas and backward sections of the community, including girls, the expansion of facilities at the middle level; and the reduction of wastage and stagnation. The last two problems are closely interlinked as they both arise from the discontinuance of education by children, mostly from economic necessity, and the solution to it lies in organising continuation education of a large scale.

(b) The expansion and improvemnt of *science education* and its linking with urgent national needs has to be given priority at all levels.

(c) *The postgraduate education and research* in all areas have to be specially looked after as high levels of excellence are needed in every field.

(d) In the case of *vocational and professional education,* its quality has to be emphasised and quantity adjusted to manpower needs. Close links have to be forged with industry.

(e) High priority has to be given to *educational research, reform in curricul and well-designed and carefully conducted pilot projects,* duly evaluated, so tha advances in new directions can be made with efficiency and economy.

(f) While *adult education* is highly important both for liquidating illiterac as well as increasing the productive efficiency of the labour force, it would n be possible to launch any large-scale programme. Emphasis has, therefor been laid on voluntary agencies and community effort and on the organisatic of literacy campaigns as part of the national service programme and in clo collaboration with plans for improving agricultural or industrial productivit

(g High priority should be given to the *identification* of talent and encouraging it through a generous system of scholarships. The community must share the increasing burden of educational development through increase in fees.

(h Adequate *training and motivation of teachers* is central to educational development.

(i High priority should be given to *the development of part-time and correspondence courses* as a means of lateral and vertical mobility of the labour force as well as of social justice so that those who were forced to enter life early due to poverty are able to go up later through their own effort.

Strategy

25 The magnitude and the complexity of the task involved in the proposals put forward in this report require, above all, the maximum possible involvement of the people and the mobilisation of local and private effort through appropriate organisational and administrative measures. Further resources will have to be conserved by maximum utilisation of existing facilities and plugging wastage and stagnation. The planning, implementing and evaluating machinery will have to be streamlined. Fringe activities (in Plan and non-Plan sectors) will have to be wound up. It will have to be ensured that every new scheme is taken up after the most careful consideration and adequate preparation through a stage of pilot projects. Top priority will have to be given to such activities which do not require much finances and have a high multiplier effect. These will need organising skills, technical competence and greater human effort. All efforts in the Fourth Plan will have to be concentrated on essential and priority schemes. Educational technologies, which promote expansion and development in education with minimum investment without lowering standards, will have to be used in an increasing measure. Educational programmes will need to be dovetailed with various social and economic objectives. This will, among other things, require effective coordination with other departments engaged in similar activities and also the drawing up of a perspective plan on the basis of manpower needs of the economy, social demand, availability or likely availability of financial and human resources.

IV

OUTLAYS AND TARGETS

Outlays

26. In the light of these priorities, the needs of education in various sectors were examined. The sum total of various proposals, which came up before the Steering Committee, was about Rs. 1615 crores. In the light of various suggestions made by the Steering Committee and keeping in view the constraint of resources, the original proposals were revised and the outlays which now emerge, are Rs. 1300 crores. Their break-up is indicated in Table 4. The outlays proposed in the Draft Outline have also been shown in the Table 4 for ready comparison.

TABLE 4

Outlays in the Fourth Five Year Plan

(Rs. in crores)

Sub-head	Draft Outline	Percentage	Proposals before the Steering Committee	Percentage	Recommendations of the Steer-Committee	Percentage
1	2	3	4	5	6	7
Elementary Education	322·00	26·6	469·00	29·0	330·00	25·4
Secondary Education .	243·00	20·1	217·00	13·4	201·00*	15·5
University Education .	175·00	14·5	298·00	18·5	255·00*	19·6
Teacher Education .	92·00	7·6	145·00	9·0	120·00*	9·2
Social Education .	64·00	5·3	45·00	2·8	40·00	3·1
Cultural Programmes .	15·00	1·2	21·00	1·3	20·00	1·5
Physical Education .	10·50	0·9	61·00	3·8	30·00	2·3
Languages Book Production . .	17·50	1·4	75·00	4·8	50·00	3·8
Educational Administration . .	10·00	0·8	25·00	1·6	22·00	1·7
N.C.E.R.&T. . .	4·50	0·4	26·00	1·6	10·00	0·8
Vocationalisation of Education . .	..	..	15·00	0·9	4·00	0·3
Other Schemes . .	3·50	0·3	10·00	0·6	5·00	0·4
Technical Education .	253·00	20·9	208·00	12·9	213·00	16·4
TOTAL .	1210·00	100·0	1615·00	100·0	1300·00	100·0

*Includes proposals relating to Science Education.

Break-up of the Plan outlay into non-recurring and recurring may be sen in Table 5.

TABLE 5

Component of the outlays in Third and Fourth Plans

(Rs. in crores)

Plan	Total	Construction	Equipment (including books)	Total (non-recurring)	Recurring
1	2	3	4	5	6
Third Plan	560·00	168·00	56·00	224·00	336·00
Fourth Plan	1300·00	300·00	175·00	475·00	825·00

The outlay in the public sector of Rs. 1300 crores indicated above will be supplemented by a contribution of the order of about Rs. 350 crores from non-government sources, of which only about Rs. 240 crores are of a type that is usually reported in educational statistics and consist of income from fees, endowments, contribution from local bodies, etc. Mid-day meals and similar programmes where *ad hoc* assistance is forthcoming from the community are also not reflected in these estimates. Further, it is estimated that the outlay on education and training programmes of Departments, other than Education, during the Fourth Plan would be about Rs. 500 crores.

27. As a result of the outlays, indicated in the above paragraph, the total expenditure on education will go up from Rs. 850 crores in 1968-69 to about Rs. 1576 crores in 1973-74, which will be about 3.86 per cent. of the national income as indicated in Table 6.

TABLE 6

Total Educational Expenditure during the Fourth Five Year Plan—1969-70 *to* 1973-74

(Rs. in crores)

Year	Total (Government)	Non-Government	Total of (Columns 2+3)	Educational expendiure as percentage of National Income
1	2	3	4	5
1968-69	640·00	210·00	850·00	2·79
1969-70	765·20	224·70	989·90	3·06
1970-71	879·33	240·43	1119·76	3·27
1971-72	994·42	257·26	1251·68	3·45
1972-73	1146·52	275·27	1421·79	3·69
1973-74	1281·66	294·54	1576·20	3·86

28. According to the latest decision of the Planning Secretaries regarding Centrally sponsored schemes and taking into consideration the tasks which will have to be taken up by the Central Government, it has been estimated that out of Rs. 1300 crores, the outlay on Central and Centrally sponsored schemes would be Rs. 334 crores and Rs. 74 crores respectively or the total Central Sector would be of the order of Rs. 408 crores. The outlay in the State Sector would be Rs. 892 crores.

29. The main schemes in the Central sector relate to the development of Central institutions as well as programmes directly executed by or assisted by the National Council of Educational Research and Training and the University Grants Commission. The work of the NCERT largely relates to pilot and experimental projects, production of model books and of prototype scientific equipment required in schools, research in curriculum, teaching methods, evaluation, etc. The University Grants Commission concentrates on the consolidation and improvement of higher education with special reference to postgraduate and research work.

30. The most important programmes in the Centrally sponsored sector will be the provision of loans for construction of hostels, functional literacy programmes in conjunction with the Agriculture Ministry's programme of intensive development of agriculture in selected areas and Book Production Programmes.

31. The details of the schemes in the Central and Centrally sponsored sector may be seen at Annesure XIII.

Targets

32. The main targets of enrolment, accepted for the Fourth Plan, are indicated in Table 7.

TABLE 7

Number of students at schools and colleges

Stage and Age-group	Unit	1950-51 (actuals)	1960-61 (actuals)	1965-66 (actuals)	1968-69 (likely position)	1973-74 (targets)
1	2	3	4	5	6	7
I. Primary (6—11) Classes I-V :						
Enrolment . .	Lakhs	191·5	349·9	514·5	568·0	748·0
Percentage of the age-group . .		43·1	62·8	78·5	79·2	92·3
II. Middle (11—14) Classes VI-VIII :						
Enrolment . .	Lakhs	31·2	67·1	105·4	130·5	201·1
Percentage of the age-group . .		12·9	22·5	30·9	34·7	45·9

1	2	3	4	5	6	7
III. Secondary (14—17) Classes IX-XI :						
Enrolment . .	Lakhs	12·6	30·2	55·1	64·2	97·2
Percentage of the age-group . .		5·6	11·1	18·0	19·0	24·6
IV. University Education (17—23) (Arts, Science and Commerce)						
Enrolment . .	Lakhs	3·1	7·4	12·3	16·9	26·3
Percentage of the age-group . .		0·8	1·5	2·3	2·9	3·8
V. Technical Education (Admission capacity)						
Diploma . .	Nos.	5900	25000	49900*	48000	26000@
Degree . .	Nos.	4120	13820	24700*	24000	17000@

*Sanctioned capacity.

@The targets have been reduced in view of the unemployment among engineers. These will be revised once the demand for the Fifth Plan is known.

The progressive increase in enrolment during the various Plan periods is indicated in Table 8.

TABLE 8

Increase in enrolement in various stages of education during various Plans

(Figures in lakhs)

Sl. No.	Stage/Age-group	Additional Enrolment					Average Annual Increase				
		I Plan	II Plan	III Plan	1966-69 Plan	IV Plan	I Plan	II Plan	III Plan	1966-1969 Plan	IV Plan
1	2	3	4	5	6	7	8	9	10	11	12
1.	Primary 6—11 . .	60·2	98·2	164·5	53·5	180·0	12·04	19·64	32·90	17·83	36·00
2.	Middle 11—14 . .	11·7	24·2	38·3	25·1	70·0	2·34	4·84	7·66	8·37	14·00
3.	Secondary 14—17 .	7·2	10·4	24·9	9·1	33·0	1·44	2·08	4·98	3·03	6·60
4.	University 17—23 .	2·4	1·9	4·9	4·6	9·4	0·48	0·38	0·98	1·53	1·88

It will be seen that the tempo of increase will comparatively slow down so far as the age-group 6-11 is concerned as we approach the saturation point. The increase at the middle stage will be more pronounced as a result of the pressure of increase at the primary stage in the earlier period, the greater retention as a result of the measures proposed to reduce wastage and

stagnation and emphasis on continuation classes. The most phenomenal increase, however, will be at the university stage because of the rapid increase in the social demand and the non-availability of sufficient alternative avenues.

33. The requirements of teachers for the programmes of expansion is indicated in Table 9.

TABLE 9

Additional employment of teachers

(Figures in lakhs)

Stage	1968-69	1973-74	1969-74 Additional teachers (Columns 3—2)	1969-74 @ Additional teachers for normal replacement	Tototal Additiional teacachers (Colvlumns 4++5)
1	2	3	4	5	6 6
Primary	14·20	16·60	2·40	2·30	4·70
Middle	5·20	6·00*	0·80	0·90	1·70
Secondary . . .	2·90	3·90	1·00	0·60	1·60
TOTAL .	22·30	26·50	4·20	3·80	8·00

@ 3 per cent for Elementary Education and 4 per cent for Secondary Educationn.
*Excludes teachers who will be required for 10 lakh students to be enrolled in n continuation classes. The existing teachers will be required to teach these students.

Thus during the Fourth Plan, the number of additional teachers who will be employed, is expected to be 8 lakhs.

34. The additional number of university and college teachers who are expected to be appointed during the Fourth Plan is likely to be 5 51,000 inclusive of 8,000 on account of normal replacement.

35. On the basis of expansion visualised for teacher training facilities the additional number of teacher-educators is likely to be about 3,0000 inclusive of replacement. The additional administrative, inspectoratete and supervisory staff required during the Fourth Plan is likely to be of the e orde of about 5,000. It is difficult to make any very precise assessment of the requirements of non-teaching staff. It is estimated very roughly that d during the Fourth Plan, about 80,000 to 90,000 additional non-teaching staff will be required.

36. The details of the various important programmes and poolicie have been given in Annexure III to XII.

In the following paragraphs some of the significant developments visualised have been indicated. The enrolment targets for elementary educaatio have been fixed on the basis of feasibility and the need to achieve the c constitutional directive as early as possible and those for the subsequent stages on the basis of estimated social demand. In regard to technical educaation, the admission capacity is proposed to be reduced keeping in view the rouh demand estimates, which is all that is possible to make at this stage wwithout the targets of industrial production etc. for the Fifth Plan being knowwn.

V

PROGRAMMES AND POLICIES

PreSchool Education

37. Owing to the dearth of resources, the main emphasis in the Fourth Plan in the field of pre-school education, will be on the training of teachers in pre-primary training institutions with attached experimental nursery schools, providing grant-in-aid on a limited scale to municipalities and corporations for setting up pre-primary schools in slum areas and organising low-cost pre-primary classes in rural areas with community support.

Elementary Education

38. The provision of universal education for all children up to the age of 14 years would be achieved latest by 1990-91; and the provision for the universal education for all children in the age-group 6-11 would be completed by 1980-81. This will be achieved : (a) by opening new schools in school-less habitations, (b) by encouraging the enrolment of girls and children of backward communities, and (c) by progressively eliminating wastage and stagnation.

39. About 5 per cent of the rural population do not have facilities for primary education. Therefore, in the Fourth Plan, priority will be given to opening primary schools in about 16,000 rural habitations which have a population of 300 and above, but have no schools, at present, within a distance of one mile. Likewise, in the opening of new middle schools, preference will be given to the school-less rural habitations with a population of 1500 and above. Simultaneously vigorous efforts will be made to encourage a larger enrolment of girls, particularly at the middle stage. At the primary stage, the enrolment of girls is highly unsatisfactory in the States of Bihar, Madhya Pradesh and Rajasthan. At the middle stage, the position is very unsatisfactory not only in these three States but also in Uttar Pradesh. It is proposed to eliminate wastage and stagnation over the next 15 to 20 years according to a phased programme. This will be done through greater integration of work in the school and among the parents, especially in classes I and II and in regard to the care of the pre-school child; through more effective control of admissions in class I so that all the children join the class about the same time, through the provision of mid-day meals; through such programmes as free textbooks and free clothing to needy children; and through effective teaching. To begin with, in the Fourth Plan, a definite target will be laid for the reduction of wastage and stagnation by 25 p given to the present incidence and vigorous efforts will be made to achieve it. In regard to qualitative improvement, special attention will be given to the revision of curricula, production of better textbooks and the improvement of teaching of science, particularly at the middle stage.

40. According to the programmes drawn up, the targets of expansion for elementary education, are shown in Table 10.

TABLE 10

Enrolment targets for elementary stage

Classes/Age-group	1960-61 actuals	1965-66 actuals	1968-69 anticipated	1973-74 proposed
1	2	3	4	5
I—V (6—11)				
Boys	235·93	328·38	356·77	446·51
Girls	114·01	186·14	211·19	301·45
TOTAL	349·94	514·52	567·96	747·96
VI—VIII (11—14)				
Boys	50·74	77·18	91·43	136·19
Girls	16·31	28·18	39·02	64·84
TOTAL	67·05	105·36	130·45	201·13
I—VIII (6—14)				
Boys	286·67	405·56	448·20	582·70
Girls	130·32	214·32	250·28	366·29
TOTAL	416·99	619·88	698·41	948·99
Percentage of population in the age-group				
I—V (6—11)				
Boys	82·9	98·5	97·1	106·7
Girls	41·3	57·7	60·3	76·8
TOTAL	62·8	78·5	79·2	92·3
VI—VIII (11—14)				
Boys	33·2	44·5	47·9	60·6
Girls	11·3	16·9	21·1	30·4
TOTAL	22·5	30·9	34·7	45·9
I—VIII (6—14)				
Boys	66·4	79·8	80·0	91·2
Girls	32·0	43·6	46·4	60·7
TOTAL	49·0	62·0	63·6	76·4

The additional children who will be enrolled in Classes I-VIII, during the Fourth Plan would be 250 lakhs as against 213 lakhs in the Third Plan. Thus, by 1973-74, the provision of schooling facilities would be available for 76.4 per cent of the children in the age-group 6-14; schooling facilities for boys would be available for 9.2 per cent and for girls 60.7 per cent.

Secondary Education

41. The enrolment at the secondary stage has shown the highest rate of growth in the field of general education. In the Fourth Plan, it is expected to enroll 33 lakhs additional children in classes IX-XI. The position about expansion of facilities at the secondary stage is indicated in Table 11.

TABLE 11

Enrolment at the secondary stage

Year	Enrolment (Figures in lakhs)			Percentage of the Age-group		
	Boys	Girls	Total	Boys	Girls	Total
1	2	3	4	5	6	7
1960-61 . . .	24·6	5·6	30·2	17·5	4·2	11·1
1965-66 . . .	42·8	12·3	55·1	27·3	8·2	18·0
1968-69 . . .	48·5	15·7	64·2	28·2	9·5	19·0
1973-74 . . .	71·0	26·2	97·2	35·2	13·5	24·6

It will be observed that, by the end of the Fourth Plan, schooling facilities according to proposed programmes would be available for 24.6 per cent of children in the age-group 14-17; 35.2 per cent for boys and 13.5 per cent for girls.

42. While making adequate provision for the inescapable growth in enrolment, the main effort in the Fourth Plan will be to enrich the content and improve the quality of secondary education. This will be achieved by a strict enforcement of grant-in-aid rules for the recognition of new schools whose location will be determined according to the requirements of each area, taking into consideration the optimum utilisation of the facilities already available in the area. At the same time encouragement will be given to the setting up of secondary schools in the backward areas and special facilities will be provided for increasing the enrolment of girls at this stage. Scholarships will be offered to bright students from rural areas to enable them to complete secondary education. The present improvement programmes relating to the revision of curricula, production of good textbooks and examination reform will be strengthened further. Emphasis will be placed on the pre-service and in-service training of science and mathematics teachers and the provision of at least the minimum laboratory equipment so as to ensure that every secondary school in the country is able to teach science as a compulsory subject up to Class X. A beginning will also be made in the vocationalisation of secondary education by reorienting and strengthening the teaching of practical subjects in schools which have,

at present, facilities for teaching these subjects so as to provide terminal courses for those who will not go beyond the matriculation stage. ITIs are already providing such courses for some students. By and large vocationalisation will be at the post-matric stage and will be mostly imparted in institutions for the training of para-medical personnel, agricultural schools, ITIs, polytechnics etc., whose intake will be determined by the need for such personnel. But there is considerable room for further experimentation.

University Education

43. Taking into consideration the inevitable expansion, it is estimated that the total enrolment in arts, science and commerce courses including the P.U.C. and the intermediate classes of Bombay University (but excluding U.P. intermediate colleges which are regarded by the State Government as a part of the school system) will increase from 16.93 lakhs in 1968-69 to 26.28 lakhs in 1973-74 indicating an additional enrolment of 9.35 lakhs. The additional enrolment in pre-university, and intermediate, undergraduate and postgraduate and research classes would be 2.76 lakhs, 27,000 5.33 lakhs and 99,000 respectively. The additional enrolment in law during the Fourth Plan is estimated to be 35,000. Emphasis will be laid on the development of postgraduate studies and research by expanding the existing centres of Advanced Study and establishing clusters of such centres of Advanced Study in a few universities for inter-disciplinary research in selected subjects. Science education will receive the highest priority. More than 50 per cent of the allocations are reserved for this purpose. It will be expanded and improved through the provision of laboratories, scienctific equipment and qualified staff. Provision has also been made for new universities, the establishment of which has already been agreed to. Special assistance will be made available to about 100 selected colleges for improvement. The affiliated colleges have been hitherto completely neglected even though they provide education to more than 88 per cent of the enrolment at the university stage. It is proposed to organise at least 850 summer institutes during the Fourth Plan, with an enrolment of about 40,000 teachers. A number of student welfare services like improvement of hostel facilities, student study homes, health services, sports and games etc. will be taken up. Residential facilities, for students and teachers will be further expanded. The existing schemes of National Scholarships will be expanded in the Fourth Plan. The emphasis will be on loan rather than grant scholarships.

Social Education

44. Provision for functional literacy both in rural and urban areas for clearly identifiable groups and compact areas, where intensive programmes of increasing production are launched or where the public response is very good, will be given high priority. Further, educational institutions, through the programme of National Social Service and the village adoption scheme, will take up the programme of initial literacy. These programmes can be successful if there is adequate follow-up in terms of reading materials and libraries. Necessary provisions for this have been made. Voluntary organisations have an important contribution to make in promoting adult education programmes. They will be assisted. The University Departments of Adult Education will be helped in taking up pilot projects, conducting research and organising extension and extra-mural lectures.

Teacher Education

45. The main emphasis in this sector will have to be on qualitative programmes like the provision of in-service education, professional education of teacher educators, improvement of existing facilities, provision of correspondence courses for the existing untrained teachers, educational research, upgrading the academic qualifications of the existing unqualified teachers, taking up specialised courses and setting up of State Boards of Teacher Education. Expansion of training facilities will be related by the State Government to the demand for new teachers and the existing training capacity. Special emphasis will be laid on the training of science and mathematics teachers.

National Service and Youth Programmes

46. The national service and sports programme which has now been accepted as an integral part of educational development, will be implemented during 1968-69 on a pilot basis by the universities and colleges. During the Fourth Plan it is proposed progressively to increase the coverage of students under this programme from one lakh in 1968-69 to 6 lakhs in 1973-74. The coverage of students under the NCC in 1973-74 would be 4 lakhs. So the coverage of the two programmes taken together will be 10 lakhs against a total estimated enrolment of 12 lakhs in the first two years of the degree-course by the end of the Fourth Plan. A number of welfare programmes for urban and rural youth will be taken up and an attempt made to provide a number of activities, through educational institutions, to non-student youth. Physical education and sports programme will be continued. The Ministry of Education have set up a Study Group which is preparing details of youth welfare programmes. The programmes of Planning Forums will be expanded in the Fourth Plan.

National Council of Educational Research and Training

47. The programmes initiated by the NCERT in the field of evaluation and guidance, curriculum construction, extension, educational research etc. will be consolidated. The programmes of development of science education will be expanded. It is proposed to effect closer collaboration between the programmes of the NCERT, the State Departments of Education, State Institutes of Education, universities and the other institutions which are concerned with the qualitative improvement of education in the county.

Development of Languages

48. The Official Languages (Amendment) Act, 1967 and the Government Resolution thereon enjoin upon the Government of India to prepare and implement a comprehensive programme for the spread of Hindi as well as other modern Indian languages mentioned in the Constitution.

49. A number of schemes for the development of languages have been proposed in the Fourth Plan. These include the setting up of Institutes of Languages, with the objectives of conducting inter-linguistic reserarch, training of translators in different languages and production of literature in Hindi and other Indian languages including tribal languages. It is also proposed to assist the State Governments in the production of literature in Indian languages so as to facilitate the change-over to regional languages

as media of instruction at the university stage. The programmes of the Scientific and Technical Terminology Commission will be stepped up. The Central Government will also continue to assist the Hindi teachers training colleges and the appointment of Hindi teachers in non-Hindi States. Assistance will be provided to the voluntary organisations for the propagation and development of Hindi. It is also proposed to set up an institution at the university level with Hindi medium in South India. The schemes for the development of Sanskrit like improvement of pay scales of Sanskrit teachers, award of scholarships for Sanskrit studies, etc. will be continued and further expanded. Grants will be given to voluntary organisations devoted to the production of Sanskrit literature.

Book Production

50. With the decision to switch over to modern Indian languages as the media of education at the university stage, it has become necessary to develop two important programmes, *viz.*, (i) the production of books in modern Indian languages with a view to their adoption as media of instruction at the university stage and (ii) the production of indigenous books in English with a view to reducing our dependence on imported books to the minimum. These programmes will be taken up by the Central Government in collaboration with the University Grants Commission and State Governments. At the school stage, intensive efforts will be made (a) to improve the quality of textbooks, (b) to produce ancillary teaching and learning materials on an adequate scale, and (c) to make proper arrangements for the distribution and sale of school textbooks. It is also proposed to suggest to the State Governments to set up autonomous book production corporations. The coordinating machinery for taking up the big programme of book production both at the Centre and State levels, will be established. Emphasis will also be placed on production of books for children, especially from the point of view of national integration and development of interest in science.

Cultural Programmes

51. The programmes of Archaeology, Akademies and Museums will be stepped up. Central assistance will continue to be made available for the reorganisation and development of museums run by State Governments and private organisations on the advice of the Central Advisory Board of Museums. It is also proposed to expand the museums run by the Central Government, *i.e.*, National Museum, Delhi, Salar Jung Museum, Hyderabad and Victoria Memorial Hall, Calcutta, etc. There is provision for the expansion of National Library, Calcutta, Delhi Public Library and the National Archives of India. The cultural and Budhistic institutions will be developed. It is proposed to make available to school and college students plaster casts and paintings of museum and archaeological objects and filmstrips depicting places of historical interest etc. The work relating to the compilation of the Indian and the District Gazetteers will be continued.

Vocationalisation of Education

52. Details of the programme are being worked out.

Development of Science Education

53. Science, being basic to the development of a modernising society, has been given a very high priority in the proposals for various levels of education. The proposals are brought together in this section so that they can be viewed as a whole and the relationship of the efforts at various levels made

clea. The efforts in the Fourth Plan will be to provide facilities for the teachirg of science as an integral part of the general education programme at last up to the high school stage. With this end in view, programmes of pre-service and in-service training of teachers will be strengthened, the curriculum in science will be up-graded and modernised and necessary physical facilities of laboratory and equipment will be made available to as many schools as possible. The agencies which provide leadership role at the State level will be strengthened and a net-work of supervisory agencies will be set up to ensure proper implementation of the science programmes. In addiion, encouragement will be provided to information activities through science clubs and science fairs.

4. At the elementary stage, the development programmes include provsion of laboratory facilities to all existing teacher training institutions, provsion of science kits to 21,000 selected primary schools, provision of in-sevice training facilities to teachers of selected schools and a pilot project in each State to improve science teaching through a mobile laboratory-*cum*-trainng van.

5. At the middle stage, it is proposed to establish about 150 science teachng centres in selected science colleges, to provide in-service training facilities for 40,000 science and mathematics teachers now teaching these subjects and to provide a science study-room and equipment for each of the 20,000 selected middle schools.

6. At the secondary stage, the State Institutes of Science Education will be strengthened, science units will be set up in the State Directorates of Education and science supervisors will be appointed in 150 districts. Existng training colleges will be provided science equipment, one-year pre-service training centres for science teachers will be set up in selected universities and a large in-service training programmes will be undertaken. Fund have also been provided for laboratory rooms and equipment in 8,000 existing secondary schools and 4,000 new secondary schools to be set up during the Fourth Plan and in about 500 higher secondary schools of the 12-year pattern. Provision is also made for grants to science clubs, science fairs at all evels and for the establishment of State Science Museums.

57. At the university stage, there has been a rapid expansion of science education during the past two decades. The enrolment in science subjects which was about 27 per cent of the total enrolment in arts, science and commerce subjects in 1960-61 rose to about 39 per cent in 1968-69. In the Fourth Plan, it is proposed to expand and diversify science education so as to meet the growing demand of science graduates and postgraduates in various disciplines. It is proposed to lay particular emphasis on the expansion and improvement of facilities at the postgraduate and research levels. For this purpose, the Centres of Advanced Study set up in various universities will be strengthened. Inter-disciplinary and intra-disciplinary research will be encouraged through the setting up of 'clusters' of Advanced Centres in related subjects. It is proposed to provide suitable short-term training courses in applied science subjects for science graduates who fail to get absorbed in vocations requiring the knowledge of science courses pursued by them. It is proposed to improve science education facilities by developing selected institutions and selected courses of study, organisation of summer institutes, refresher courses and college development programmes and development of instrumentation workshops and computer facilities in universities and collegiate institutions.

58. The total provision exclusively for the scheme of expansion and improvement of science education in the Fourth Plan is Rs. 117.50 crores out of a Plan outlay of Rs. 255 crores for higher education. This is in addition to the outlays provided for schemes like hostels and staff quarters, etc. which are common to both science and humanities courses. The provision exclusively for science education at the elementary and secondary stages is Rs. 22.50 crores and Rs. 41.41 crores, respectively, thus making a total provision of Rs. 181.41 crores for science education at all stages. This is exclusive of the provision for science courses in technical institutions. Out of this about Rs. 20 crores is for training of teachers, mostly for elementary and secondary teachers.

Technical Education

59. It is proposed to bring down the admission capacity of degree and diploma courses from 24,000 and 48,000 respectively to about 17,000 and 26,000 in the light of the anticipated demand for engineers and diploma holders, during the Fifth Plan. These figures will be revised as soon as firm figures of demand are available. The main emphasis in this field will be to concentrate resources and energy on improving quality and standards. The improvement programmes would relate to pre-service and in-service training of teachers, reorganisation of diploma courses in order to diversify them and reorientate them functionally to the needs of industry, expansion and improvement of postgraduate engineering studies and research, curriculum development and preparation of instructional material including laboratory equipment, expansion of apprenticeship training in industry, etc.

VI

PLANNING, IMPLEMENTATION AND EVALUATION MACHINERY

60. To put through the programmes indicated in the previous sections, and even to improve returns from the existing programmes, it is of the utmost importance that the administrative machinery should be streamlined. This will require a careful evaluation of the present strength of the cadre of the Central and State Governments, their recruitment and training policies and the incentives provided to personnel at various levels and the provision of remedial measures. Special attention is needed to reduce the work-load to inspectors so that effective supervision can be broadened and modernised to include professional guidance to teachers. It would be desirable to broad-base the area of recruitment of educational administrators both at the Centre and State levels so that people working in universities and similar institutions can be drawn upon for administrative jobs and people in the administrative wing can go to teaching jobs for a few years to facilitate cross-fertilisation of ideas. This will promote a close relationship between administrative practices and the needs of the educational institutions. Besides, strengthening the administrative and inspectorate staff, it would be desirable to arrange for their training and retraining. For junior administrative personnel, training programmes could be arranged at the State level, but for senior administrators, it is proposed to set up a National Staff College for Educational Administrators which would, besides providing training programmes through seminars and workshops, also undertake research in problems relating to comparative studies of various procedures and practices in the different States and in other countries with similar problems as our own, so that lessons can be learnt from the relevant experience.

61. A careful review of procedures will also be necessary so that through decentralisation of the decision-making authority quick decisions can be taken at the appropriate levels right along the lines down to the institutional levels. The administrative machinery, in order to be able to cope with developmental tasks, has to develop the capacity to change and grow in response to the call of new programmes and policies. For that programmes and policies have to be periodically reviewed and modified in the light of evaluation. That would require a carefully designed and strong planning and a statistical cell to assist the Director of Education. This cell could keep the procedures and the practices of the administrative machinery at all levels under constant review.

62. Planning is a continuous process. Therefore, in the Fourth Plan itself steps should be taken to streamline the planning machinery and in the first instance to make it effective at least at the district level though the attempt should be to take it right down to the institutional level.

63. In view of the importance of this subject, a Working Party on Educational Planning, Administration and Evaluation was set up by the Planning Commission. The Report of the Working Party has since been received and it is proposed to implement the programmes suggested by the Working Party in the Fourth Plan.

Annexure I

Extracts from "Approach to the Fourth Plan" as approved by the National Development Council in their meeting held on May 17-18, 1968.

EDUCATION

Immediate attention must be paid to implementation of the directives in the Constitution regarding primary education. The implementation will require provision of special facilities to backward areas and backward sections of the community and for the education of girls. The extent of wastage and stagnation in primary education is at present proving very costly. It would be necessary to device measures to reduce this substantially. In the field of adult literacy, it is proposed to emphasise the functional approach.

2. Since education is the main instrument of social change, opportunities for secondary and higher education must become increasingly available to all classes. At the same time, restraint of resources—financial and personnel—emphasises the need to economise in, and to rationalise the process of institutional spread and to make strenuous efforts at maintaining minimum standards of quality.

3. Considerations arising out of manpower planning have special relevance to the field of technical, vocational and professional education. The institutional and other facilities brought into existence to provide this education must be linked to estimates of future demand for trained manpower. This is because the educational effort in this field is relatively costly and excessive supply wastes national resources and because over-supply of highly qualified technicians leads to special difficulties in the cases of unemployment. The estimates of future demand can only be made on the basis of a commitment to a certain pattern of long-term development. Further, industry, business and commerce need also to be closely associated with this sphere of educational effort.

4. Enlargement of research activity is essential. All such activity should be coordinated fully between the institutions and universities specially with postgraduate work and that in its applied aspects, it is closely linked with the appropriate sectors of economic actitvity.

5. The relatively early stage at which a large majority of students in India find it necessary to leave education indicate the importance of providing facilities for part-time education, correspondence courses and other training programmes. These should be so designed as to facilitate lateral and vertical mobility of members of the working force.

6. Because of our poverty, it is not possible for the State to maintain free a system of widespread and varied educational services. While, it is necessary to provide special facilities for the poor, it is not financially desirable to afford free facilities to those who can afford to pay for the education of their children. Therefore, a system in which an appropriate charge for educational service is made, combined with a scheme of scholarships, freeships and loans appears the most appropriate. It is also desirable to encourage voluntary

contributions for educational activity, especially in relation to non-recurrent and capital expenditure, from the community and individuals.

7 While programmes for the expansion of facilites at different stages will have to continue it is essential to lay greater emphasis on programmes of qualitative improvement. Among these, special attention will have to be given to the improvement of the skills and status of teachers, indigenous book production and promotion of student welfare.

8. Another step is the extension of public services which raise the standard of living of the mass of the people. The two most important directions in which this has happened significantly during the last 15 years have been the spread of educational and public health facilities. Education is the most effective means for progress. An appropriate spread of educational opportunities is an extremely important instrument of social policy. It is noteworthy that backwardness in economic organisation and cooperative effort usually goes hand in hand with backwardness in education (Chapter VIII, Development and Distribution, para 4).

9. It is possible to incur expenditure on specialised programmes, such as school meals, nutritional programmes in favour of definite areas or categories of people and programmes for the welfare of children. If these are properly articulated, they may benefit specially the handicapped classes and categories. Subsidies have been given in the past through the lowering of foodgrains prices. It is obvious that we cannot afford general subsidies at any significant level and further that subsidisation, which is necessarily non-discriminatory achieves social purposes at too great a cost (Chapter VIII, Development and Distribution, para 5).

stag should include a regular and systematic education of those who are idenfied at the first stage as being capable of putting in serious efforts. Thiwill need a paid teacher on a part-time basis and a proper library of suitale follow-up literature. The entire programme should be financed joinv by the State and the local community.

. Programmes of adult education may be developed in industrial and commercial undertakings, public and private, and by voluntary organisations. The should also form an important part of the programme of national or soci service for students. All Departments of Government should participa in the programme in a suitable manner, the technical guidance bein provided by the Educatien Department. A State Board of Adult Edution may be set up to coordinate these different programmes.

. *Part-time Education.*—The relatively early stage at which a large majority of students in India find it necessary to leave educational institution and the requirements of a changing technology, indicate the importance of providing facilities of part-time education, correspondence courses and othe training programmes. These should be so designed as to facilitate lateri and vertical mobility of members of the working force.

. *Planning and Establishment of New Institutions.*—Preference should be give to the full utilisation of facilities in an existing institution over the creaon of a new one. It is also necessary to ensure that each educational institution reaches an optimum size which will help to make it both economic and fficient.

0. On the basis of the Second Education Survey, the location of new primry and secondary schools should be carefully planned. Similar plannings also necessary for colleges. No new university should be created unless the ned for it is clearly established, adequate resources are provided and the concrrence of the University Grants Commission, the Ministry of Education and the Planning Commission is obtained. A convention should also be stablished that university centres should be set up in the first instance and evcloped into universities in due course.

III Programmes of Consolidation and Qualitative Improvement

1. While programmes of inescapable expansion will continue in the Four Plan on the broad lines indicated above, emphasis has now to be shiftd to those of consolidation and qualitative improvement.

2. *Teacher Education and Teachers Status.*—Suitable steps should be taken to improve the remuneration, retirement benefits and conditions of work and servic of teachers.

3. Special emphasis should be given to the employment of women teachrs with a view to increasing the enrolment of girls.

4. Teacher education—both pre-service and in-service—needs special attention. A State Board of Teacher Education should be set up in each Stateto formulate and implement comprehensive plans for the development of teache education. The programmes to be developed for the purpose should include, amongst others, (a) expansion of facilities to clear the backlog of untrained teachers and to increase the output of training institutions to equal

the annual demand; (b) the improvement of training institutions; (c) revision and vitalising of training courses; (d) advanced training of teacher-educators; and (e) the starting of part-time and correspondence courses to supplement those for full-time education.

15. *Physical Facilities in Educational Institutions.*—Steps have to be taken to improve physical facilities, e.g., buildings, libraries, laboratories, workshops, playgrounds, school farms, etc. in educational institutions at all levels. Norms should be prepared for prescribing minimum facilities required for each type of institution and attempts should be made to raise as many institutions as possible to this level.

16. The problem of school buildings is urgent. Special efforts should be made to adopt the cheap designs prepared by the Central Building Research Institute, Roorkee and to reduce the cost to the minimum by use of local materials and adoption of pre-fabricated techniques. Provision should also be made for clean drinking water and adequate sanitary facilities in each institution.

17. The assistance of the local community should be fully enlisted for the construction and maintenance of school buildings and improvement of other physical facilities.

18. *Student Services.*—The development of student services and close teacher-student contacts needs emphasis at all stages and especially in higher education. Special attention needs to be paid for supply of text-books. Adequate text-book libraries should be set up in all institutions of secondary and higher education.

19. *Development of Talent.*—Talent sould be encouraged through a liberal scheme of scholarships, freeships and other incentives.

20. *Improvement of Curricula, Teaching Methods and Evaluation.*—These programmes need to be developed on a priority basis especially as the finances involved are not large and their multiplier effect is considerable.

21. Curricula need to be revised and upgraded at all stages. Pilot projects should be developed for the introduction of work-experience and national or social service and generalised in the light of experience gained. Emphasis needs to be placed on the cultivation of social and moral values.

22. The methods of teaching and evaluation should be improved through training institutions, programmes of in-service education for teachers, improved supervision and supply of improved teaching and learning materials. The instruments of mass media should be fully utilised for this purpose.

23. *Book Production.*—Programmes of book production, textbooks and other teaching and learning materials need great emphasis.

24. The State Governments should make full use of the programme of textbooks and teaching materials prepared by the NCERT. They should also consider the desirability of establishing autonomous corporations, functioning on commercial lines, for the production and distribution of textbooks.

25. The development of regional languages, should be accelerated with a vew to enabling their speedy adoption as media of education at the univerty stage. A programme of preparing textbooks and other reference marial needed for this purpose should be developed intensively and quickly.

26. Programmes of producing textbooks and other reference material in igher education will also be developed at the national level, the object beig to produce as early as possible most of the books required at the undergrauate stage and a fair proportion of those required at the postgraduate stag within the c u try itself.

27. *Science Education* .—Science education should be improved through pre ervice and in-service training of science teachers and adequate supplies of lboratory equipment and other teaching materials and aids.

28. *Physical Education and Sports and Games.*—Emphasis should be placed on ne development of programmes of physical education and games and sports at al stages. The existing training facilities for physical education instructors and coaches should be reviewed and wherever necessary, expanded and stregthened. Special encouragement should be given to indigenous games. Prorammes of scouts and guides, youth hostels, etc. should be strengthened and developed further.

29. *Pattern of School and College Classes.*—To the extent resources permit step should be taken to adopt the pattern of 10+2+3 recommended by the Education Commission.

IV. Technical Education

30. As pointed out earlier, expansion of technical education may be relatd to future manpower needs. Where future manpower estimates indicate the need for reduction, that reduction should be effected largely in institutions which have not been able to provide facilities of the standard laid down by the All India Council for Technical Education.

31 In the Fourth Plan, accent should be on programmes of qualitative improvement and consolidation. There should be closer cooperation between technical education and industry and commerce. Priority should be attached to ne qualitative improvement of postgraduate education, carefully adjusted to manpower needs, and research, especially as increasing sophistication will make larger demands for high quality design and research engineers. Part-time and sandwich courses may be established in industrial complexes, whenever new facilities have to be created. Correspondence courses may also be developed on pilot basis, in the first instance, to assist employed personnel to upgrade themselves. These non-formal courses would assist the horizontal and vertical mobility of technically trained personnel as also the training persons for self-employment.

32 The requirements of development indicate that the technical performance of the small-scale dispersed units must be at a high level and that they should absorb the fruits of technological advances to a significant extent in al important directions and provide opportunities of self-employment for technically trained persons. For this purpose, it may be necessary to provide shot-term course in management, sales and accountancy to technically quaified persons.

33. Highest importance should be given to the pre-service and in-service training of technical teachers and providing them with opportunities for professional advancement. The in-service training should include summer institutes, sequential courses, organised field experience particularly in industry and advanced studies and research for those teachers whose academic qualifications need to be improved.

34. The Technical Teachers Training Institutes should reorganise their programmes to cater primarily for teachers sponsored by technical institutions. Special attention should be given by the Institutes to equipping technical teachers with pedagogical skills and techniques.

35. Polytechnics should designedly be brought into close relationship with industry to conduct cooperative programmes of training for technicians in selected and diversified fields like automobile engineering, refrigeration and air-conditioning, radio and electronics, machine tool technology, instrument technology and chemicals manufacture in relation to regional requirements.

36. Research programmes should be organised and conducted by the Institutes of Technology and other well-established institutions which have adequate expert personnel, with special reference to curriculum development, preparation of textbooks, teachers' guides and instructional materials. The Institutes of Technology should increasingly take interest in helping the engineering institutions in conducting in-service training programmes and developing a new methodology of technical education.

V. Cultural Programmes

37. Emphasis should be laid on consolidating the continuing programme of archaeology, museums, academies and other cultural projects. Special attention should be paid to those schemes which bring out the composite character of Indian culture. Museums, archaeological sites, etc. should be fully utilised for educational purposes and guides prepared to assist teachers for this purpose.

VI. Educational Planning, Administration and Finances

38. The machinery for planning and administration should be streamlined.

39. There should be an effective planning cell in the Directorate of Education. The different institutions created for qualitative improvement of education, namely, the State Institute of Education, Institute of Science Education, etc., may be brought together as an effective technical arm of the Directorate of Education communicating with the NCERT on the one hand and the district-level set-up on the other.

40. The district should be adopted as the principal unit for planning, administration and development of education. The staff at the district level should be accordingly strengthened. The programme of school-complexes may be adopted and the system of institutional planning introduced.

41. The supervisory machinery should be strengthened and subject-specialists may be appointed, especially in science and mathematics.

ANNEXURE III

ELEMENTARY EDUCATION IN THE FOURTH PLAN

Pre-Primary Education

Pre-Primary education is important for the physical, mental and emotional development of children. The need for pre-primary education is particularly great in the case of children from slum areas or from poor families whose home environment is unsatisfactory. Children who attend pre-primary classes show better results at the primary stage, the incidence of wastage and stangnation being comparatively lower in their cases. Every encouragement should, therefore, be given in the Fourth Plan to voluntary organisations to expand facilities for pre-primary education, particularly in the rural areas. On account of the constraint on resources, Government's role will be limited to the following programmes which may be included in the Plan :—

(a) Setting up in each State at least one institute with an attached model nursery school for organising training of teachers, production of literature and experimentation;

(b) Opening a limited number of schools in slum areas;

(c) Providing grant-in-aid on a limited scale to municipalities and corporations for setting up pre-primary schools in industrial areas for children of workers; and

(d) Organising low-cost pre-school classes in rural areas with community support.

An ad hoc provision of Rs. 2.00 crore is made for these programmes of which Rs. 1.00 crore is shown under "teacher training sector" and Rs. 1.00 crore under the Elementary Education Sector.

Elementary Education—The Main Objectives

2. The programmes in the elementary education sector have been drawn up keeping in view the following broad objectives:—

(a) By the end of the Fourth Plan the facilities for primary education (classes I-IV/V) should be spread all over the country so that no child may have to walk more than one mile to attend the nearest primary school. As for the middle stage (classes V/VI-VII/VIII), steps should be taken to expand facilities during the Fourth and Fifth Plans, in such a manner that by the end of the Fifth Plan, a middle school should be within a walking distance of three miles of every pupil in the country. The Second Educational Survey will provide guidance in regard to the location of new schools.

(b) The Constitutional directive regarding provision of universal education for all children up to the age of 14 years should be achieved latest by 1990-91 and the provision for universal education for all children in the age group 6-11 should be completed by 1980-81. Since conditions vary widely each State will have to work out its own perspective plan of elementary education and decide upon the enrolment targets for the Fourth Plan keeping in view this long-term perspective. In fact, it will be useful to prepare a perspective plan for each district.

(c) Wastage and stagnation should be eliminated in the next 15 to 20 years according to a phased programme. In the Fourth Plan, a definite target for reduction of wastage and stagnation, by say 25% of the present incidence, should be laid down and vigorous efforts made to achieve it.

(d) A core programme for raising the standard of elementary education should be implemented in the Fourth Plan. This will include: the revision and upgrading of curriculum, the preparation of better textbooks, the provision of minimum physical facilities, the improvement of facilities for the teaching of science and the introduction of work experience.

(e) Salaries and conditions of service of teachers should be improved. The facilities for pre-service training of teachers should be adequate in number and quality. The proportion of untrained teachers should be progressively reduced. The facilities for in-service training should be expanded and opportunities and incentives should be provided to teachers to improve their academic and professional qualifications.

Location of new schools

3. As stated already, the target in the Fourth Plan is to provide a primary school (classes I-IV/V) within easy reach of every child. The Second Educational Survey reveals that only about 5% of the rural population do not have facilities for primary education. The Survey identified about 16,000 habitations with population of 300 and above which are not served by the existing primary schools. During the Fourth Plan, the highest priority should be given to the opening of primary schools in these and groups of other habitations which have a total population of 300 and above. In regard to middle school education (classes IV/V-VII/VIII), the Survey shows that in 1965-66, 82.25% of the rural population living in 7,12,894 habitations had the necessary facilities i.e. children in these habitations did not have to walk more than three miles to attend middle classes. According to the Survey, about 4,000 to 5,000 habitations with population 1,500 and above were not served by the existing middle schools. In locating new middle schools during the Fourth and Fifth Plans, preference should be given to these habitations, and groups of other habitations with a total population of 1,500 and above. With the help of the Survey, a district-wise programme of opening new schools during the Fourth Plan should be prepared keeping in view the targets indicated in para 2(a).

Targets of additional enrolments

4. It has been stated that each State should work out the additional numbers of pupils which it must enrol during the Fourth Plan in order to achieve the targets indicated in paragraph 2(b) above. In the case of the age-group 6-11, the minimum effort which the country would need to make is to enrol about 180 lakh additional pupils in classes I-V during the Fourth Plan so as to raise the overall percentage of enrolment in that age-group from about 79.2 in 1968-69 to about 92.2 in 1973-74. Since additional enrolment in classes VI-VIII during the Fourth Plan will depend on the number enrolled in the lower classes and the transfer ratio from these classes it has been estimated that it will be feasible to enrol 60 lakh additional pupils in these classes. In addition, it is proposed to enrol about 10 lakh more pupils through the provision of part-time education. If these targets are realised the percentage of enrolment in the age group 11-14 will rise from 34.7 in 1968-69 to 45.9 at the end of the Fourth Plan. The details may be seen in Statement I & II.

Cost of additional enrolment

5. (i) It has been assumed that the average annual salary of trained matriculate teacher during the Fourth Plan will be Rs. 2,000 and that of a trained graduate Rs. 3,000/-. It has also been assum that the new teachers appointed in primary classes (I-IV/V) during the Pl period will be mostly trained matriculates. In the middle classes, about on Fourth of the total number of teachers recruited during the Four Plan will be trained graduates, as against 17% graduate teachers at th stage during 1965-66.

(ii) The teacher-pupil ratio in primary classes is about 1: 40 at presen It will be extremely difficult to find the necessary financial resources to enr 180 lakh additional pupils and maintain the present teacher-pupil ratio. would, therefore, be advisable to introduce in the primary classes the doub shift system, at least in classes I & II. Since the effective teaching time i these classes does not exceed 2½ to 3 hours, one teacher should be able to tea the two classes under the double shift arrangement. This will make it possib to increase the teacher-pupil ratio to 1: 45. In the middle classes, the teache pupil ratio assumed in this paper is 1:30 against the present ratio of 1:25.

(iii) Working on these assumptions the average annual cost per pup in respect of teacher emoluments, provident fund contribution and othe benefits works out to Rs. 49/- at the primary stage and Rs. 82.5 at the middl stage. To this may be added another 10% to cover the non-teacher cost such as salaries of class IV servants, contingencies etc. The total per pup direct cost will thus be Rs. 54 at the primary stage and Rs. 90.75 at the middl stage. The cost of part-time education has been assumed at 50% of the co in regular full-time classes i.e. Rs. 45 per pupil per annum. With the propose increase in the teacher-pupil ratio, existing teachers should be able to tea 70 lakh additional children, in classes I-V and 26 lakh additional children i classes VI-VIII. Thus provision for teachers, accommodation etc. has to b made for expansion of facilities for 110 lakh additional children in class I-V and 44 lakh additional children in classes VI-VIII (including 10 lak children through part-time education). The total cost during the Four Plan for the two stages will come to about Rs. 178.20 crore and Rs. 106.0 crore respectively. Assuming further that the cost to Government will b 85% of the total direct expenditure at the primary stage and 80% at the middl stage, the provisions required in the Fourth Plan for expansion of facilit at the two stages will be Rs. 151.30 crores and Rs. 84.85 crore respectively.

6. (i) In addition to the programme outlined in the foregoing paragra regarding expansion of facilities for education at the primary and mid stages, it is proposed to give the school system responsibility for imparti functional literacy to all persons in the age-group 11-17, who have eit missed primary education or were unable to complete it. It is felt that pa time education from an hour to an hour and a half every day given ov a period of one year should suffice to make persons in this age group functiona literate. These classes will be held in the existing primary and middle sch buildings outside the normal school hours. A teacher of the school will given an allowance of about Rs. 25/- p.m. to conduct the literacy class. Taki the average attendance as 15 per class the cost of making one person functiona literate will be about Rs. 20/- per year. Ultimately, this system should effectively linked with the regular school system and it should be possible f a young man to pass his various examinations through this part-time study.

i) The Kothari Commission estimated that about 200 lakh persons in the age-grpup 11-13 alone could be brought under this programme. However in view of the constraint on resources and the need for building up the progamme on a sound basis it might be more prudent to keep a target of enronent of 50 lakh pupils during the Fourth Plan. The cost will amount to R 10 crore.

Assitance to backward States

. A major proportion of additional enrolments will take place in some of the backward States like Bihar, Madhya Pradesh, Rajasthan and Uttar Pradsh. It is feared that these States will not be in a position to meet the expediture from the State resources and the Central assistance which they may reasonably expect to receive according to the prevailing pattern. It will, therefore, be necessary to give special central grants to these States over and abov the State Plan ceilings. This special Central assistance should generally be subject to the condition that the grantee States make adequate contibutions from their Plan and non-Plan resources to the funds needed for epansion of facilities for primary education.

Specal programmes for girls

. Since the major problem in achieving universal enrolment is to enrol lge numbers of girls, it will be necessary in most of the States to undertake pecial programmes to encourage enrolment of girls. These programmes inclue social enrolment drives through publicity and propaganda, provision of gis hostels and quarters for women teachers, provision of stipends for girls, appointment of school mothers, construction of separate sanitary blocks for girls n mixed schools, provision of attendance allowance for teachers etc. It is roposed to provide Rs. 20.00 crore for these programmes.

Schol meals and free text-books

. The provision of free school meals and supply of free-text books is necesary in the case of poor children, particularly those living in backwarc areas. About 1 crore children are, at present, supplied mid-day meals in scoos. The food-stuffs for this purpose are being made available largely by CARE and other foreign agencies. It is proposed to increase the coverage of ths programme by 50 lakh children, thus covering roughly 20% of the pupils enroled in classes I-V at the end of the Fourth Plan. Various suggestions regading the form which this programme may take in the Fourth Plan are unde discussion. However, assuming the annual cost of feeding and administrative charges for one child as Rs. 20 and Rs. 5 respectively, the totalcos of extending the benefit of the school meals programme to 50 akh addiional pupils in the Fourth Plan will amount to about Rs. 37.5 crore. A phased programme of supply of free text-books to 15% of the elementary schol pupils, numbering over 9 crore at the end of the Fourth Plan, a an average cost of Rs. 3 per annum will cost about Rs. 12.50 crore.

0. A programme of this magnitude can be organised only with the voluntary contribution of the community, the Government support being limited to about 25% of the expenditure i.e. about Rs. 10.00 crore for school meal and about Rs. 3.00 crore for free text-books. The percentage of State assisunc will vary in inverse proportion to the prosperity of an area.

Wastage and Stagnation

11. The incidence of wastage and stagnation is about 60% in the primary classes. The incidence is particularly high in classes I and II. Various studies have been made from time to time and valuable suggestions have been made by the Kothari Commission to elimninate this evil. It is proposed to lay down a definite target for the reduction of wastage and stagnation say 25% during the Fourth Plan. It will be necessary to create administrative cells at the Centre and in the States to direct and coordinate efforts to achieve this objective. A sum of Rs. 1 crore is provided for this purpose.

Qualitative improvements

12. (a) *Strengthening State Institutes of Education.*—To cope with the programmes of revision and upgrading of curriculum, preparation of text-books, general reading materials, teachers' hand-books and audio-visual aids and introduction of improved evaluation techniques, the State Institutes of Education will be strengthened. It is proposed to provide a sum of Rs. 1.5 lakh per year for 20 State Institutes for their development activities. The total cost during the Fourth Plan will be Rs. 1.50 crore.

(b) *Buildings and equipment.* —There is an actue shortage of accommodation in primary and middle schools. Apart from the heavy backlog, the new enrolment of about 110 lakh children in classes I-V will require the construction of about 2,45,000 additional rooms and provision of simple equipment. It is proposed that the responsibility for providing buildings and equipment may be placed mainly on the village communities, the contribution of Government being limited to about Rs. 600/- per class-room, which will be roughly 25% of the cost. The cost to Government will amount to about Rs. 14.70 crore. Similarly, against about 1,00,000 additional class-rooms required for middle classes, it is suggested that government assistance may be provided at the rate of Rs. 1,200/-per room—Rs. 1,000/- for the class room and Rs. 200/-for equipment. The cost will amount to Rs. 12.00 crore.

(c) *Introduction of work experience.*—An ad hoc sum of Rs. 5 crore will be provided for (i) research and experimentation, (ii) training courses for teachers, (iii) publication of teachers' guide-books, (iv) purchase of equipment etc. The emphasis will be on making effective use of facilities already existing in basic and other schools.

Development of Science Education

13. There are about 4,72,000 primary sections. Considering this large number, the emphasis during the Fourth Plan period should be on developing competencies of the primary school teachers for handling improved programmes of science. A selected number of schools may be equipped to develop experimental programmes and gather experience before large scale programmes are implemented.

(i) *Strengthening of existing* 1, 400 *teacher training schools with laboratory and workshop equipment.*—There are at present about 1,400 teacher training schools preparing teachers for primary schools. There are no laboratory facilities in these schools. It is proposed that in the pre-service training the content of science and its methodology should be included as an integral part of the course for all primary school teachers. To achieve this, each training school has to be

aquately provided with science and workshop equipment so that competenc of demonstration and improvising science equipment may be developed inuture primary school teachers. A provision of Rs. 1.40 crores is proposed f thi purpose at the rate of Rs. 10,000/- for each training school.

(i) *Provision of science kits to* 21,000 *primary schools.*—It is proposed to provide sinc equipment kits to 21,000 primary schools (60 primary schools per ecatonal district) at the rate of Rs. 200/- per kit. This will enable these sool to teach the new courses of general science more effectively. The total c of this programme will be Rs. 42 lakhs.

(ii) *In-service training of* 21,000 *primary school teachers of selected schools.*—With a iew to enable selected primary teachers to teach new courses of general scic the teachers of 21,000 primary schools (which are proposed for the subly of science kits) will be trained through a two month in-service programme in 700 selected neighbourhood higher secondary schools/training schools. T: toal cost of this programme will be Rs. 41.3 lakh.

(iv) *Provision of mobile laboratory*-cum-*training vans.*—As a pilot project to inrov science teaching at the primary stage and provide in-service training to lage number of teachers through well-trained staff, it is proposed to prid 20 State Institutes of Science Education with a mobile van unit fitted wi a projector, a small laboratory and a library. Important topics of the syabs will be taught by the staff of these mobile units in selected primary scools where teachers of the neighbourhood primary schools will observe ai dicuss the teaching. Each van will be provided with a trained science grluae, an under graduate and driver-*cum*-projectionist. The total cost of his programme will be Rs. 17 lakhs.

Mdl· Stage

(v *Establishing* 150 *science training centres in selected science colleges.*—The Khai Comnission has recommended that science at the middle stage shld be taught as individual disciplines of physics, chemistry and biology inlac of the existing courses of general science. In order to achieve this, eai mddle school with a single section would need at least two science and mhenatics teachers competent to teach modern courses of physics, mathemics. chemistry and biology. To train such teachers, it is proposed to run a ew wo year course for matriculates who will be trained as science and maeratics teachers for middle classes. 150 such training centres are proposed to e oened. The yearly intake of each centre will be 80. The non-recurring exndture on buildings, hostel facility and equipment is estimated at Rs. 5 kh er centre. The training cost is estimated at Rs. 600 per trainee. Each traeewill be paid a stipend of Rs. 500 per year. These centres will prepare caidates for a course leading to diploma in science education to be awarded by he niversities. The course will consist of content, methodology and practic wek. The cost of this programme will be Rs. 7.50 crore non-recurring. Th recurring cost of the phased programme will be Rs. 9.24 crores.

(vi *In-service training programme for existing teachers of science and mathematics woing in middle schools.*—There are at present about 90,000 middle schools whe cience is taught as an integrated course of general science. In order to ain the existing teachers of these schools to teach science course as indivdu disiplines of physics, chemistry, mathematics and biology, a two month in-srvic training course will be organised through selected teacher training colges During the plan period about 40,000 teachers at the rate of two teachers acfrom a middle school will be trained to handle the new courses in scienceandmathematics. The cost of this phased programme will be Rs. 89 lakhs.

(vii) *Provision of a science study-room and equipment for senior elementary schools.*— In order to have the desired effect through a programme of science teching, it is necessary for children to have first-hand experience of science. To achieve this, it is proposed that 20,000 selected middle schools may be assisted to build a science study-room and equip it fully for showing demonstrations and doing some individual pupils' laboratory work. A sum of Rs. 5,000 per school as building grant on a matching basis and another Rs. 5,000 for purchase of furniture, storage facility and equipment is proposed. The cost of this programme will be Rs. 2 crores (non-recurring).

Incentive payments to teachers

14. Elementary teachers who improve their academic and professional qualifications will be given incentive payments. Teachers at this stage will be encouraged to pass the matriculation or higher academic examinations and/or take their pofessional training through regular, short-term or correspondence courses. An ad hoc provision of Rs. 5.00 crore is made for this purpose. General increase in salary scales of the existing teachers will be met from non-Plan resources. It may also be mentioned that the question of expanding and improving both pre-service and in-service training of teachers has been dealt with in a separate note.

Strengthening of Inspecting staff

15. Regular supervision and guidance are necessary to improve the quality of instruction in primary and middle schools. The general question of improving the quality of inspection etc. has been discussed in a separate note. Here it is necessary to state that in view of the large expansion envisaged in the Fourth Plan, it will be necessary to appoint additional inspecting staff. At present the expenditure on inspection and direction forms about 4% of the total direct cost on education. Assuming the same proportion of expenditure during the Fourth Plan, the cost of additional staff for the inspectorate will be about Rs. 9.40 crore.

Conclusion

16. Statement III gives the details of the outlay required for elementary education in the Fourth Plan in order to achieve the targets suggested in the present note. The total provision for elementary education excluding that for pre-service and in-service traning of teachers, adds up to about Rs. 330 crore. It may be pointed out that the outlay suggested for this sector in the draft Outline of the Fourth Five Year Plan (1966-71) was Rs. 322 crore. Since then salary scales of the teachers have been revised upwards in all the States leading to a steep rise in the per capita cost of education in an elementary school. Therefore, there is no scope, whatsoever, for further reduction in the allocation for elementary education, suggeted in this paper.

STATEMENT I

Enrolment position in 1968-69 *and target for* 1973-74 *Classes I—V*

(Population and Enrolment figures in lakhs)

Name of the State	1968-69								
	Boys			Girls			Total		
	Population	Enrolment	3 as %age of 2	Population	Enrolment	6 as %age of 5	Population	Enrolment	9 as %age of 8
1	2	3	4	5	6	7	8	9	10
1. Andhra Pradesh@	27·11	22·76	84·0	26·47	16·00	60·4	53·58	38·76	72·3
2. Assam	11·10	10·31	92·9	11·04	6·34	57·4	22·14	16·65	75·2
3. Bihar@	39·29	33·08	84·4	38·41	11·33	29·5	77·61	44·41	57·2
4. Gujarat	18·50	22·08	119·4	17·33	12·88	74·3	35·83	34·96	97·6
5. Haryana@	7·17	6·03	84·1	6·45	2·47	38·3	13·62	8·50	62·4
6. Jammu & Kashmir	2·60	2·84	109·2	2·44	1·31	53·7	5·04	4·15	82·3
7. Kerala	13·83	17·16	124·1	13·13	14·04	106·9	26·96	31·20	115·7
8. Madhya Pradesh@	28·25	23·13	81·9	27·21	9·85	36·2	55·46	32·98	59·5
9. Madras£	23·77	28·00	117·8	22·91	20·82	90·9	46·68	48·82	104·5
10. Maharashtra@	32·81	35·25	107·4	31·64	24·54	77·5	64·45	59·79	92·8

@Information received in response to Selected Physical Targets letter.

£The figure of total enrolment received in response to Selected Physical Target letter. The break-up of the total figure between boys and girls estimated.

1	2	3	4	5	6	7	8	9	10
11. Mysore	19·63	19·84	101·1	18·70	14·67	78·4	38·33	34·51	90·0
12. Orissa@	13·67	13·52	98·9	13·65	7·68	56·3	27·32	21·20	77·6
13. Punjab	10·50	8·70	82·8	9·45	5·54	58·6	19·95	14·24	71·3
14. Rajasthan@	18·54	14·69	79·2	17·10	5·44	31·8	35·64	20·13	56·5
15. Uttar Pradesh	61·30	62·47	101·9	56·70	35·97	63·4	118·00	98·44	83·4
16. West Bengal	36·22	27·44	90·8	29·82	16·56	55·5	60·04	44·00	73·3
17. Nagaland	0·29	0·37	127.5	0·28	0·20	71·4	0·57	0·57	100·0
18. A. & N. Islands	0·05	0·06	120·0	0·05	0·03	60·0	0·10	0·09	90·0
19. Delhi	2·53	2·72	107·5	2·39	2·14	89·5	4·92	4·86	98·8
20. Goa, Daman & Diu	0·47	0·61	129·7	0·46	0·44	95·6	0.93	1.05	112.9
21. Himachal Pradesh	2·58	3·44	133·3	2·32	1·54	66·4	4·90	4·98	101·6
22. Manipur*	0·78	0·77	98·7	0·77	0·43	55·8	1·55	1·20	77·4
23. Tripura	1·08	0·92	85·2	1·05	0·68	64·8	2·13	1·60	75·1
24. Laccadive, Minicoy and Amindive Islands@	0·02	0·02	130·0	0·02	0·02	100·0	0·04	0·06	115·0
25. N. E. F. A.	0·27	0·24	88·9	0·25	0·06	24·0	0·52	0·30	57·7
26. Pondicherry	0·26	0 31	119·2	0·25	0·23	92·0	0·51	0·54	105·9
27. Chandigarh		N.A.			N.A.			N.A.	
28. Dadra & Nagar Haveli*	0·05	N.A.		0·05	N.A.		0·10	N.A.	
All India	366·59	356·77	97·1	350·33	211·19	6·3	716·92	567·96	79·2

Enrolment position in 1968-69 and targets for 1973-74—Classes I—V

Name of the State	1973-74								
	Boys			Girls			Total		
	Population	Enrolment	12 as percentage of 11	Population	Enrolment	15 as percentage of 14	Population	Enrolment	18 as percentage of 17
	11	12	13	14	15	16	17	18	19
1. Andhra Pradesh	30·91	29·36	95·0	29·05	23·24	80·0	59·96	52·60	87·7
2. Assam	13·35	13·35	100·0	12·74	8·92	70·0	26·09	22·27	85·4
3. Bihar	43·60	43·16	99·0	41·82	16·73	40·0	85·42	59·89	70·1
4. Gujarat	21·64	25·96	120·0	20·21	18·60	92·0	41·85	44·56	106·5
5. Haryana	8·63	8·14	94·3	7·83	4·38	55·9	16·46	12·52	76·0
6. Jammu & Kashmir	2·90	3·41	117·6	2·74	2·19	80·0	5·64	5·60	99·3
7. Kerala	15·94	19·76	124·0	14·85	16·69	112·3	30·79	36·45	118·4
8. Madhya Pradesh	31·24	31·24	100·0	29·38	16·16	55·0	60·62	47·40	78·2
9. Madras	25·56	30·75	120·3	24·02	26·42	110·0	49·58	57·17	115·3
10. Maharashtra	38·28	44·49	116·2	35·74	35·74	100·0	74·02	80·23	108·4

	11	12	13	14	15	16	17	18	19
11. Mysore	22·23	25·56	115·0	20·85	20·85	100·0	43·08	46·41	107·7
12. Orissa	15·88	17·47	110·0	15·15	10·60	70·0	31·03	28·07	90·5
13. Punjab	12·66	12·66	100·0	11·48	8·61	75·0	24·14	21·27	88·1
14. Rajasthan	21·55	19·83	92·0	19·54	8·80	45·0	41·09	28·33	69·7
15. Uttar Pradesh	67·77	74·54	110·0	63·52	51·73	81·4	131·29	126·27	96·2
16. West Bengal	35·55	34·99	98·4	33·91	23·16	68·3	69·46	58·15	83·7
17. Nagaland	0·33	0·40	121·2	0·30	0·27	90·0	0·63	0·67	106·3
18. A. & N. Islands	0·07	0·08	114·2	0·06	0·06	100·0	0·13	0·14	107·7
19. Delhi	3·44	4·13	120·0	3·21	3·53	110·0	6·65	7·66	115·2
20. Goa, Daman & Diu	0·51	0·71	139·2	0·48	0·54	112·5	0·99	1·25	126·3
21. Himachal Pradesh	3·10	3·69	119·0	2·81	2·10	75·0	5·91	5·79	97·9
22. Manipur	0·98	0·97	99·0	0·92	0·63	68·5	1·90	1·60	84·2
23. Tripura	1·28	1·17	91·4	1·21	1·03	85·1	2·49	2·20	88·0
24. Laccadive, Minicoy and Amindive Islands	0·02	0·026	130·0	0·02	0·02	100·0	0·04	0·046	115·0
25. N. E. F. A.	0·30	0·30	100·0	0·27	0·10	37·0	0·57	0·40	70·2
26. Pondicherry	0·28	0·36	128·6	0·27	0·35	129·6	0·05	0·71	129·1
27. Chandigarh		N.A.			N.A.			N.A.	
28. Dadra & Nagar Haveli	0·06	N.A.		0·05	N.A.		0·11	N.A.	
All India	418·19	446·51	106·7	392·46	301·45	76·8	810·56	747·96	92·3

STATEMENT II

Estimated additional enrolment of pupils in classes VI—VIII in the Fourth Plan and the likely position at the end of the Fourth Plan (1969—74)

(Enrolment figures in lakhs)

Sl. No.	State/Union Territory	Additional enrolment (Full Time)			Additional enrolment (Part Time)			Total enrolment in 1973-74			Percentage of enrolment to the population in the age-group 11—14		
		Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Andhra Pradesh	2.29	1.26	3.55	0.40	0.16	0.56	8.42	3.53	11.95	50.6	22.0	36.6
2	Assam	1.10	0.57	1.67	0.17	0.10	0.27	3.72	1.81	5.53	54.4	26.8	40.8
3	Bihar	2.42	0.63	3.05	0.50	0.10	0.60	9.86	2.00	11.86	41.6	8.7	25.3
4	Gujarat	2.61	1.54	4.15	0.39	0.20	0.59	8.22	4.31	12.53	72.3	40.6	57.0
5	Haryana	0.60	0.52	1.12	0.13	0.06	0.19	2.74	1.28	4.02	62.0	32.1	47.9
6	Jammu & Kashmir	0.30	0.18	0.48	0.05	0.03	0.08	1.11	0.56	1.67	72.1	40.0	56.8
7	Kerala	1.90	1.75	3.65	0.44	0.35	0.79	8.67	7.12	15.79	102.2	88.9	95.8
8	Madhya Pradesh	2.71	1.11	3.82	0.44	0.14	0.58	8.57	2.84	11.41	49.8	17.3	33.9
9	Madras	3.85	3.70	7.55	0.70	0.50	1.20	13.10	9.49	22.59	91.0	68.9	80.2
10	Maharashtra	4.23	3.22	7.55	0.80	0.50	1.30	15.62	9.33	24.95	77.2	48.2	63.0
11	Mysore	1.93	1.50	3.43	0.36	0.21	0.57	7.17	4.22	11.39	59.4	36.4	48.2
12	Orissa	1.85	1.05	2.90	0.25	0.11	0.35	5.19	2.47	7.66	61.7	29.8	45.9
13	Punjab	0.85	0.85	1.70	0.18	0.11	0.29	3.87	2.38	6.25	59.6	40.7	50.7

1	2	3	4	5	6	7	9	9	10	11	12	13	14
14	Rajasthan	1.79	0 51	2.30	0.26	0.06	0.32	5.64	1.30	6.94	49.0	12.4	31.6
15	Uttar Pradesh	5.36	1.91	7.27	1.00	0.30	1.30	19.76	5.40	25.16	52.8	15.6	35.0
16	West Bengal	2.63	1.36	3.99	0.46	0.20	0.66	9.67	4.28	13.95	51.7	23.4	37.7
17	Nagaland	0.05	0.04	0.09	0.01	..	0.01	0.14	0.08	0.22	82.3	47.0	64.7
18	A. & N. Islands	0.01	0.004	0.014	..	..	..	0.02	0.01	0.03	50.0	33.3	42.8
19	Delhi	0.90	0.56	1.46	0.11	0.07	0.18	2.33	1.48	3.81	122.6	90.2	107.6
20	Goa, Daman & Diu . . .	0.06	0.05	0.11	0.01	0.01	0.02	0.26	0.16	0.42	96.3	59.3	77.8
21	Himachal Pradesh . . .	0.29	0.12	0.41	0.06	0.02	0.08	1.26	0.42	1.68	79.2	29.4	55.6
22	L. M. & A. Islands . . .	0.003	0.002	0.005	..	..	..	0.01	0.004	0.014	100.0	40.0	70.0
23	Manipur	0.07	0.03	0.10	0.01	0.01	0.02	0.26	0.11	0.37	53.0	22.4	37.7
24	N. E. F. A.	0.03	0.01	0.04	..	..	..	0.06	0.02	0.08	37.5	13.3	25.8
25	Pondicherry	0.04	0.03	0.07	..	..	..	0.14	0.08	0.22	93.3	53.3	73.3
26	Tripura	0.12	0.09	0.21	0.02	0.01	0.03	0.38	0.26	0.64	62.2	42.6	52.4
	GRAND TOTAL .	37.99	22.69	60.68	6.75	3.25	10.00	136.19	64.84	201.13	60.6	30.4	45.9

[redacted] III

Elementary Education—Government Cost of Programmes in the Fourth Plan

(Rs. crores)

Name of Scheme	Total cost	Cost of Buildings	Cost of Equipment
1. Pre-primary education	1·00	0·15	0·15
2. Additional enrolment			
(a) classes I—V	151·30	..	..
(b) classes VI—VIII	84·85	..	..
(c) Part-time literacy classes	10·00	..	..
Total (Additional enrolment)	246·15	..	..
3. Special programmes for girls	20·00	5·00	..
4. School meals land free text-books			
(a) School meals	10·00	..	..
(b) Text-books	3·00	..	..
Total (Mid-day meals & text-books)	13·00	..	..
5. Reduction of wastage and stagnation	1·00	..	..
6. Qualitative improvement			
(a) Strengthening of State Institutes of Education	1·50	0·20	0·10
(b) Buildings and equipment			
(i) Classes I—V	14·70	12·50	2·20
(ii) Classes VI—VIII	12·00	10·00	2·00
(c) Introduction of work experience	5·00	..	1·50
Total (Qualitative improvement)	33·20	22·70	5·80
7. Strengthening of teaching of science			
(i) Strengthening of existing 1400 teacher training schools	1·40	..	1·40
(ii) Provision of science kits to 21,000 primary schools	0·42	..	0·42
(iii) In-service training of 21,000 Primary school teachers	0·41	..	..
(iv) Twenty mobile laboratory-*cum*-training vans	0·17	..	0·17
(v) Establishing 150 science training centres	16·74	6·00	1·50
(vi) In-service training of 14,000 middle school teachers	0·89	..	0·05
vii) Science study rooms & equipment for 20,000 middle schools	2·00	1·00	1·00
Total (Science Education)	22·03	7·00	4·54

(Rs. crores)

	Name of Scheme	Total cost	Cost of Buildings	Cost of Equipment
8.	Incentive payments to teachers	5·00	..	..
9.	Provision of additional inspecting staff . . .	9·40	..	..
	Total .	350·78	34·85	10·49

Since items Nos. 6(a), 7(i), 7(iii), 7(iv), 7(v) and 7(vi) relate to teacher training, provision for these items is being made in the teacher training sector. *Thus the net provision for Elementary Education will be Rs.* 329·67 *crores of which Rs.* 28·65 *crore is for buildings and Rs.* 7·27 *crore for equipment.*

ANNEXURE IV

SECONDARY EDUCATION IN THE FOURTH PLAN

Inroduction

Since Independence, there has been a phenomenal increase in the facilities forsecondary education. There were about 7,300 high and higher secondary schools in the country in 1951. Their number is estimated to have risen to about 28,000 in the current year. Enrolment in secondary classes is expected to go up from about 12.10 lakh in 1951 to about 68 lakh at the end of 1958-59. Depite this expansion, some sections of the population, particularly girls, have not shared adequately the benefits of secondary education. Also, new schools have been established without much forethought, with the result that while there is a concentration of schools in some areas, there are many bakward areas which have inadequate facilities for secondary education.

2. It is recognised that secondary schools have two main aims. They prepare a miniority of bright students for pursuing higher studies at the university level. To others, they offer an all-round general education with vocational bias so that they can make an easy transition from the school into th world of work. Following the recommendations of the Mudaliar Commission, two important changes were introduced in some secondary schools: (a the duration of the secondary course was lengthened by a year to ensure beter preparation for higher education, and (b) practical courses were inroduced, in addition to core subjects, for those who desired to complete their education at the secondary stage. Other recommendations related tothe revision of curricula, the preparation of good textbooks, examination reform, training teachers etc. The Kothari Commission has reviewed the progress in the implementation of these reforms. It has suggested a two-year higher secondary course preceded by a ten-year course of general education. The Kothari Commission has also laid stress on work experience, vocationalisation of secondary education, revision of curricula, text-books, examination reform etc. These recommendations form the basis for the programmes for secondary education included in the Fourth Plan.

Main Objectives

3. Keeping in view (a) the increasing demand for secondary education, (b the urgency for enriching the content and improving the quality of secondary education, and (c) the constraint of resources, the following approach is uggested in formulating programmes for secondary education in the Fourth Pan :

(i) While making adequate provision for the inescapable growth in enrolment at this stage consequent upon the increasing enrolment at the elmentary stage, great care should be taken to ensure that substandard schools are not opened during the Fourth Plan. This can be achieved through a strict enforcement of the grant-in-aid rules for the recognition of new schools. Further, the location of new schools, should be determined strictly in accordance with the needs of each area, taking into consideration the optimum utilisation of the facilities already available in the area. Special efforts will also be made to promote and strengthen secondary education in the rural and backward areas.

(ii) While the programmes for improving the quality of secondary education relating to the revision of curricula, textbooks, examination reform etc. should be continued and strengthened, the highest priority in the Fourth Plan should be given to the development of science education and the vocationalisation of secondary education.

(iii) Owing to paucity of resources, it will not be possible for the Government to contribute towards the construction of school buildings. The local community should normally bear the entire cost of the buildings. An exception may, however, be made in the case of science laboratory rooms and school buildings for backward areas, and provision should be made in the Plan for their construction with Government assistance.

(iv) A lower priority should be assigned to the introduction of the new pattern of secondary education recommended by the Kothari Commission. However, sufficient funds should be provided in the Plan to enable the States which have already initiated the process of reorganisation to complete it during the Fourth Plan.

4. Keeping in view the objectives indicated above, detailed schemes have been suggested in the paragraphs that follow for inclusion in the Fourth Plan.

Additional enrolment

5. On the basis of the past trends in the growth of enrolment in secondary classes (IX-XI), it has been estimated that the additional enrolment in these classes during the Fourth Plan may be about 33 lakh pupils (boys 22.50 lakh and girls 10.50 lakh). The details are given in *Statement I*. If the target is realized the total enrolment in secondary classes will rise at the end of the Fourth Plan to 97.17 lakh pupils (boys 70.99 lakh and girls 26.18 lakh). The percentage of this enrolment to the total population in the age group 14—17 will be 24.6 boys, 35.2 and girls 13.5. In this connection it may also be useful to mention that the State Governments had proposed additional enrolment target totalling 31.45 lakh students for the period 1966-71.

Cost per Pupil

6. According to the Second Educational Survey, the teacher-pupil ratio in these classes in 1965-66 was 1 : 22. In the present note, the ratio has been assumed as 1 : 25. The average annual salary of a fresh trained graduate teacher during 1968-69 has been estimated at Rs. 2,880 and that of a fresh post-graduate teacher at Rs. 4,200. According to the Second Educational Survey the ratio of postgraduate teachers to graduate teachers was 2 : 5.4. It is assumed that in the Fourth Plan this ratio will be 2 : 5. On this basis the per pupil cost in respect of emoluments including provident fund contribution and other benefits for the teaching staff will be about Rs. 143 per annum. To this may be added 42% or Rs. 60 to cover the cost of non-teaching staff, contingencies and other direct costs. Thus, the total per pupil cost may be assumed at about Rs. 200 per annum.

Cost of Additional Enrolment

7. Owing to the increase in the teacher-pupil ratio suggested in paragraph 6 above, it will be possible for the existing staff in secondary schools to teach 9 lakh additional children. Thus, it will be necessary in the Fourth

Plan to provide for additional staff, etc. for 24 lakh additional children only. The total cost on this account is estimated at Rs. 144 crore. Further, it has been assumed that the cost to the Government will be about 70% of this expenditure *i.e.* Rs. 101 crore (the Government share of expenditure on secondary education was 62% in 1962-63).

Correspondence Courses

8. During 1968-69, a beginning has been made by the Education Directorate, Delhi, to offer correspondence courses at the secondary stage to employed persons. It is proposed to expand this programme in the Fourth Plan in the light of the experience gained at Delhi. A provision of Rs. 50 lakh is proposed for this purpose on an *ad hoc* basis.

Special Programmes for Girls

9. It will be necessary to provide special facilities like scholarships, women teachers' quarters, girls' hostels and sanitary blocks in mixed schools. A sum of Rs. 7.50 crore is provided on an *ad hoc* basis.

Scholarships

10. A provision of Rs. 5.00 crore is proposed for scholarships for bright pupils from poor families particularly those coming from rural areas who have to live in hostels away from home in order to complete their secondary education.

General Improvement Programmes

11. (i) *Incentive payments to teachers.*—An *ad hoc* provision of Rs. 2.0 crore is suggested for incentive payment to teachers who improve their academic or professional qualifications through regular or correspondence or in-service courses. Any general improvement in salary scales of secondary teachers will be met from non-Plan resources.

(ii) *Other Improvements in secondary schools.*—During the Third Plan, State Governments had formulated a number of schemes to ; (i) develop and upgrade curricula, (ii) produce better text-books, (iii) improve evaluation techniques ; (iv) provide educational and vocational guidance services; and (v) improve school libraries. An *ad hoc* provision of Rs. 10.00 crore is made in the Fourth Plan to strengthen these programmes.

Work Experience and Vocationalisation of Secondary Education

12. (i) *Work Experience.*—It will not be possible, owing to dearth of resources, to introduce work experience in all schools during the Fourth Plan on the lines recommended by the Kothari Commission. It is, therefore, proposed to introduce this programme on a pilot basis. The emphasis will be on utilizing the facilities already found in post-basic schools, multipurpose schools, technical high schools, etc. A provision of Rs. 5.0 crore is proposed on an *ad hoc* basis for : (a) research and experimentation, (b) publications, (c) in-service training and (d) equipment.

(ii) *Vocationalisation.*—The details of this programme are being worked out.

Development of Science Education

13. (i) *Strengthening of State Institutes of science education.*—State institutes/ units of science education were established towards the end of the Third Plan to develop curriculum in science and mathematics, to prepare better text-books, teachers' handbooks, etc. to organise in-service training courses and generally to assist the State Directorates of Education in all matters relating to the teaching of science in schools. In some of the States, the institutes have not been set up so far and in others, the institutes are not staffed and equipped properly. It is proposed to provide for the development of the institutes at the rate of Rs. 3 lakh every year. For 20 institutes, the cost will come to Rs. 3.00 crore.

(ii) *Science units in the Directorate of Education.*—At present there are no technical units in the Directorates of Education to guide and administer the development programmes in the field of science education. This is proving to be a major hindrance in the efficient implementation of these programmes. Accordingly, it is proposed to set up 20 science units at a cost of Rs. 50,000, each per year. The cost will be Rs. 50 lakh.

(iii) *Science supervisors in the districts.*—The need for science supervisors attached to the district inspector's office is now accepted. It is proposed to appoint about 150 science supervisors during the Fourth Plan at a cost of Rs. 12,000 per annum per supervisor. The cost of this programme phased over a period of 5 years will be about Rs. 54 lakh.

(iv) *Pre-service training.*—The present arrangements for pre-service training of science and mathematics teachers have been found to be far from satisfactory as in these courses very little emphasis is laid on the content of science. It is considered advisable to entrust this work to the universities who with the assistance of their science and education departments can organise specialised pre-service courses in content and methodology. To begin with, these courses may be organised in 15 universities during the Fourth Plan. A sum of Rs. 75 lakh as non-recurring at the rate of Rs. 5 lakh per centre for building additional hostel accommodation, equipment, etc. is provided for this scheme. The recurring cost of the phased programme for staff and stipends will be Rs. 1.40 crore.

(v) *Construction of additional laboratories.*—According to the Second All-India Educational Survey, there are more than 8,000 secondary schools where there are no laboratory facilities available. As science is proposed to be made a compulsory subject for all students throughout the school stage, it will be necessary to assist these institutions to construct new laboratories. The average cost of construction of a composite laboratory with its fixtures and fittings is estimated at Rs. 15,000.The total cost of providing laboratories to these existing schools will be Rs. 12 crore.

Besides this, it is expected that 4,000 new secondary schools will come up during the Plan period. The responsibility for providing laboratory buildings may be taken by the State Governments for which an additional provision of Rs. 6 crore will be needed.

(vi) *Supply of equipment to new and existing institutions.*—It is proposed to provide science equipment at a cost of Rs. 10,000 per school to all new high schools (about 4,000 in number) and assist another 8,000 existing high schools at cost of Rs. 6,000 per school. This will enable these schools to teach science up to class X as recommended by the Kothari Commission. To total cost of this programme will be Rs. 8.8 crore.

(vii) *Provision of laboratories, equipment for elective courses in science in 12-year schools.*—Some of the States have decided to adopt the higher secondary course of two years; duration as recommended by the Kothari Commission. The higher secondary classes will be started either in the colleges or in selected good schools. In some of the States 11-year higher secondary classes already exist. Some of these schools may be upgraded to the new pattern. It is, therefore, proposed to establish elective courses in science in the two-year higher secondary classes in about 500 higher secondary schools at an average cost of Rs. 1.0 lakh per school to cover the cost of laboratory rooms, science equipment, books, etc. The cost of this programme will be Rs. 5 crore.

(viii) *Provision of Science equipment for the laboratories of the existing teacher training colleges.*—In spite of starting new pre-service programmes for secondary school science teachers, a majority of the science teachers for the high schools will continue to be prepared for quite some time by the existing teacher training colleges. Efforts are being made to improve science and mathematics programmes being offered in these colleges by including the content of science along with its methodology. The training colleges have, however, no laboratory facilities to develop the practical skills and demonstration techniques in the would-be teachers of science. To enable them to handle such programmes, it is proposed that each of the existing 250 teacher training colleges may be assisted to equip their science laboratories for physics, chemistry and biology and develop a small workshop at a cost of Rs. 20,000 per institution. A sum of Rs. 50 lakh is proposed for this purpose.

(ix) *Inservice training programme for secondary school teachers.*—With the upgrading and modernising of the science curriculum, it will be necessary to retrain the existing science and mathematics teachers of the senior secondary classes. It is proposed to train 10,000 secondary school teachers through a two-month inservice course through selected teacher training colleges with the active assistance of science colleges. A provision of Rs. 72 lakh is proposed for this programme.

Out-of-Class Science Activities

14. (i) *Establishing science clubs in secondary schools.*—The science courses offered through the school curriculum are mostly directed to cater to the needs of the average learner. Experience in different countries has shown that science clubs provide an excellent forum to cater to the needs and to arouse the curiosity and nurture the talent of the gifted students in science. It is proposed that 10,000 secondary schools may be assisted during the Plan period with a grant of Rs. 1,500 per school to establish science clubs. A sum of Rs. 1.5 core is proposed for this purpose.

(ii) *Organising science fairs at various levels.*—To constantly energise the science clubs, it is necessary to provide them with a forum to exchange ideas and to inculcate a spirit of competition for constant improvement in their performances. The science fairs provide an opportunity to achieve these objectives. It is proposed that during the Plan period each district should organise a science fair for its schools and similarly each State should also organise a science fair where the district competitors could compete and share their experiences with other schools. The State Institute of Science and the district supervisors can organise these activities at the State and district levels. The NCERT may be entrusted to organise a national science fair which will provide a forum to locate gifted students in science. A provision of Rs. 10 lakh for the Plan period is proposed for this activity.

(iii) *Training courses for science club sponsors.*—Experience during the Second and Third Plan periods has shown that the activities in science clubs become static at the level of classification, collection, duplication and model making, unless the science club sponsors are oriented to develop new ideas. It is proposed that the State institutes of science should organise orientation courses for science clubs sponsors of those schools which will receive assistance for establishing science clubs. A provision of Rs. 10 lakh is proposed for this activity.

(iv) *Establishment of State science museums.*—Science museums play a very important role in helping the children as well as adults develop a correct understanding of science and appreciate its role in life and national economy. It is proposed that during the Plan period 10 such units may be developed at the State headquarters at a cost of Rs. 5 lakh per unit. These State museums will ultimately provide an excellent forum to organise the State-level science fairs and give impetus to science club movement in general. The cost for this scheme during the Plan period will be Rs. 50 lakh.

Physical Education, Jr. N.C.C. and Social Services Programmes

15. An *ad hoc* provision of Rs. 10.0 crore is made for these schemes.

School Buildings

16. The Steering Group at its third meeting decided generally not to make any provision for school buildings. However, in view of the fact that a large number of new secondary schools will have to be opened in backward rural areas and in the slums of towns and cities, a provision of Rs. 25.00 crore is made for the construction of school buildings.

Outlays

17. The total provision suggested for secondary education (excluding provision for pre-service and inservice training of science teachers) works out to about Rs. 201.00 crore (*vide* details at *Statement* II). This allocation is only Rs. 1 crore higher than the ceiling of Rs. 200 crore suggested by the Steering Group.

STATEMENT I

Likely Position of Enrolment in Classes IX-XI in 1968-69 and targets for 1973-74

(Enrolment and Population figures in lakhs)

Sl. No.	Name of the State	1968-69									1973-74								
		Boys			Girls			Total			Boys			Girls			Total		
		Population	Enrolment	4 as % of 3	Population	Enrolment	7 as % of 6	Population	Enrolment	10 as % of 9	Population	Enrolment	13 as % of 12	Population	Enrolment	16 as % of 15	Population	Enrolment	19 as % of 18
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	Andhra Pradesh	12·98	3·33	25·6	12·94	0·92	7·6	25·92	4·31	16·66	14·93	4·99	33·4	14·73	1·71	11·6	29·66	6·70	22·6
2	Assam . .	5·02	1·94	38·6	1·99	0·71	11·2	10·01	2·65	26·5	6·01	2·91	48·4	6·05	1·24	20·5	12·06	4·15	34·4
3	Bihar . .	19·27	1·51	23·6	18·46	0·48	2·6	37·73	5·02	13·3	21·99	6·36	28·9	21·62	0·84	3·9	43·61	7·20	16·5
4	Gujarat . .	8·68	2·66	30·6	8·17	0·85	10·4	16·83	3·51	20·8	10·15	3·09	30·3	9·50	1·36	14·3	19·65	5·35	21·2
5	Jammu & Kashmir.	1·32	0·29	21·9	1·18	0·11	9·3	2·50	0·40	16·0	1·41	0·41	29·1	1·26	0·19	15·1	2·67	0·60	22·5
6	Kerala . .	6·68	2·59	38·8	6·56	2·07	31·5	13·24	4·66	35·2	7·70	3·88	50·4	7·35	3·31	45·0	15·05	7·19	41·8
7	Madhya Pradesh	12·75	2·84	22·3	12·33	0·62	5·0	25·08	3·46	13·8	15·67	4·26	27·2	15·18	1·09	7·2	30·85	5·35	17·3
8	Madras . .	11·76	4·70	39·9	11·60	2·30	19·8	23·36	7·00	30·0	13·39	7·05	52·6	12·98	4·03	31·0	26·37	11·08	42·0
9	Maharashtra .	15·73	5·66	36·0	15·00	2·11	14.0	30·73	7·77	25·3	18·08	8·49	47·9	17·37	3·69	21·0	35·65	12·18	34·1
10	Mysore . .	8·96	2·34	26·1	8·83	0·85	9·6	17·79	3·19	17·9	10·78	3·28	30·4	10·48	1·36	13·0	21·26	4·64	21·8
11	Orissa . .	6·49	2·00	30·8	6·74	0·40	5·9	13·23	2·40	18·1	7·50	3·00	40·0	7·65	0·70	9·2	15·15	3·70	24·4

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
12	Punjab & Haryana	9·05	1·85	20·4	7·96	0·81	10·1	17·01	2·66	15·6	10·53	2·59	24·6	9·33	1·30	13·9	19·86	3·80	19·6
13	Rajasthan	8·56	1·56	18·2	8·00	0·27	3·4	16·56	1·83	11·1	10·21	2·34	22·9	9·45	0·49	5·2	19·66	2·83	14·4
14	Uttar Pradesh	28·58	7·71	27·0	26·80	1·59	5·9	55·38	9·30	16 8	33·96	10·79	31·8	31·35	2·54	8·1	65·31	13·33	20·4
15	West Bengal	13·60	3·42	25·1	13·56	0·94	6·9	27·16	4·36	16·1	16·43	5·79	35·2	16·41	1·41	8 6	32·84	7·20	21·9
16	Nagaland	0·14	0·03	21·4	0·14	0·01	7·1	0·28	0·04	14·3	0·15	0·04	26·6	0·16	0·02	12·5	0·31	0·06	19·3
17	A. N. Islands	0·03	0 008	26·6	0·02	0·002	10·0	0·05	0·010	20·0	0·03	0·016	53·3	0·03	0·004	13·3	0·06	0·02	33·3
18	Goa, Daman & Diu	0 21	0·10	47·6	0·21	0·06	28·6	0·42	0·16	38·1	0·27	0·17	62 9	0·27	0·11	40·7	0 54	0·28	51·8
19	Delhi	1·39	0·76	54·7	1·14	0·43	37·7	2·53	1·19	47·0	1·78	1·14	64·0	1·46	0·73	50·0	3·24	1·87	57·7
20	Pondicherry	0·12	0·06	50·0	0·12	0·03	25·0	0·24	0·09	37·5	0·14	0·09	64 3	0·14	0·04	28·6	0·28	0·13	46 4
21	Tripura	0·41	0·12	29·2	0·44	0·05	11·4	0·85	0·17	20·0	0·50	0·18	36 0	0·54	0·07	12·9	1·04	0·25	24 0
	TOTAL	171·73	48·51	28·2	165·17	15·67	9·5	336·90	64·18	19·0	201·61	70·99	35·2	193·51	26·11	13·5	395·12	97·17	24·6

STATEMENT II

Outlays Suggested for Development Programmes for Secondary Education in the Fourth Plan

(Rs. crore)

		TOTAL COST	COST ON BUILDINGS	COST ON EQUIPMENT
1.	Additional enrolment (classes IX—XI)	101·00	..	..
2.	Correspondence courses	0·50	..	..
3.	Special programmes for girls	7·50	2·50	0·10
4.	Scholarships	5·00	..	..
5.	Improvement programmes :			
	(i) Incentive payment to teachers	2·00	..	..
	(ii) Other improvement programmes	10·00	..	0·50
6.	Work Experience	5·00	..	0·50
7.	(A) Development of Science Education			
	(i) Strengthening of State Institutes of Science Education	3·00	0·50	0·50
	(ii) Science Units in the Directorates of Education	0·50	..	..
	(iii) Science Supervisors in the Districts	0·54	..	..
	(iv) Pre-service training	2·15	0·50	0·25
	(v) Construction of additional laboratories	18·00	18·00	..
	(vi) Supply of Science equipment	8·80	..	8·80
	(vii) Laboratories & equipment in Higher Secondary schools	5·00	3·50	1·50
	(viii) Science equipment for training colleges	0·50	..	0·50
	(ix) In-service training	0·72	..	..
	(B) Out of class Science Activities			
	(i) Establishing science clubs in Secondary schools	1·50	..	1·50
	(ii) Organising Science Fairs	0·10	..	..
	(iii) Training Courses for Science club sponsors	0·10	..	..
	(iv) Establishment of State Science Museums	0·50	0·25	0·25
	TOTAL (Science Education)	41·41	22·75	11·80
8.	Physical Education, Jr. N. C. C. and Social Services	10·00	..	0·50
9.	Buildings	25·00	25·00	..
	TOTAL	207·41	50·30	13·40

Since item Nos. 7A(i), (iv), (viii) & (ix) relate to teacher training, expenditure on these items has been provided in the teacher training sector. Thus the provision for secondary education in the Fourth Plan is estimated at Rs. 201·04 crore of which Rs. 49·30 crore is for buildings and Rs. 12·15 crore is for equipment.

ANNEXURE V

UNIVERSITY EDUCATION IN THE FOURTH PLAN

Introduction

The contribution of institutions of higher education to the socio-economic development of the country can be hardly over-emphasised. In the developing countries, like India, this role assumes an added significance because the pace and quantum of economic and industrial advancement is determined primarily by the quality of the professional and technical manpower trained in universities and collegiate institutions. It is, therefore, necessary that adequate priority should be given to the quantitative expansion and qualitative improvement of higher education.

2. During the Fourth Plan the emphasis needs to be laid on consolidation and improvement of quality of higher education *e.g.*, strengthening of staff, library and laboratory facilities, etc. Specific attention would also be paid to some of the important newly emerging inter-disciplinary fields and special efforts would be directed towards improving substantially the conditions of work and service of teachers as the quality of education depends essentially on the quality of teachers. Nothing is more important than to attract and retain in the academic profession men of outstanding ability, competence and dedication. Further, in the context of the recent unrest among students, priority has to be given to welfare programmes for students like hostels, day-centres as also to 'reading seats' in libraries. This would be an essential step for raising the academic standards as living conditions of a majority of the students are such that they do not provide congenial atmosphere for serious academic work. It would also be desirable that a substantial portion of the staff resides on or near the campus. That would help to promote a corporate intellectual life and closer contact between the academic staff and students. It will also be necessary to start evening colleges and correspondence courses to cater to the needs of those who cannot take advantage of full-time day institutions.

3. Consistant with the needs of our developing economy, high priority needs to be given to raising the level of education in science and technology (agricultural education and research should receive special attention particularly in the context of the present agriculture based economy of India).

4. An important task in the entire programme of university education is to promote first-rate centres of post-graduate studies and research in the universities. No university, not even in the most advanced countries can afford to go in for advanced specialisation in all fields. If fact, one of the most important things for a university is to select carefully subjects/fields for high-level specialisation constituting areas of special concentration of efforts and resources of the university. Such a selection must take into account existing facilities and potentialities for further growth and it should contain an element of flexibility and adjustment to take account of future developments. In addition to special efforts of this kind, it is necessary to take several steps to strengthen the system of higher education by having and expanding programme of seminar's and summer institutes to be followed up by a programme of improvement of curricula, reform of examinations and provision of increased facilities for research work by teachers and talented students. It is also essential to make university education more library-centred and introduce measures to provide adequate library services in universities and colleges.

Priorities

5. In the light of the foregoing, the Fourth Plan programmes of higher education would provide for the following :

1. Expansion and improvement of postgraduate education and research including establishment of university centres of postgraduate study, including special assistance for selected university departments of postgraduate study and research and development of inter-disciplinary and intradisciplinary subjects.
2. Expansion and improvement of science education.
3. Development of centres of advanced study.
4. Expansion and improvement of college education—postgraduate and undergraduate courses.
5. Special assistance for selected colleges.
6. Improving the professional and academic competence of teachers through the organisation of seminars, summer institutes and refresher courses.
7. Library development.
8. Award of scholarships and fellowships.
9. Students and teachers amenities and services.

Additional enrolment

6. The additional enrolment in institutions of higher education in the courses of arts, science and commerce has been calculated by computing the 'transfer ratios' of the number of students at the school stage and the college stage after the lapse of specified period. The detailed estimates of additional enrolment are given in *Appendix* I. It has been reckoned that the total enrolment in arts, science and commerce courses including P. U. C. and intermediate classes of Bombay University (excluding U. P. Intermediate) will increase from 16.93 lakh in 1968-69 to 26.28 lakh indicating an additional enrolment of 9.35 lakh. The distribution of the additional enrolment stage-wise has been indicated in Table 1 below.

TABLE 1.—*Enrolment in Arts, Science and Commerce (Higher Education)*

(000's)

	1968-1969	1969-1970	1970-1971	1971-1972	1972-1973	1973-1974	Addl. Enrolment IV Plan
1	2	3	4	5	6	7	8
Pre-University . . .	512	558	608	663	723	788	276
Intermediate (Other than U.P. Board) . . .	50	55	60	65	71	77	27
Under graduate . .	1,007	1,118	1,247	1,312	1,409	1,540	533
Post graduate and Ressearch	124	138	157	176	198	223	99
TOTAL .	1,693	1,869	2,072	2,216	2,401	2,628	935*

*It is assumed that 35,000 students will be educated through correspondence courses.

7. It is estimated that the additional enrolment in Law during the Fourth Plan would be 30,000. This has been estimated on the basis of a growth rate of 9% per annum. So far as teacher education is concerned, calculations have been indicated in a separate paper on the subject.

Cost of Expansion and Improvement

8. In view of the substantial cost-differentials in university departments and affiliated colleges consequent upon the varying scales of pay of academic staff, teacher-pupil ratio and other amenities, an attempt has been made to work out separate cost estimates per student in university departments and affiliated colleges. Assuming that the present proportion of 12 : 88 between university departments and affiliated colleges would continue, the additional enrolment in university departments and affiliated colleges in the Fourth Plan would be distributed as under :

University departments	1.08 lakh
Affiliated colleges	7.92 lakh
Total	9.00 lakh

9. The average annual cost per student has been calculated separately for university departments and affiliated colleges on the basis of teacher costs worked out on the assumption that all new teachers will be given the revised scales recommended by the University Grants Commission *plus* D.A. at Central Government rates. To this has been added non-teacher costs at the rate of 45% of total costs in the university teaching departments and 35% in colleges. The details of these calculations have been explained in the note at *Appendix II.*

10. The average annual recurring cost per student, which has formed the basis of projections of expenditure on higher education during the Fourth Plan is indicated below :

University departments	Rs. 1219
Affiliated colleges	Rs. 510

11. The non-recurring cost was calculated on the basis of norms of costs adopted by the All-India Council for Technical Education for the engineering colleges *minus* costs of items like workshops, tool rooms etc. The non-recurring cost per student is as under :

	Rs.
Arts courses	760
Science courses	1,570@

12. The detailed calculations of cost both recurring and non-recurring for the expansion and improvement of facilities for higher education are given below :

I. RECURRING

(a) *University Departments*	
Enrolment	1·08 lakh (*vide* Appendix I)
Cost per student	Rs. 1,219
Total cost	1,219 × 3 × 1·08 = Rs. 3,950 lakh*
	*Including expenditure on post graduate education
Cost to Government* 80%	Rs. 3160 lakh...I

@ including laboratory, buildings, equipment and library.

(b) *Affiliated Colleges*

Enrolment	7·92 lakh
Cost per student	Rs. 510
Total cost	7·92 × 510 ×3 = Rs. 12,118 lakh* *Including expenditure on post-graduate.
Cost to Government @ 50%	Rs. 6,059 lakh...II

(c) *Correspondence Course*

Enrolment	0.50 lakh*
Cost per student	Rs. 200
Total Cost.	0.50 × 200 × 3 = Rs. 300 lakh.
Cost to Government @ 50%	Rs. 150 lakh III

(d) Cost of improvement of present facilities @ Rs. 50,000 for arts colleges and Rs. 1,00,000 for science and arts colleges at an average rate of Rs. 75,000 per college for 2000 colleges Rs. 1,500 lakh .. IV

Total cost to the Government (I + II + III + IV) Rs. 10,809 lakh (A)

II. NON-RECURRING

Out of 9 lakh additional enrolment, about one lakh enrolment will be in the evening colleges. It is estimated that about 3 lakh students including 1 lakh in science courses would be accommodated in the existing institutions. Facilities will have to be provided for about 5 lakh students @ Rs. 760 per student.

Enrolment	5 lakh
Cost per student	Rs. 760
Total cost	Rs. 3,800 lakh
Cost to Government at the rate of 50%	Rs. 1,900 lakh (B)

III. ADDITIONAL COST ON ACCOUNT OF SCIENCE

Enrolment	3 lakh
Cost per student	Rs. 810
Total cost	Rs. 2,430 lakh
Cost to Government @ 75%	Rs. 1,823 lakh (C)
Total cost of Expansion and Improvement (A) + (B) + (C)	Rs. 14,592 lakh

13. The other important programmes of higher education along with their cost estimates are indicated below :

*Reference Appendix I.

Expansion of Post-graduate Education and Research

14. The Education Commission has recommended that the bulk of postgraduate and research work should be organised in the universities or in university centres where good programmes can be developed by co-operation of 3 or 4 colleges under the guidance of the university. The universities and the university centres will have to shoulder the responsibility for about 80 per cent of the postgraduate and research work as against 55 to 57 per cent at present. Only some good affiliated colleges of long standing which have done creditable work at the undergraduate and or postgraduate level should be allowed to carry on postgraduate and research work. The universities thus have a tremendous additional responsibility to undertake. This would mean providing for at least a 2-fold increase in the postgraduate enrolment in the universities in the next five years and creation of facilities for catering to this additional number as well as improvment of the facilities for the existing numbers. The postgraduate courses occupy a key position in the university system and also represent a sector of manageable dimensions. Improvement of postgraduate education will have an immediate impact on the quality of teachers and good teachers have a multiplying effect on the quality and standard of the entire educational system.

Science Education

15. There has been a rapid expansion of science education at the university stage during the past two decades. The enrolment in science subjects in 1965-66 was 5,65,244 out of a total enrolment of 14,37,178 in arts, science and commerce courses, which worked out to about 40% of the total against about 30% in 1950-51. There has been a considerable expansion in the postgraduate and research enrolment in science and science-based courses.

16. In the Fourth Plan, it is proposed to further expand and diversify science education so as to meet the growing demand for scientists in various disciplines. The main emphasis will, however, be on the qualitative improvement of science education so as to raise it to the level and content of education in scientifically advanced countries. In view of the large outlays involved in the process, it would be necessary to work on the basis of selectivity and to draw up a phased programme so that, in course of time, all institutions will be developed.

17. It is proposed to lay particular emphasis on the improvment of facilities at the postgraudate and research level. For this purpose, the centres of advanced study set up in various universities will be strengthened. It is also proposed to encourage interdisciplinary and intra-disciplinary research through the setting up of clusters of advanced centres in related subjects. Research in science subjects is to be integrally related to the needs of the industry—present as well as future—as far as they could be comprehended. Special emphasis is proposed to be laid on the development of mathematics in universities and colleges.

18. In accordance with the recommendations of the Education Commission, suitable short-term training courses will be organised for science graduates who are not gainfully employed in vocations requiring the knowledge of science courses possessed by them.

19. It is also proposed to lay emphasis on the setting up of instrumentation workshops and computor facilities etc. at the universities. This will promote research in universities.

20. A paper giving details of the various programmes for the development of science education in physical and financial terms at the university stage is enclosed. Most of the programmes contemplated in the paper have been incorporated under relevant schemes indicated in the Summary Statement. Necessary provision has however, been made for the programmes which are in addition to those indicated therein.

Centres of Advanced Study and Research in Universities

21. The scheme is a continuing programme and is intended to encourage the pursuit of 'excellance' and team work in studies and research and to accelerate the attainment of higher standards in specific fields of study. So far 30 centres (17 in science subjects and 13 in humanities) have been recognised for advanced research in various fields of science, humanities and social sciences. It is proposed to further develop the existing centres and to develop some other promising departments as advanced centres. Emphasis will be laid on the development of inter-disciplinary and intra-disciplinary research by the setting up of 'clusters' of advanced centres in allied subjects. A sum of Rs.17 crore has been provided for the purpose in the Fourth Plan. This also includes provision for encouraging research work in sciences as well as humanities in universities and colleges.

New Universities/University Centres

22. The Planning Commission in its paper, 'Approach to the Fourth Plan' has suggested that preference should be given to the full utilisation of facilities in existing institutions than creating new ones. The Conference of Education Secretaries convened by the Ministry of Education in March, 1968, also strongly pleaded for self-restraint in the establishment of new universities.

For the Fourth Plan, it is envisaged that no new university would be established unless the need for it is clearly established and adequate resources can be found for the purpose. Provision has, however, to be made for the universities, the establishment of which has already been agreed to like the second university at New Delhi as also the establishment of another university in Kerala. In the case of other states, proposing to establish new universities, it has been suggested that in the first instance university centres may be set up which will provide facilities of a university standard and which may later on be developed into full-fledged universities. An amount of Rs. 15 Crore has been proposed.

Special Assistance to Selected Colleges

23. The Education Commission (1964-66) has recommended special assistance to outstanding colleges. This will cost Rs. 3 crore@ Rs. 3 lakh per college for an estimated number of 100 such colleges in the Fourth Plan.

Summer Institutes and Follow-up-Programmes including modernisation of Curricula

24. The Education Commission (1964-66) has described the programme of summer institutes as "a major instrument in the country's effort towards improvement of science education in schools and colleges". This programme, undertaken in collaboration with the U. S. National Science Foundation, has grown in dimensions over the years and has been widely welcomed by teachers. During the past five years over 400 institutes have been organised

in sciences which have provided training facilities to more than 16,000 school and college teachers. Special institutes are also organised for the benefit of talented undergraduate students, teachers in English and social sciences. The summer institutes in English language teaching are being undertaken in co-operation with the British Council. There is an urgent need to undertake followup activities so that the summer institute training can be effectively utilised by the teachers. A number of follow-up activities have already been started such as research participation programme for college teachers and students, provision of semi-micro analysis equipment, college development programme, development of demonstration equipment and teaching aids, preparation of curricular and instructional materials. There is need to expand this programme so as to increase the coverage of teachers. It would be necessary to organise at least 850 institutes during the Fourth Plan period with an enrolment of about 40,000 teachers. The cost of organising these summer institutes and the followup activities during the Fourth Plan would be of the order of Rs. 4 crore (excluding the amount to be spent by the NCERT for the school-level programmes).

Students Welfare Programmes

25. The rapid expansion of education at the higher level has underlined the necessity of making student welfare an integral part of the academic life of the universities. The increase in the size of the universities, apart from other needs, calls for a technique which can personalise the student welfare and give him a sense of belonging and a feeling of self-reliance. Without such a programme, the mere expansion of higher education may lead to unhappy results which the educational institutions have witnessed in the recent past and which has done incalculable harm to the cause of education in the country.

26. It is proposed that during the Fourth Plan, the following schemes which have a direct bearing on the welfare of the students may be taken up :—

27. *Improvement of hostel facilities.*—Assistance may be given to universities for making adequate sanitary arrangements (urinals, water closets, etc.) and providing suitable dining facilities in hostels. An amount of Rs. 1 crore may be allocated for this scheme. Assistance may, particularly, be provided to universities in respect of hostels which were built before 1960 as it is felt that hostels built after 1960 have generally been done with the assistance of the University Grants Commission and contain requisite facilities for which assistance is now proposed to be given for older hostels.

28. *Students' study homes.*—With a view to provide a congenial place and environment for studies particularly in areas where there is a concentration of student population, assistance may be given to universities for putting up reading homes. A reading home may have arrangements for reading seats as well as a small library. It is proposed that during the Fourth Plan 50 reading homes may be set up through-out the country. For this an amount of Rs. 50 lakh would be required.

29. *Health service.*—A Health Service Scheme on the lines recommended by the Committee set up by the University Grants Commission to formulate a scheme of health service for staff and students in the universities and colleges under the chairmanship of Dr. A. L. Mudaliar, Vice-Chancellor Madras University, would be initiated in some of the universities. It is proposed that an amount of Rs. 2 crore may be allocated for this scheme.

30. *Sports and games.*—During the Fourth Plan, it is proposed to give assistance to universities and colleges for providing facilities for sports and games to the students. An amount of Rs. 60 lakh would be required for providing assistance to the universities and colleges as under :

1.	Rs. 20,000 for each university for 50 universities . . .	Rs. 10 lakh
2.	Rs. 10,000 for each college for 500 colleges . . .	Rs. 50 lakh
	TOTAL .	Rs. 60 lakh

Thus, the total requirements for programmes of student welfare during the Fourth Plan period would be Rs. 4.10 crore or say, Rs. 4.00 crore.

Residential Facilities for Students and Teachers

31. *Hostels.*—The University Grants Commission Committee on Residential Accommodation for Students and Teachers (1965) estimated that the cost of providing hostel accommodation to 25% of the students at the collegiate stage (against 18% in 1962-63) would be Rs. 120 crore. For obvious reasons, it is difficult to provide this amount out of the allocations likely to become available for higher education in the Fourth Plan. An *ad hoc* amount of Rs. 10 crore is proposed for the purpose.

32. *Staff quarters.*—The University Grants Commission Committee mentioned above estimated that the cost of providing residential accommodation to 50% of teachers would be Rs. 137 crore. Since then there has been an appreciable rise in the cost of construction as well as the number of teachers to be provided for in the Fourth Plan because of increase in the enrolment. Therefore, the cost calculated by the University Grants Commission Committee would need to be enhanced if the target proposed by the Committee has to be kept in tact. In view of the current financial constraints, this does not seem to be in the realm of possibility. In the Fourth Plan, an amount of Rs. 6 crore has been proposed for teachers' quarters and teachers' hostels.

Other Schemes of the U.G.C.

33. A sum of Rs. 3 crore has been provided for schemes like examination reform, research grants to individual research workers, utilisation of services of retired teachers etc.

Rural Higher Education

34. At present 14 rural institutes are working with an enrolment of about 4,000 in various courses. The National Council for Rural Higher Education has appointed a committee to review the progress of the scheme of rural higher education and suggest ways and means for improving its working so that the objectives for which they were started may be achieved. Further expansion of the scheme will depend upon the report of this committee.

35. It is proposed that, subject to the recommendations made by the above-mentioned committee and the Government's decisions thereon, in the Fourth Plan, emphasis should be laid on the consolidation and improvement of facilities in rural higher education and any expansion of the scheme should be based on a careful assessment of the need for rural higher education in relation to manpower requirements for this category of personnel. It would be necessary to work out a perspective plan of development of rural

higher education. The relationship of the rural institutes with the agricultural universities will also need to be clearly defined. A sum of Rs. 2 00 crore has been proposed for the scheme.

Other schemes of the Ministry of Education

36. An amount of Rs. 3 crore has been proposed for programmes of the Ministry of Education like Indian Institute of Advanced Study, Simla, Institute of Russian Studies; Grants to Voluntary Organisations, etc.

Programme of Book Production

37. The need for organising a massive programme of book production for universities and colleges has been underlined in view of the national decision to change over to regional languages as media of instruction. The Ministry of Education has entered into agreements with the Governments of U.S.A., U.K. and Soviet Union for the republication/translation of standard works of foreign origin in low-priced editions. The translation of these works in regional languages and the production of original works in those languages will need to be taken up on a big scale during the Fourth Plan. The Ministry of Education has worked out a comprehensive scheme for the production of books in regional languages for which a sum of Rs. 18 crore has been provided under the schemes relating to the development of modern Indian Languages. No separate provision, therefore, has been made under higher education.

Scholarships and Fellowships

38. The importance of large scholarships programmes to provide financial support to meritorious but needy university students can hardly be over-emphasised. The Ministry of Education has launched a number of scholarship schemes for post-matriculation studies. The University Grants Commission also porvides fellowships and research scholarships to promising students.

39. It is proposed to work out a comprehensive scheme of scholarships and fellowships covering both secondary and higher education stages for implementation in the Fourth Plan. It has been suggested that the number of scholarhips during the Fourth Plan should be twice as much as at present. The emphasis will be on loan scholarships so that, in course of time, a self revolving fund may be created. It is also proposed to establish an autonomous organisation for the administration of scholarhip programmes. As suggested in the draft outline of the proposed organisation. "The organisation will coordinate the various scholarships programmes in the country. It will receive funds from the Government as well as donations from the public. It will follow up the educational careers of scholars and offer them the necessary guidance from time to time. It is felt that the new organisation will have the necessary flexibility and speed, as well as prestige to act as the focus of national endeavour in this important field."

In the Fourth Plan, an amount of Rs. 40 crore has been provided for the purpose. This includes Rs. 5 crore for University Grants Commission's fellowships and research scholarships including national integration scholarships and Rs. 35 crore for the programmes of the Ministry of Education.

Outlays

40. The above proposals along with their financial provisions have been summarised in table 2 in the enclosed statement. The total cost of higher education has been estimated at Rs. 255 crore, which may be distributed as follows :

	(Rs. crore)
Ministry of Education	41.50
University Grants Commission	131.12
State Governments	82.80
TOTAL .	255.42

41. A list of schemes indicating proposed Fourth Plan Outlays is given in Table 2.

Table 2. Outlays for Higher Education

(Rs. lakh)

Sl. No.	Scheme	Total	Centre		States
			Ministry of Education	U.G.C.	
1	2	3	4	5	6
1	Additional enrolment and expansion of facilities : arts, science, commerce courses :				
	Expansion Programmes :				
	(i) Under-graduate education . .	7119	..	2000	5119
	(ii) Postgraduate education . .	4000	..	4000	..
	(iii) Cost of improvement of existing institutions	1200	..	600	600
	(iv) Correspondence courses . .	150	..	150	..
2	Science education :				
	(i) Provision of equipment, laboratory, buidings and libraries for additional enrolment . .	1823	..	912	911
	(ii) Short-term courses in applied science	100	..	100	..
	(iii) Development of Workshops .	300	..	300	..
	(iv) Basic research work for industrial development	50	..	50	..

1	2	3	4	5	6
3	Centres for advanced study and research in university . .	1500	..	1500	..
4	New universities/university centres	1500	100	700	700
5	Special assistance to selected colleges	300	..	300	..
6	Expansion and improvement of legal education	300	..	200	100
7	Summer institutes/seminars . .	400	..	400	..
8	Student welfare services . . .	400	..	200	200
9	Hostels	1000	50	500	450
10	Staff quarters (including teachers homes)	600	..	400	200
11	Other schemes of the U.G.C. . .	300	..	300	..
12	Scholarships and fellowships . .	4000	3500	500	..
13	Other schemes of the Ministry of Education	300	300	..	..
14	Rural Higher Education . . .	200	200	..	..
	Grand Total	25542 or say Rs. 255 crore	4150	13112	3280

APPENDIX I

ENROLMENT IN ARTS, SCIENCE AND COMMERCE AT HIGHER EDUCATION STAGE DURING THE FOURTH FIVE YEAR PLAN

A number of statistical teachniques can be employed to project the enrolment at the higher education stage. The methodology commonly utilised includes : (i) projections on the basis of observed trends in the growth rate over a fairly long period; (ii) establishing relationship between the out-turn from the second-level institutions and the potential entrants to universities and colleges; and (iii) computing 'transfer ratios' of the number of students at the school stage and the college stage after the lapse of the specified period. In view of the significant changes in school enrolments in the recent past, any method of projection which does not take account of these changes cannot be relied upon. Therefore, in this note an attempt has been made to estimate the enrolments at higher education stage on the basis of the method mentioned at (iii) above.

2. During the latter half of the third Plan and the last three years there has been a phenomenal increase in the enrolments at higher education. This has been due mainly to three factors :

(i) Transfer of one year from intermediate to undergraduate stage ;

(ii) Accelerated programmes of expansion at school stage which resulted in bigger supply of students for higher education ; and

(iii) Desire of a larger proportion of students for continuing higher education, or to put in other words, an improvement in transfer ratio from schools to colleges.

3. So far as the first factor is concerned, the position has more or less stabilised by now. Except for a few universities in U.P. and Western Maharashtra, all the universities have changed over to three-year degree course. As there is no likelihood of these universities changing over to three year degree course in the near future, no major change is expected in enrolments at undergraduate or postgraduate stages on account of structural changes. Similarly, the enrolments at pre-university stage have also more or less stabilised and we can expect a smooth growth.

4. The second factor is the most important of all and it influences the enrolments at higher education to a great extent because enrolment, say, at undergraduate stage in any year depends on the cohort of students at secondary stage or middle stage 3 years or 6 years earlier. Therefore a rise or a fall in the rate of growth in enrolment at middle or secondary stage will effect the enrolments at higher stage. It is an admitted fact that the rate of increase in enrolment at any stage cannot go on rising indefinitely. After touching the highest point it has to come down and ultimately it will be equal to the rate of growth in population of the corresponding age-group in case no deliberate policy of restriction or acceleration of enrolment is adopted. A bulge in the rate of growth in enrolment at primary stage occurred in the Second Plan; a similar phenomenon occurred at secondary stage during the Third Plan. The rate of increase at middle stage touched its highest during the year 1961-62 (11.1%),thereafter it started declining—10 per cent each in the years 1962-63, 1963-64 and about 6 per cent in 1964-65 and 1965-66. On the basis of this

shift in the feeder enrolments, it is expected that the rate of increase in enrolments at pre-university and undergraduate stages will be at the peak during the years 1967-68 to 1969-70 and thereafter it will start declining. The rate of increase in enrolment at postgraduate stage will, however, continue to rise during the Fourth Plan. It will start declining from Fifth Plan onwards.

5. The third factor works in the direction of increasing the enrolments and it is expected that with the implementation of qualitative programmes as envisaged in the Fourth Plan, the rate of wastage will decline and the transfer ratio from schools to higher education will improve.

6. Thus so far as enrolments at higher education are concerned, two forces in opposite direction will work during the Fourth Plan : firstly, the reduction in the rate of growth in the feeder cohorts; and secondly, the improvement in transfer ratio. As the former has a dominant influence, it is expected that the rate of growth in enrolment at higher education shall start declining from the year 1970-71 onwards.

Enrolments at undergraduate Stage

7. The available statistics for the enrolment at undergraduate stage in the past are not comparable on account of structural changes and changes in classification from time to time. The statistics up to the year 1959-60, pertain to only 2-year degree course (except Delhi). Thereafter these pertain to 3 years in some of the States and 2 years in other States and sometimes in the same State these pertain to both, two-year and three year degree courses. As such, these cannot be related to the corresponding enrolments at school stage a few years earlier. In order to overcome this difficulty, the statistics for the enrolment at undergraduate stage have been re-classified by adding the enrolments in intermediate 2nd year or in class XII which are equivalent to the 1st year of 3-year degree course. The reclassified enrolment in classes XII, XIII and XIV (final year of the first degree) are given in col. 5 of *Table I*. These have been related to enrolments at middle* stage classes VI-VIII as given in col. (2) of *Table 1* with a lag of 6 years. It will be seen from the col. (6) that the rate of transfer from classes VI-VIII to classes XII-XIV has been quite steady and during the 14th years 1955-56 to 1968-69 it increased from 12.7 per cent to 14.5 per cent. This shows an improvement of about 0.1 per cent per year. On this basis the improvement in transfer ratio during the Fourth Plan could be about 0.6 per cent, but on account of qualitative programmes and restriction in admissions to technical education (this will to some extent increase the enrolments in general education), there are chances of a further improvement in transfer ratio and it has been assumed to be about 0.2 per cent per year during the Fourth Five Year Plan.

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*The enrolments at middle stage and not at secondary stage have been used on account of the following two reasons :

(i) The pattern of secondary education is not uniform throughout the country. The enrolment in class XI relates to the final year of matriculation in some States and in other States it relates to the final year of higher secondary stage.

(ii) To find the enrolment at undergraduate stage during the year 1973-74 if enrolment at secondary stage are used we shall require enrolments at secondary stage during the year 1970-71 which is not known at present. But if enrolments at middle stage are used we shall require enrolment in classes VI-VIII during the year 1967-68 which is known.

Table I. Enrolment at Undergraduate Stage Arts, Science and Commerce 1949-50 *to* 1968-69

Year		Enrolment in Classes (000's)				Col. 5 as % of Col. 2 with a lag of 6 years
		VI-VIII	Classes XII, XIII & XIV			
			Under-graduate	Class XII	Total	
1		2	3	4	5	6
	1949-50	2,844	..	..	..	
	50-51	3,120	101	105	206	
	51-52	3,388	115	114	229	
	52-53	3,567	129	135	264	
	53-54	3,829	143	148	291	
	54-55	4,048	157	173	330	
	55-56	4,293	169	193	362	12.7
Rate of growth per year						
	First Plan	6.6	—	—	11.9	
	56-57	4,637	200	199	399	12.8
	57-58	4,928	227	196	423	12.5
	58-59	5,441	260	198	458	12.9
	59-60	6,052	294	204	498	13.0
	60-61	6,705	348	170	518	12.8
Rate of growth per year						
	Second Plan	**9.3**	—	..	**7.4**	—
	61-62	7,470	428	157	585	13.6
	62-63	8,221	493	114	607	13.1
	63-64	9,039	559	119	678	13.8
	64-65	9,915	640	123	763	14.0
	65-66	10,346	721	139	860	14.2
Rate of growth per year						
	Third Plan	**9.0**	..	..	**10.7**	..
	66-67	10,990	805	153	958	14.3
	67-68	11,842	907	168	1,075	14.4
	68-69	12,701	1,007	185	1,192	14.5
Rate of growth :						
	Per year	**7.1**	..	..	**11.5**	..

8. The enrolments calculated on this basis in classes XII-XIV during the Fourth Plan are given in Col. 5 of *Table II.*

Table II. Enrolment at Undergraduate Stage Arts, Science and Commerce 1969-70 *to* 1973-74

Enrolment in Classes VI-VIII		Rate of transfer	Enrolment in Classes XII-XIV		Enrolment in Class XII	Enrolment at Undergraduate Stage (Col. 5-Col. 6)
Year	Enrolment		Year	Enrolment		
1	2	3	4	5	6	7
	(000's)	%		(000's)	(000's)	(000's)
1963-64 . . .	9,039	14.6	69-70	1,320	202	1,118
1964-65 . . .	9,915	14.8	70-71	1,467	220	1,247
1965-66 . . .	10,346	15.0	71-72	1,552	240	1,312
1966-67 . . .	10,990	15.2	72-73	1,670	261	1,409
1967-68 . . .	11,842	15.4	73-74	1,824	284	1,540

From these, the projected enrolments in class XII of intermediate (including U.P. Board) have been deducted and the resultant enrolments at undergraduate stage are given in col. 7 of Table II. This gives an increase of about 533 thousand (1540-1007) during the Fourth Five Year Plan, or a rate of increase of about 9 per cent per year.

Enrolments at Postgraduate and Research

9. The enrolments at post-graduate and research have been estimated by taking into consideration the enrolments in classes XII-XIV and the transfer rate from these classes to postgraduate and research classes with a lag of 3 years.

Table III. Enrolment at Postgraduate and Research in Arts, Science and Commerce 1950-51 *to* 1968-69

Year	Enrolments (000's)		
	XII, XIII, XIV	Post graduate and Research	Col. (3) as % of 2 with lag of 3 years
1	2	3	4
1950-51	206	20	
1951-52	229	22	
1952-53	264	23	
1953-54	291	26	12.6
1954-55	330	28	12.5
1955-56	362	31	11.6

1	2	3	4
Rate of growth per year during First Plan	**11.9**	**9.2**	
1956-57	399	33	11.3
1957-58	423	38	11.4
1958-59	458	45	12.3
1959-60	498	52	12.9
1960-61	518	58	13.6
Rate of growth per year during Second Plan	**7.4**	13.3	
1961-62	585	66	14.5
1962-63	607	69	13.8
1963-64	678	73	14.1
1964-65	763	80	13.7
1965-66	860	89	14.6
Rate of growth per year during Third Plan	**10.7**	**8.9**	
1966-67	958	98	14.4
1967-68	1075	110	14.4
1968-69	1192	124	14.4
Rate of growth per year	**11.5**	**11.7**	

It will be seen from col. 4 of *Table III* that during the past 16 years 1953-54 to 1968-69 the proportion has improved by 1.8 per cent from 12.6 to 14.4. The improvement in the later years has been even slower, but it is expected during the Fourth Plan, this proportion will improve and will increase by 0.2 per cent per annum. On this basis the expected enrolments at post-graduate and research are given in *Table IV* below :

Table IV. Enrolment in Arts, Science and Commerce at Postgraduate and Research during Fourth Five Year Plan

Enrolment in Classes XII-XIV		Transfer Ratio	Enrolment at Post-graduate and Research	
Year	Enrolment in (000's)		Year	Enrolment in (000's)
1	2	3	4	5
1966-67	958	14.4	1969-70	138
1967-68	1075	14.6	1970-71	157
1968-69	1192	14.8	1971-72	176
1969-70	1320	15.0	1972-73	198
1970-71	1467	15.2	1973-74	223

It will be seen from col. 5 of Table IV that the enrolment will increase by 99 thousand (223-124). This gives an average annual growth rate of about 12.5 per cent.

Enrolments at Intermediate and Pre-University Stages

10. The enrolments at intermediate stage excluding U.P. Board and pre-university are estimated to be about 50 thousand and 512 thousand during the year 1968-69. These are assumed to rise at about 9 per cent per annum (these cannot rise at a faster rate than enrolments at undergraduate stage). This will give an additional enrolment of about 278 thousand at pre-university stage and about 27 thousand at intermediate stage.

Total Enrolments at Higher Education

11. Table V below gives the consolidated picture of growth of enrolments at various levels of education. It will increase from 1693 thousand in the year 1968-69 to about 2628 thousand in the year1973-74 giving an additional enrolment of about 935 thousand during the Fourth Five Year Plan.

Table V. Enrolments in Arts, Science and Commerce at Higher Education Stage during Fourth Five Year Plan

Stage of Education	Year (000's)						
	1968-1969	1969-1970	1970-1971	1971-1972	1972-1973-	1973-1974	Addl. Enrolments Fourth Plan
1	2	3	4	5	6	7	8
Pre-University . . .	512	558	608	663	723	788	276
Intermediate (other than U.P. Board) . .	50	55	60	65	71	77	27
Undergraduate . .	1007	1118	1247	1312	1409	1540	533
Postgraduate and Research	124	138	157	176	198	223	99
TOTAL .	1693	1869	2072	2216	2401	2628	935

Enrolment in Correspondence Courses

12. It is expected that about 35 thousand students out of the above enrolments and another 15 thousand students (who for various reasons would not have continued higher education otherwise) will join the correspondence course.

Enrolment in University Teaching Departments

13. Of the total enrolment in arts, science and commerce at higher education, about 11.7 per cent was in university teaching departments in the year 1965-66. It is assumed that this percentage will be about 12.0 per

cent during the Fourth Plan. This shows that out of total additional enrolment of 9 lakh in full-time course about 108 thousand will be in university teaching departments and the rest in affiliated colleges.

Enrolment in Evening Colleges

14. The enrolment in evening colleges was about 45 thousand during the year 1963-64. It is expected to rise to about 1 lakh during the Fourth Plan.

Enrolment in Science Courses

15. At present about 40 per cent of total enrolment is in science courses. This is expected to improve to about 45 per cent. This gives an additional enrolment of about 405 thousand in science courses during the Fourth Five Year Plan.

APPENDIX II

AVERAGE ANNUAL COST PER STUDENT IN ARTS, SCIENCE AND COMMERCE COURSES IN UNIVERSITY TEACHING DEPARTMENTS AND AFFILIATED COLLEGES DURING THE FOURTH FIVE YEAR PLAN

The major portion of expenditure on higher education during the Fourth Five Year Plan will be on expansion programmes and on qualitative improvements in facilities for the existing and the additional enrolments. It is, therefore, very essential to estimate cost per student at various levels of education during the year 1968-69. The latest available statistics on cost per student at higher education level relate to the year 1963-64. Obviously these figures cannot be adopted for the Fourth Five Year Plan. It is also not possible to calculate on the basis of these figures the level of expenditure per student in the year 1968-69 on account of the following reasons :

(i) The available data for the past is only at current prices. In the absence of proper indices for rise in cost, the average annual cost in 1968-69 cannot be found out on the basis of existing data.

(ii) After the year 1964 there have been considerable changes in the salary scales and dearness allowance rates paid to teachers. No precise information on this is available.

2. On account of these reasons the recurring cost per student during the Fourth Five Year Plan has been calculated on the basis of teacher cost and its proportion to total recurring cost. For teacher cost the salary scales as recommended by the University Grants Commission and dearness allowance rates as applicable to Central Government employees have been taken into account. The pupil-teacher ratio in university teaching departments has been taken as 15 : 1 and in colleges 22 : 1. It is further assumed that the distribution of teachers into various categories such as professors, readers, lecturers etc. for the additional enrolment during the Fourth Five Year Plan would be the same as it existed in the year 1965-66.

Cost per Student in University Teaching Departments

3. *Table I* below gives the scales of pay, average pay per teacher during the Fourth Plan, dearness allowance and total emoluments per teacher per year for different categories of teachers in university teaching departments.

Table I. Average Annual Cost per Teacher in University Teaching Departments

Category of Teacher	Scale of Pay	Average Pay per Teacher during Fourth Plan	Addl. 10% for provident Fund & Other Benefits	D.A.	Total Emoluments per Month	Total Emoluments per Year
1	2	3	4	5	6	7
Professor (Sr. Grade)	1600—1800	1700	170	100	1970	23,640
Professor . . .	1100—50—1600	1250	125	100	1475	17,700

1	2	3	4	5	6	7
Reader	700—50—1250	850	85	100	1035	12,420
Lecturer	400—40—800—50—950	520	52	153	725	8,700
Tutor/Demonstrator	250—15—400	300	30	137	467	5,604

The total emoluments per teacher given in Col. 7 for different categories of teachers have been weighed with the proportion of teachers in that category as it existed in the year 1965-66 in university teaching departments.

Table II below gives the average annual cost per unit of teacher on account of emoluments to teachers

Table II. Average Annual Cost Per Teacher Unit in University Teaching Department

Category of Teacher	Average Emoluments per Year	Weight	Total Emoluments
1	2	3	4
Professor (Sr. Grade)	23640	0.0265	626
Professor	17700	0.0529	936
Reader	12420	0.1786	2218
Lecturer	8700	0.6850	5960
Tutor/Demonstrator	5604	0.0570	319
TOTAL	..	1.0000	10059

4. On the basis of previous records it is assumed that the cost on account of salaries of teachers per teacher unit will form about 55% of the total re curring cost. Thus total recurring cost per teacher unit will be Rs. 18,289 $(10059 \times \frac{100}{55})$.

This cost will be for 15 student . Therefore, the cost per student per annum will be Rs. 1,219 (18289)/15. It is further assumed that Government will bear 80% of this cost.

Cost per Student in Affiliated Colleges

5. *Table III* gives the scales of pay, average pay per teacher during the Fourth Plan, D. A. and total emoluments per teacher per year for various categories of teachers in affiliated colleges.

Table III. Average Annual Cost per Teacher in Affiliated Colleges for Arts, Science and Commerce

Category of Teacher	Scale of Pay	Average Pay per Teacher during Fourth Plan	Add 10% for Provident Fund and Other Benefits	D.A.	Total Emoluments per Month	Total Emoluments per Year
1	2	3	4	5	6	7
		Rs.	Rs.	Rs.	Rs.	Rs.
Principal/Sr. Lecturer	700—40—1100	820	82	100	1002	12024
Lecturer . .	400—25—600	375	37	153	565	6780
Demonstrator .	250—15—400	300	30	137	467	5604

6. The total emoluments per teacher given in col. 7 for various categories of teachers have been weighed with the proportion of teachers in that category in affiliated colleges as it existed in the year 1965-66.

Table IV. Average Annual Teachers Cost per Teacher Unit in Affiliated Colleges

Category of Teacher	Average Emoluments per Year	Weight	Total Emoluments
1	2	3	4
	Rs.		Rs.
Senior Lecturer	12024	0.1241	1492
Lecturer	6780	0.7558	5124
Demonstrators	5604	0.1201	673
TOTAL .	..	1.0000	7289

7. It is assumed that this cost will form about 65% of the total recurring cost in affiliated colleges per teacher unit. Thus total recurring cost per teacher unit will be Rs. 11,214(7289 $\times$ 100). This cost will be for 22

$$\frac{65}{}$$

students. Therefore, the cost per student per annum will be Rs. $510 \frac{(11214)}{22}$

It is further assumed that Government would bear 50% of this cost. The corresponding percentages in the years 1961 and 1962 were 39.3 and 40.7 respectively.

ANNEXURE VI

TEACHER EDUCATION IN THE FOURTH PLAN

Introduction

An important sector of post-secondary education is the training of teachers for elementary as well as secondary schools. The Education Commission have spelt out various programmes of improvement and development of teacher education. Taking into consideration the role which teacher education has to play in the reorientation of the educational system, the following approach in this field is proposed :

(a) A detailed plan of teacher requirements and teacher training—both pre-service and in-service-may be drawn up.

(b) Where expansion is called for, it may preferably be given through the expansion of existing institutions instead of opening new ones. In some cases, it may be necessary to combine a number of small institutions into bigger and viable units.

(c) The quality of training institutions will need special attention. A phased programme for removing deficiencies in respect of buildings, hostels, equipment, etc. in existing institutions may be drawn up. The methods of teaching and evaluation in the training institutions need to be carefully reviewed. Material useful for teachers could be brought out with the assistance, where necessary, of the N.C.E.R. & T., in the regional languages.

(d) For in-service training to which very high priority needs to be attached—all training institutions may have extension wings for imparting refresher courses.

(e) The help of the universities could be enlisted in training programmes, especially of science and mathematics teachers.

(f) The backlog of untrained teachers and the up-dating of trained teachers may be accomplished through the organisation of correspondence courses, especially in conjunction with summer institutes.

(g) Training facilities for teacher educators need to be provided on high priority basis.

(h) The formulation and implementation of plans in regard to teacher training may be facilitated if State Boards of Teacher Education, as suggested by the Education Commission, are established.

An attempt has been made to work out details of teacher education programmes in the light of the above approach. It is estimated that out lays required to implement these programmes would be Rs. 120 crore as shown in *Statement I*. In the Draft Outline of the Fourth Plan, the outlay provided for teacher education was Rs. 92 crore as shown in *Statement II*

Expansion of Schooling Facilities in the Fourth Plan

2. It has been decided that the targets of additional enrolment, in the Fourth Plan, in various classes would be as under :

(a) Classes I—V . . . . . 180 lakh

(b) Classes VI—VIII. . . . . 70 lakh

(10 lakh through continuation courses)

(c) Classes IX—XI . . . . . 33 lakh

Thus the total enrolment in various stages of education, by the end of Fourth Plan, is shown in *Table I.*

Table I. Enrolment in Various Classes in 1968-69 *and* 1973-74

(in lakh)

Classes	Position in 1968-69	Additional Enrolment in 1969-74	Total Enrolment in 1973-74
1	2	3	4
I—V	567	180	747
VI—VIII	120	70*	190
IX—XI	64	33	97
TOTAL .	751	283	1034

*10 lakh students will be enrolled in continuation classes.

During the Fourth Plan additional 283 lakh children would be enrolled in various classes raising the total enrolment to 1034 lakh in 1973-74.

Requirements of Additional Teachers

3. It has also been agreed that the teacher-pupil ratio by 1973-74 in primary, middle and secondary classes should be 1 : 45, 1:30 and 1:25 respectively. On the basis of these ratios, the number of teachers, who would be in position by the end of the Fourth Plan, is indicated in *Table II.* Table II also indicates the number of additional teachers who will have to be appointed as a result of (a) expansion of schooling facilities and (b) normal replacement.

Table II. Additional Employment of Teachers in the Fourth Plan

(Figures in lakh)

State	1965-66 (As per Second Educational Survey)	1968-69	1973-74	1969-74 (Additional Teachers) (Col. 3 + Col. 4)	1969-74 (Additional Teachers for Normal Replacement)	Total Additional Teachers (Col. 5+6)
1	2	3	4	5	6	7
Primary . .	11.96	14.20	16.60	2.40	2.30	4.70
Middle . .	4.36	5.20	6.00*	0.80	0.90	1.70
Secondary . .	2.77	2.90	3.90	1.00	0.60	1.60
TOTAL .	19.09	22.30	26.50	4.20	3.80	8.00

*Excludes teachers who will be required for 10 lakh students to be enrolled in continuation classes. The existing teachers will be required to teach these students.

The requirements of additional teachers during the Fourth Plan is expected to be 8.0 lakh.

State-wise Requirements of Teachers

4. The expansion of training facilities will have to be worked out separately for individual States and Union Territories in relation to enrolment targets and the existing capacity in training institutions. Further the training programme will have to be phased according to the additional enrolment visualised for each year. An attempt will have to be made to match the out-turn from training institutions with the annual requirements of teachers. In fact, detailed calculations of subject-teachers, for each of the States, will have to be worked out and expansion of training programmes phased appropriately. In this connection, drawing up of a perspective plan of teacher education cannot be over-emphasised. For calculating cost etc. an attempt has, however, been made to work out the over-all requirements of teachers and also be need for expansion of training facilities.

Training Facilities

5. In 1967-68, the enrolment in teachers' training colleges and training schools was 34,320 and 1.69 lakh respectively. The total facilities were available for training 2.03 lakh teachers; 34,320 for degree courses and 1.69 lakh for diploma/certificate course. The annual out-turn of teachers with degree and diploma/certificate in Teaching, is expected to be 29,000 and 1.12 lakh respectively in 1967-68. The position in 1968-69 is likely to be different. In fact, a number of States have closed down some of their training institutions because of lack of employment opportunities for teachers. It is expected that, in 1968-69 training facilities may be available for 33,000 and 1.50 lakh in training colleges and training schools respectively.

annual out-turn of training colleges and training schools is expected to be 28,000 and 1 lakh respectively. Thus over a period of five years, the number of trained teachers, with degree and diploma/certificate qualifications, who would be available, may be 1.4 lakh and 5 lakh respectively.

6. The number of additional elementary school teachers (reference *Table II*) who will be required during the Fourth Plan, as a result of expansion and normal replacement would be 4.70 lakh and 1.70 lakh respectively or 6.40 lakh. Out of these about 1 lakh teachers would be with graduate postgraduate qualifications and the rest, *i.e.* 5.4 lakh teachers will be with matriculation and equivalent qualifications. (Reference *Table II*). The out-turn from existing institutions is likely to be 5.00 lakh matric trained teachers. Thus additional training facilities for 40,000 teachers will have to be arranged in training schools, if the assumption is that all new teachers to be appointed during the Fourth Plan should be trained. The requirements of science and other subject teachers will be about 20,000 and appropriate training programmes will be arranged for them. In this connection, attention is drawn to para 13(v) of Annexure I to Elementary Education Programmes in the Fourth Plan.

7. The number of additional secondary school teachers, who will be required, during the Fourth Plan, as a result of expansion and normal replacement, would be 1.60 lakh. To this will have to be added the number of graduate teachers required for elementary schools whose number, as estimated in para 6 above, would be 1 lakh. The out-turn from existing institutions is likely to be 1.4 lakh trained teachers as against the requirements of 2.6 lakh teachers. Thus, additional training facilities for 1.2 lakh teachers will have to be arranged, the assumption being that all new teachers to be appointed during the Fourth Plan should be trained.

Accent on Training of Science Teachers

8. According to the present pattern of admissions in training colleges only 21% of the candidates have a science degree which means that, on an average 4,200 science teachers with B.Ed. or B.T. degree become annually available or 21,000 trained science teachers would be avilable out of the total out-turn of 1.4 lakh during the Fourth Plan. It is estimated that the acutal requirements of science teachers, during the Fourth Plan, would be 80,000 or so out of 2.6 lakh teachers. This indicates that the pattern of admissions in training colleges will have to be diversified with greater emphasis on the admission of science graduates so that the requisite number of trained science teachers become available.

9. It has been observed that in a number of States, there are many trained unemployed teachers. One of the important reasons for this is that educational institutions do not appoint trained teachers. It would be necessary to modify the grants-in-aidcode in a suitable manner so that it is obligatory for managements to appoint only trained and qualified teachers. Unless this is done, it may not be advisable to expand the training facilities as recommended in paras 6 and 7 above.

Correspondence Courses for Untrained Teachers

10. Even though training facilities have expanded during the last 15 years, they have not kept pace with the number of additional teachers appointed to cater to additional enrolment. As a consequence, the number

trained teachers has grown. Table 3 indicates the position in this regard the year 1967-68.

Table III. Untrained Teachers in 1967-68

(Figures in lakh)

	Trained Teachers	Untrained Teachers	Total	Percentage of Untrained Teachers
1	2	3	4	5
Elementary School Teachers . . .	11.73	3.84	15.57	25
Secondary School Teachers . . .	3.46	1.44	4.90	29
TOTAL .	15.19	5.28	20.47	26

the end of 1967-68, the total number of untrained teachers was 5.28 (26 per cent); 3.84 lakh (25 per cent) in elementary schools and 1.44 (29 per cent) in secondary schools. The position is not likely to change 1968-69.

11. According to the Second All India Educational Survey, out of the number of 19.09 lakh teachers in 1965-66, the number of untrained was 5.06 lakh, 3.15 lakh teachers in primary sections, 1.08 lakh in middle sections and 84,000 in secondary sections.

Elementary School Teachers

12. Out of 3.15 lakh of untrained teachers in primary sections 2.43 teachers had teaching experience of 8 years and less, 1.8 lakh teachers teaching experience of 4 years and less. Out of 1.08 lakh untrained in middle sections, 84,126 teachers had 8 years or less of experience. number of teachers, whose teaching experience was less than 4 years was 64,000. The total number of untrained elementary school teachers with teaching experience of 4 years and less in 1965-66 was 2.44 lakh (1.8 lakh plus 64,000).

13. Since experience in regard to the organisation of the correspondence course for elementary school teachers, many of whom are not even academically qualified, is not available, it may be desirable to concentrate on the training of about 2.44 lakh of untrained teachers, who may have put in 8 years or less of service, through correspondence courses, in the Fourth Plan. This problem is mainly acute in the States of Assam, West Bengal, Orissa, Mysore and Jammu & Kashmir where there is a large concentration of untrained teachers. The State Institutes of Education and other appropriate organisations will have to prepare a phased programme of clearing this backlog of untrained teachers.

Untrained Secondary School Teachers

14. According to the Second All India Educational Survey, out of 84,
untrained teachers working in secondary sections, 67,818 teachers had tea
experience of 8 years and less, and out of these 52,750 untrained teachers
teaching experience of 4 years and less. The position may have sli
improved by now. The problem is, however, concentrated in Assam, Bi
Jammu & Kashmir, Mysore, Nagaland, Orissa, Rajasthan and West Be
In the Fourth Plan, the target may be to train 50,000 teachers through co
pondence courses in the four Regional Colleges of Education and the Ce
Institute of Education who have the experience of running these cou

In-service Programme

15. Continuous retraining and refreshing of teachers of various subj
specialists in methods of teaching and professional knowledge is essen
because of the growing obsolescence. For instance, the Second All In
Educational Survey indicated that about 65,000 teachers or about 2
per cent of the total teaching force working in secondary sections are scie
teachers. Only 31.2 per cent of them possess the prescribed qualificati
of a science degree with professional teacher training qualifications.
would be necessary to draw up a regular programme of in-service train
and education of teachers, through correspondence, week-end, and oth
short-term courses in order to provide them an opportunity to keep the
selves abreast of the latest developments. Such in-service training program
will have to be provided by the existing teacher education institutions throu
their extension service departments and State institutes of education, scie
institutes and summer institutes. These departments will have to be stre
thened to take up this work. The in-service programmes will have to
arranged at the district level so that the coverage is large. With a view
enabling selected primary school teachers to teach new courses of gene
science, teachers of 21,000 primary schools (where science kits will be pro
ded), will be trained through a two-month in-service programme in 7
selected neighbourhood secondary schools and training schools. The
are at present about 90,000 middle schools, where science is taught as
integrated course of general science. In order to train the existing teach
of these schools to teach science courses as individual disciplines of physi
chemistry, mathematics and biology, a two-month in-service training cou
will be organised through selected teacher training colleges. During t
Plan period, about 40,000 teachers will be trained. During the Fourth Pla
5 lakh teachers (4 lakh elementary school teachers and 1 lakh seconda
teachers including 1.25 lakh science teachers) may be provided in-servi
training programmes.

Improvement of Training Institutions

16. The Education Commission has observed that most of the teach
training institutions have substantial deficiencies in regard to equipm
buildings and other facilities especially craft sheds, craft equipment, labo
tories and libraries. A number of training institutions are under priva
management and in most cases, the managements do not have enough fun
for providing the necessary facilities. During the Fourth Plan, both recurri
and non-recurring expenditure, will have to be provided to training insti
tions to improve these facilities including science laboratories, to increase t
number and value of stipends of student teachers and provide incentives
teacher educators for improving their qualifications. Non-recurring fun

will be utilised mainly for providing, in order of priority, laboratory, library, audio-visual and workshop equipment, minimum hostel facilities and staff quarters. It should also be possible to select about 10 per cent of such institutions and to develop them as peaks of excellence.

17. There are about 1400 training schools in the country. A number of them are small-sized and, therefore, uneconomic. It would be desirable to concentrate on developing large-sized institutions by amalgamating the existing institutions and providing additional physical facilities. There are about 220 training colleges/university departments of education. In the Fourth Plan, about 150 training colleges/university departments of education will be selected to develop as comprehensive colleges with multi-faculty training programmes. Norms will be laid down in respect of the staff and various physical facilities. The institutions selected for the purpose could be enabled to develop a minimum prescribed level.

18. From the point of view of general qualifications, school teachers in India range from those who have not completed the middle school course to those possessing postgraduate degrees. *Table IV* brings out the position about the educational status of teachers in 1965-66 according to the Second All India Educational Survey.

Table IV. Educational Status of Teachers—1965-66

Qualifications	Teachers in Primary Sections	Teachers in Middle Sections	Teachers in Secondary Sections	Total
1	2	3	4	5
1. Below middle pass	22,907 (1.9)			22,907 (1.2)
2. Middle pass	5,94,354 (49.7)	57,085 (13.1)	871	
3. Matriculate	4,93,682 (41.3)	2,16,429 (49.7)	24,247 (8.7)	7,34,358 (38.4)
4. Intermediate	55,505 (4.6)	51,560 (11.8)	14,546 (5.2)	1,21,611 (6.4)
5. Graduate	16,618 (1.4)	65,025 (2.5)	1,51,649 (20.7)	2,33,292 (23.6)
6. Others*	11,752 (1.0)	34,741 (8.0)	28,471 (10.3)	74,964 (3.3)
TOTAL	11,96,111 (100.0)	4,35,939 (100.0)	2,77,137 (100.0)	12,09,187

*Figures within parantheses indicate percentages of teachers of music, craft and physical education.

Of the total number of teachers employed in schools in India during 1965-66, according to the Second All India Educational Survey, 22,907 (1.2%) were teachers with less than middle pass educational qualifications. There were 6,52,310 teachers (34.2%) who did not have the matriculation certificate. The number of teachers, who had passed matriculation examination was 7,34,358 (38.4%), 1,21,611 (6.4%) were intermediates and only 3,03,037 teachers (15.9%) had graduate and postgraduate qualifications. It may be noted that teachers who are matriculate or less, constituted the bulk of teachers, namely, 73.8 per cent of the total teacher population in the country

19. The Education Commission, after analysing the growth of qualified teachers over the period 1951-66, observed that the number of unqualified teachers is being reduced very slowly. The Commission observed that at the present rate, it may take 20—25 years to ensure that every teacher has had at least 10 years of general education. If the quality of education is to be improved, the qualifications of unqualified and under-qualified teachers will have to be upgraded. This can be done through a big programme of correspondence courses or part-time courses or morning and evening courses. This programme would involve, among other things :

(a) giving study leave to teachers for short durations ;

(b) linking the increase in emoluments with improvement in qualifications ; and

(c) appointment of teachers in leave reserve who could relieve the teachers going on study leave.

Professional Advancement of Teacher Educators

20. The staff of training institutions, whose number is estimated to be about 15,000 or so are inadequately prepared for their tasks. For instance, 40 per cent of the staff in secondary training colleges have only B.A. degree in addition to the B.Ed.; 58 per cent hold a master's degree in education or in an academic subject ; and only 2 per cent have a doctoral degree.

21. The conditions of training institutions for primary teachers is very depressing and their standards even more unsatisfactory than those of secondary training institutions. The majority of the staff is recruited from among teachers of secondary shools. These have been trained for the work at the secondary stage and are, in consequence, inadequately trained for preparing teachers for primary schools.

22. The Education Commission have recommended that the staff of the training colleges should have a double master's degree in an academic subject and in education and a fair proportion, say, 10 per cent, sould also have a doctorate degree. They should also have studied teacher education as a special subject at the M.Ed. or through a special education course. In regard to the staff of training schools, the Education Commission have recommended that they should have, besides the B.A. degree, a master's degree either in education or in an academic subject and should be entitled to receive the same scale of salary as lecturers in arts and science colleges and two advance

increments, in recognition of the professional training. The following programmes will have to be taken up :

1. Provision of further education, research and doctoral courses for the existing staff of training institutions in university departments of education/schools of education and other appropriate teacher education institutes.

2. Training of qualified people as teacher educators by providing additional facilities in university departments of education/schools of education, etc.

3. Provision for the appointment of additional staff in teacher education institutes as leave reserve to replace the staff going in for higher education.

4. Provision for leave salary and fellowships for teacher educators going in for further education and for entrants to training institutions.

5. Strengthening university departments of education/schools of education for providing specialised courses.

Educational Research

23. The quantity of educational research is small and its quality is also poor. There are inadequate facilities for research in training colleges and also there are few competent people to guide it. Ancillary services like documentation and computation have not been developed. There is not a single journal exclusively devoted to educational research. There is no central clearing house and as such there has been considerable duplication of work. The Education Commission have suggested the setting up of a documentation centre and a National clearing house in educational research. Further, it has also been suggested that education research in teams and in inter-disciplinary fields should be developed. In order to make research functional, it has been suggested that officers of the Education Department, working in the field, should be brought together with research workers in the training colleges and in the universities. Some beginning will have to be made in the Fourth Plan to promote educational research.

Development of Special Courses and Programmes

24. New courses for the training of headmasters and training experts in evaluation, curriculum construction, guidance and counselling, teacher education, educational administration, statistics, educational planning and finance etc. specialist teachers for handicapped and talented children etc., will have to be developed in the Fourth Plan. There will have to be two-year M. A. in Education Courses and M. Ed. courses in special subjects and also two-year B. Ed., training courses etc. The Education Commission has recommended these courses and have observed that details of these courses should be worked out.

State Boards of Teacher Education

25. The Education Commission has suggested the setting up of State Boards of Teacher Education so that a bridge is created between the institutions of teacher education under the Education Departments and the institutions which are within the fold of universities. The State Government of Maharashtra have already implemented this programme and the Gujarat Government are taking it up for implementation in the Fourth Plan. It may be necessary to encourage the other State Governments to take up this programme. The All India Association of Teacher Educators could assume the role of bringing about the desired coordination among the State Boards till the question of the setting up of the National Board of Teacher Education could be considered.

Production of literature on Education

26. The availability of suitable literature in training institutions in regional languages is of vital importance for improving the quality of teacher education. Under this scheme, it should be possible to write suitable manuscripts by individual authors, teams of authors and institutions and publication grants should be available for this purpose. Translations or adaptations from standard books may be encouraged to augment the supply of literature. In this connection, it may be useful to carry out a survey of existing literature available to teachers by the State Institutes of Education and the University Grants Commission.

State Institutes of Education

27. To cope with the programme of the revision and upgrading of curricula, preparation of text books, general reading materials, teachers' hand-books and audio-visual aids and the introduction of improved evaluation techniques, the State Institutes of Education will be strengthened. It is proposed to provide a sum of Rs. 2 lakh per year for 20 State Institutes for the developmental activities. The total cost during the Fourth Plan will be about Rs. 3.00 crore.

Strengthening of State Institutes of Science Education

28. In some of the States, the Institutes of Science Education have not been set up so far and in others, the institutes are not staffed and equipped properly. The State institutes units of Science education will be established as integral parts of the State institutes of education in all the States by the end of the Fourth Plan to develop curriculum in science and mathematics, prepare better text books, teachers' hand-books, etc., organise in service training courses and generally to assist the State Directorates of Education in all matters relating to the teaching of science in schools. It is proposed to provide for the development of the institutes a sum of Rs. 3 lakh every year. The cost of 20 institutes will come to Rs. 3.00 crore.

Pre-primary Teacher Training

29. An outlay of Rs. 1 crore is suggested for pre-primary teacher training programmes.

STATEMENT I

List of Schemes and Outlays for Teacher Education in the Fourth Plan—1969-1974

Sl. No.	Name of the Scheme	Revised by the Steering Committee
1	2	3
1	*Expansion of Training facilities*	
	(i) Training Schools ii) Training Colleges/University Departments of Education	36.00
2	*Correspondence Courses*	
	(i) Elementary School Teachers	7.00
	ii) Secondary School Teachers	3 75
3	*In-service Programmes*	
	(i) Elementary School Teachers	9.00
	(ii) Secondary School Teachers	5.00
4	*Improvement of existing institutions*	
	(i) Training Schools	22.35
	(ii) Training Colleges and University Departments of Education	7.50
5	*Up-grading the academic qualifications of teachers*	
	(i) Elementary School Teachers	8.00
	(ii) Secondary School Teachers	6.00
6	Professional advancement of teacher educators	3.00
7	Educational Research	1.00
8	Development of Special Courses and Programmes	2.00
9	State Boards of Teacher Education	0.40
10	Production of reading materials, text-books etc. for teachers	2.00
11	State Institutes of Education	3.00
12	State Institutes of Science Education.	3.00
13	Development of pre-primary education Research and Training and Pilot Project.	1.00
	TOTAL	120.00

STATEMENT II

List of Schemes and Outlays for Teacher Education in the Draft Outline of Fourth Plan

Sl. No.	Name of the Scheme	Outlays (Rs. crores)	Targets
1	2	3	4
		Rs.	
1	*Training of Elementary School Teachers*		
	(a) Full time expansion	35.00	60,000 additional seats
	(b) Improvement of existing Training Institutes.	14.00	Improvement of 1.3 lakh seats.
	(c) Correspondence Courses for Training untrained teachers.	6.00	Correspondence courses for 1.4 lakh teachers
	(d) In-service Training Courses . . .	5.00	
	TOTAL . .	60.00	
2	*Secondary Education*		
	(a) Full time expansion of training facilities .	21.00	Training of 56,000 teachers.
	(b) Improvement of existing training institutions.	3.00	Improvement of 150 training colleges.
	(c) Correspondence Courses for training untrained teachers.	2.00	Correspondence courses for 17,660.
	TOTAL .	26.00	
3	State Institutes of Education	2.00	Strengthening of 15 Institutes.
4	Pre-Primary education (training of teachers, research (etc.)	2.00	
5	State Institutes of Education	2.00	
	TOTAL .	6.00	
	GRAND TOTAL .	92.00	

ANNEXURE VII

SOCIAL EDUCATION IN THE FOURTH PLAN

Introduction

1. Widespread illiteracy is a real handicap in the way of both economic and social development. Owing to a variety of reasons, the programme of the liquidation of illiteracy has not been adequately attended to in the past and has led to various problems. Though literacy* increased from 17% in 1951 to 24% in 1961 and is expected to have increased to about 33% in 1968-69, the number of illiterates also increased from 298 million in 1951 to 334 million in 1961 and is expected to increase to 349 million in 1968-69, due to the increase in population. In 1960-61, the literacy percentage in the age-group 15-44, which constitutes the working force, and is very important from the point of view of the production capacity of the country both in industrial and agricultural sectors, was 30.6. The number of illiterates in this age-group was 131 million. It is estimated that in 1968-69, out of the total population of about 230 million in this age-group 150 million would be illiterate

Causes of Slow Rate of Literacy

2. The main reasons for the slow rate of literacy in India is the inadequate provision for compulsory primary education facilities and the huge problem of wastage and stagnation. The other reason for retarding the growth of literacy is the inadequate support given to it in terms of finances and low priority given to it in the development plans. In 1950-51, the expenditure incurred on social education was Rs. 8.56 million (0.6 per cent of the total educational expenditure of Rs. 1,440 million). In 1965-66, the expenditure incurred on social education was Rs. 12.00 million (0.2 per cent of the total educational expenditure of Rs. 6,000 million). While the total expenditure on education during the period 1951-66 increased about four times, the expenditureon social education increased only by one and a half times. This means that, in educational development programmes, adult literacy and social education have been given the lowest priority. Thus, for instance, while the proportion of expenditure incurred on social and adult education to the total educational development programmes in the First Plan was 3.3, it was reduced to 1.5 in the Second Plan and to 0.5 in the Third Plan. Even in the literacy classes, conducted in the country, the main emphasis is on reading and writing without any due regard being given to the functional aspects of literacy programme. There has also been a lack of coordination between various departments in organising literacy programmes. The educational administrators and planners have not felt the need for linking adult education and

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*Percentage refers to total population. The criterion for literacy as indicated in the Census of 1961 is explained below :

"The test for literacy in the Census of 1961 was satisfied if a person could with understanding, both read and write. The test for reading was ability to read any simple letter either in print or in manuscript. If the person could read one of the examples in the enumerator's handbook with facility, he was taken to have passed the test for reading, the test for writing was ability to write a simple letter. To qualify for literacy, a person was not required to pass any standard examination. On the other hand, literacy was, recognised as something a man still possessed and actively put to use and it was in this general practical sense that it was uniformly applied. The results are thus comparable from area to area. If a person could both read and write and had also passed a written examination or examinations as proof of an educational standard attained, the highest examination passed was to be recorded."—Census of India—1961, Vol. I, page XIV.

adult literacy with economic development with the result that the prio given even in overall planning and educational development has been w low.

The educational administrators have been adopting the conventional a orthodox methods without creating any motivation among the adults mobilising voluntary public and political support for developing the progra mes.

Approach

3. Within the span of the next five years, it would be an impossible t to take up the programme of the eradication of illiteracy among 150 mill adults in the age-group of 15-44 . The strategy may be to take up this p gramme in a modest way by concentrating on the most sensitive age-gr of 15-24, where the number of illiterates is estimated to be about 60 mill It may not, however, be desirable to neglect the other age-groups particul the illiterates in the age-group 25-44, who form the majority of the leade the villages at present. Further, in the Fourth Plan, social education w in its comprehensive sense, includes besides literacy, the health, recrea and home life of the adults, their economic life and citizenship training wo largely centre around functional literacy which can be achieved in two sta While financial resources for adult education will have to be found, for o programmes, there is no need for expenditure but of organisation. The org sations which can take care of such programmes will have to be identi

First Stage of Adult Education

4. The first stage of adult education may be in the form of a mass m ment largely dependent on the mobilisation of local resources, both of per nel and finance. This again can be taken up by (a) educational institutio neighbouring villages and towns and cities, and (b) non-student educ youth and other social workers in compact areas.

Literacy by Educational Institutions through Adoption Programm

(a) Students, teachers, members of professional classes, educated ple, etc. can be an important asset in this movement. Here the cooper of secondary students and that of college students through the programm National Social Service, which has already been accepted for implementa can be obtained. Every educational institution may be required to run racy classes regularly and be given responsibility for liquidating illit in a specified neighbouring area, the size of which may be determined b size of the staff and the number of students available for literacy wor

Literacy Campaigns in Selected Areas

(b) Towards the end of the Third Plan, Adult literacy pilot pr were implemented, as an advance action programme, to take up a ma programme of adult education in the Fourth Plan. The results of the pr implemented have indicated that public cooperation in imparting lit has been coming forth, though there would be need for some incentive a and transportation charges etc. to encourage workers to take up this w In 1968-69, these pilot projects are being taken up in more States. In the c of the Fourth Plan, literacy on the lines of these projects will be taken compact areas in selected blocks. A small area of manageable size, wh a large village or a *panchayat samity* block can be taken in hand for co trated effort, with the object of making every adult, especially in the group 15-24 literate. Literacy programmes amongst adults will be orga

wherever there is necessary atmosphere and local enthusiasm. The first phase may be largely on a campaign basis with the added condition that the follow-up for taking the neo-literates up to the functional standard would immediately follow without leaving any gap between the two.

5. The main effort under these twin programmes would be to provide the first stage of literacy to 10 million illiterates in the rural areas, especially in the age-group 15-24, whose total number is about 60 million. In addition 5 lakh illiterates will be covered in the hilly and tribal areas.

6. The second stage would include a regular and systematic education of those who are identified at the first stage, both in rural and urban areas, as being capable of putting in serious effort.

Functional Literacy in Rural Areas

(a) A start has already been made in giving functional literacy in the rural areas covered by the high-yielding variety projects. The number of such projects may have to be increased. The functional literacy projects will be taken up in high-yielding variety areas, in conjunction with rural industries projects and other similar projects in different States. The functional literacy programme will need a paid teacher on a part-time basis and a proper library containing suitable follow-up literature. This entire programme may be financed jointly by the State and the local community. It is proposed to cover 11 million illiterate adults, mostly in the age-group 15-24 under this programme.

Functional Literacy in Urban and Industrial Areas

(b) Programmes of adult education will have to be developed in industrial and commercial undertakings—public and private—Government offices, etc. In fact the State and Central Governments should give a directive to their offices and public sector undertakings to make their workers literate. It should be possible to make about 5 lakh persons literate under this programme.

(c) The development of adult education, especially in industrial areas, has been strongly recommended by the Planning Commission COPP Team on Literacy among Industrial Workers and by the Education Commission. The success of the programme of literacy will largely depend upon how major occupational groups can be identified and effective literature of a functional character produced for them. In the case of large organised, identifiable groups like industries, large farms, government offices etc., it may be the responsibility of the employer to provide literacy and social education to these workers.

Further Education for Industrial Workers

7. In addition to these programmes, corporations, other local bodies and institutions may also arrange adult education programmes for slum areas. About 2 million adults may be covered under this programme. Industrial plants, both in the public and private sector, may take the lead in organising classes for workers and encouraging them to go in for various examinations. In view of the important role which the working classes play in improving production, their education may not be allowed to end after they have become functionally literate. The main function of these programmes may be to equip an increasing number of workers with higher technical and vocational qualification so that they can rise to positions of responsibility in the industry.

Selected Literacy Projects

8. A number of experimental projects, viz., Vidyapeeths, Janta Colleges, workers social education institutes, polyvalent centres, continuation classes for adults, extension departments, correspondence courses etc. initiated earlier have, in certain cases, done commendable work and have proved their worth. To promote these activities on a large scale in various parts of the country, assistance may be given to the State Governments and voluntary organisations for taking up such projects. In the Fourth Plan, voluntary organisations should be given all encouragement to realise their full potential for work in the field of adult education, where they have many advantages over official agencies.

9. The universities have an important part to play in extra-mural and extension lectures, taking up literacy and adult education classes, conducting researches and studies, organising pilot projects, correspondence courses, training of key personnel, etc. For organising such activities, the universities should be helped in setting up departments of adult education.

Training of Literacy Workers

10. Attention would also be paid to the training of literacy workers. The training of workers for carrying out literacy work may have to be organised on a big scale. The training may be short and intensive both for salaried and voluntary workers.

Library Services

11. The other problem is that of organising library service. There will have to be an extensive net work of libraries covering the whole country, at all levels, manned by properly trained librarians. School libraries may be integrated with the system of public libraries. Libraries will need reorientation in order to function as media of adult education. They may need to be stocked with reading materials, which will lead the neo-literates step by step from simple but interesting reading to more advanced books giving information of value to them.

Book Production

12. Before the programme of literacy is taken up, in a big way, it may be necessary to organise a large number of workshops in different parts of the country (in every linguistic area) for training writers of suitable books for the neo-literates. This reading material may be required in enormous quantity if the follow-up is to be effective and is to have relevance to the life and social needs of those people. Besides, the business of book production for the use of the masses of the people may have to be undertaken on a big scale. This will call for a considerable amount of specialised skill, resourcefulness and organisation. It may be necessary not only to ensure the production of the right type of reading material but also in the practical aspects of the scheme, quality of printing, efficient organisation in production and distribution of books and other printed material. The literature provided by various technical departments centring round various development programmes may have to be suitably processed by the Education Departments in order to suit the mental equipment of adults. The literature will have to be life centred and in this connection the role of wall news paper cannot be over-emphasised. Some of the talks meant for rural listeners can also be given in the form of suitable lessons to be used in literacy classes.

Literacy and Mass Media

13. Modern means and scientific aids may be pressed into service in support of the campaign of literacy and also other adult education programmes

to make them attractive and more effective. Audio-visual aids, radio listening, preparation and exhibition of special films, even the use of television and other media of mass communication may be tried to the extent financial resources permit. To a large extent funds for organising these programmes are already provided in the budgets of the Department of Information and Broadcasting.

Literacy Administration

14. Taking up the various programmes of adult education, as detailed above, would mean considerable work load on the staff in the States. To strengthen the State Departments of Education at the district, block and village levels, and also at the headquarters, additional technical staff may have to be appointed. The adult education programme will need the closest collaboration and cooperation of various governmental authorities, ministries and departments as also between official and non-official organisations. State Boards of Adult Education may have to be set up to provide the necessary inter-departmental coordination, to organise programmes like the initial phase of literacy, functional literacy, obtaining non-official support from all possible sectors etc.

Targets of Literacy

15. Adult education programmes are generally informal. They have a large variety and standards of courses. They can be as numerous as the groups and sections of the community which they would serve. The basic idea would be to provide facilities, opportunities and means for them to acquire knowledge, and in their functions as citizens. A big and nation-wide programme of adult education organising the movement, preparing the materials, training personnel and a number of other requisites, requires time. It would be possible to achieve full literacy in various areas, at different times, depending upon the stage of educational development in area, the degree of public cooperation and the efficiency of organisation. Any postponement of the date of ilquidation of i literacy beyond the period of 10 to 15 years may aggravate the problem. In 1968-69 it is estimated that, out of the total population of 230 million in the age-group 15-44, the number of literates may be 80 million or about 35 per cent. In the age-group 15-24, out of the total population of 100 million the number of literates may be about 45 million or about 45 per cent. The objective, therefore, may be that, it should be possible, by providing literacy to about 35 million adults under various programmes, to raise the percentage of literacy in the age-group 15-24 from about 45 in 1968-69 to 66 by 1973-74. In the age-group 15-44 by 1973-74 the percentage of literates is expected to be about 45 or so.

Outlays for Adult Education

16. For various programmes relating to adult education, a provision of Rs. 40 crore will be required as detailed in the *Statement* enclosed. The appendices enclosed with this note indicate the norms of costs of some of the important programmes.

Popular Leadership and Literacy

17. Motivation for literacy and retention of literacy once imparted are two important problems which need the urgent attention of educational administrators. Adult education programmes can be successful if it is ensured

that there is follow-up in terms of the provision of reading materials through a net-work of libraries. The Fourth Plan makes provision for the follow-up materials adequately. As far as motivation is concerned, in a democratic set-up it will depend on the level of political and popular leadership and the enthusiasm which can be generated by treating literacy as a national programme. The Education Commision have observed that the responsibility for initiating a massive movement to combat illiteracy goes beyond the capacity of the administrative and educational system so that it rests squarely upon the political and social leadership of the country. This is more true now than ever.

STATEMENT *Adult education in the Fourth Plan—List of Schemes, Provisions and Targets*

Sl. No.	Name of the Scheme	Physical Targets	Financial Outlays (Rs. in crores)	Details about Norms and Costs.
1	2	3	4	5
1	First stage of literacy in rural areas	15 million	6.00	Appendix I
2	First stage of literacy in tribal, hilly, border, denotified areas . .	½ million	0.40	Appendix II
3	Functional literacy in rural areas including high yielding variety areas	10 million	14.00	Appendix III
4	Literacy in urban and industrial areas	2 million	2.00	Appendix IV
5	Establishment of block libraries .	1,200	6.30	Appendix V
6	Strengthening of existing block libraries	175	0.43	
7	Village circulating libraries . .	..	4.07	Appendix VI
8	General reading material for neo-literates	5 crores booklets	3.00	Appendix VII
9	Training of librarians . . .	..	0.10	
10	Training of literacy teachers, workers, and key personnel . . .		0.10	
11	Experimental Project (Workers' Social Education Institutes, Vidyapeeths, Extra-mural lectures, polyvalent centres) . . .	..	0.20	
12	Assistance to voluntary organisations	5 million literates.	3.00	
13	Production of literature for neo-literates and for neo-reading public (Department of Adult Education of NCERT) . . .	..	*	..
14	Strengthening of literacy administration	..	0.10	..
15	Departments of Adult Education in Universities	..	0.30	..
	TOTAL .	..	40.00	

*To be provided under NCERT.

APPENDIX I

FIRST STAGE OF LITERACY IN RURAL AREAS

The per capita expenditure from Government sources on the first stage of literacy for a period of 4 months was earliar estimated to be about Re. 1.00 with the break-up shown in table below :

Table : cost per capita—Initial Literacy

Sl. No.	A ticles etc.	No.	Approximate Price
1	2	3	4
1	Primer	1	0.50
2	Chart for a Group upto 30 members @ Rs. 1.50 per chart .	..	..
	Share per adult	1	0.05
3	Progress record book @ 0.90	..	..
	Share per adult	1	0.03
4	Teachers' Guide @ Rs. 1.40	..	..
	Share per adult	1	0.04
5	Note-books @ 0.19	2	0.38
	TOTAL	..	1.00

It was assumed that the community, *Panchayat samities*, etc. will bear the cost of slate, pencils, kerosene oil, etc. which would roughly amount to Re. 1.00. For calculation purposes, this expenditure was let out earlier on the assumption that this will be the share of the community on the lines of the *Gram-Shikshan Mohim* of Maharashtra. The Conference of Adult Education officers convened in 1966 by the Ministry of Education was, however, of the view that this was a very low estimate. It was thought that though no regular remuz neration would be given to social workers, etc. for conducting literacy classes, there would be need for giving incentive awards, transportation charges, etc. in some form or the other. Further, the cost of materials and kerosene oil had also gone up. They were, therefore, of the view that the cost *per capita* from Government sources, for the initial phase of literacy, should be assumed to be Rs. 4.

APPENDIX II

FIRST STAGE OF LITERACY IN TRIBAL, HILLY, BORDER, DENOTIFIED AREAS

For the backward, hilly and tribal, denotified areas etc. where it would not be possible to enlist public support for making adults literate through voluntary workers etc., the cost per capita for period of 4 months would be about Rs. 8 with the break-up between different items as shown in Table below —

Table : Cost per capita—Initial Literacy in Tribal, Hilly, Denotified Areas.

Sl. No.	Teachers/articles	Approximate Cost
1	2	3
		Rs.
1	*Teacher*	
	Rs. 20 per month for four months and for 30 adults . . .	80.00
2	*Lanterns*	
	6 @ Rs. 8/- lasting 4 years	6.00
	$\frac{6 \times 8}{4 \times 2}$	
3	*Kerosene oil*	
	@ Rs. 10/- per month . . . . . Rs. 10 × 4 months	40.00
4	*Primers*	
	@ Re. 1/- 30 × 1	30.00
5	*Note Books and Pencils*	
	@ Re. 1/- 30 × 1	30.00
6	*Slates* Re. 1/- × 30. × 1	30.00
7	*Teachers' kit*	4.00
8	*Contingencies*	
	Rs. 5 × 4 months	20.00
	TOTAL FOR 30 ADULTS	240.00
	Cost per adult . . .	8.00

APPENDIX III

FUNCTIONAL LITERACY

Cost of one literacy group or class of 30 adults of 6 months duration

		Rs.
1	Salary/Honorarium of one Instructor at Rs. 20 p.m.	120.00
2	Salary of Supervisor at Rs. 50 p. m. 1/10th of Supervisor for one class	3.00
3	Training of Instructor or teacher	50.00
4	Training of Supervisor at Rs. 30 1/10th of Supervisor for one class	30.00
5	Slates (Re. 1/- each)	30.00
6	Note-books (Re 1/- each)	30.00
7	Primers etc. at Re 1/- each	30.00
8	Instructors' kit	4.00
9	Kerosene Oil	60.00
10	One Petromax (Rs. 60/-), Two Hurricane Lamps (Rs. 8 each) lasting 4 years. $\frac{60 \times 1}{4 \times 2} + \frac{2 \times 8}{4 \times 2}$	10.00
11	Maps and Charts etc. $\frac{15}{4 \times 2}$	2.00
12	Follow-up material Rs. 5/- per set of 10 books—30 sets for 2 years	40.00
13	Wall Newspaper	2.00
	TOTAL FOR 30 ADULTS	411.00
	COST PER ADULT	13.70 or 14

APPENDIX IV

LITERACY IN URBAN AND INDUSTRIAL AREAS

The Social Education Committee of the City of Bombay has been doing commendable work for the urban and industrial youth in providing adult and further education. The development of urban social education especially in industrial areas has been strongly recommended by the Planning Commission, COPP Team on Adult Literacy in Industrial Areas. It would be necessary to have social Education Committees in at least 10 cities on the pattern of the Bombay City Social Education Committee. The target for providing social education and adult education to urban youth through the social education committees during Fourth Plan is about 20 lakh youths. It is expected that the total cost on making an industrial and urban youth literate would be about Rs. 20. Out of this, the Government expenditure would be about 50% and the rest would be borne by the Social Education Committees/Corporation, Municipalities/Employers. On this basis, the governmental expenditure, during the Fourth Plan on covering 20 lakhs of youth would be Rs. 2 crore.

APPENDIX V

BLOCK LIBRARIES

1. Out of 5223 blocks spread over the rural areas in the whole country 1394 blocks have libraries. The Planning Commission Working Group on Libraries have observed the block libraries will be the main centres of the State library system which will directly render service to the rural population and further extend, in due course, such service through village-level libraries. As the resources would not be sufficient to establish and maintain self-contained village-level libraries immediately, an attempt will be made to build up a sure base in the block libraries for village-level service. The target could be that, by the end of the Fourth Plan, 2610 block libraries or 1/2 of the 5223 blocks should have well-established library system. The additional block libraries which will have to be established during the Fourth Plan would be 1216 or 1200 (2610 block libraries minus 1394 existing block libraries). Assuming a minimum recurring expenditure of Rs. 15,000 per block library, including the salary of staff (a librarian and a clerk) the amount required will be as under for a period of 4 years.

(Rs. in crores)

Phasing	No. of Libraries	Expenditure
1	2	3
		Rs.
II Year	200	0.30
III Year	200	0.90
IV Year	400	1.50
V Year	400	2.10
TOTAL	1,200	4.80

Building for New Block Libraries

2. It may not be possible to construct buildings for all new block libraries. In the Fourth Plan it is proposed to provide buildings only for 600 block libraries. The cost of these buildings at the rate of Rs. 25,000 per building (including Rs. 5,000 for skeleton shelving for books) would be Rs. 1.50 crore.

Strengthening of Block Libraries

3. It is also proposed to strengthen one-eighth of the existing block libraries, *i. e.*, 175 libraries at the rate of Rs. 500 per annum for a period of 5 years and the cost will be Rs. 43.5 lakh.

4. Total cost would be Rs. 6.73 crore.

APPENDIX VI

VILLAGE CIRCULATING LIBRARIES

Strengthening the existing block libraries and establishing libraries in new blocks by itself will not extend the library facilities to all the villages. Considering the fact that the number of titles is limited, it is essential that the books are kept circulating and that there is provision for the circulation of books and later the assimilation of these books by the villagers. It would be essential that there should be a provision of a librarian who goes round the villages himself, checking on the work that is being done in the distribution and assimilation of book material. It is assumed that the existing block libraries have each a provision of a librarian. The provision of a librarian assisted by a clerk for each of the new block libraries has been separately provided. The block librarian will have to maintain a record of the readers reactions to the book material. The maintenance of this record is essential.

2. For regulating the traffic of incoming and outgoing book material, to and from blocks to villages, it may be necessary to provide for a type of itinerant library assistants about 5, for a block, to begin with, who would be going round on cycle. The primary school teachers would be responsible for circulating the books in the villages through the school children and other local people. This facility will have to be provided for all the 3,900 block libraries. The salary of an itinerant library assistant at the rate of Rs. 40 per month for a period of five years for all the blocks, after proper phasing, would be Rs. 1.56 crore ($3900 \times 5 \times 40 \times 12$). In addition to this, the *Zila Parishads*

3

and *panchayats* may like to pay some allowance to the itinerant library assistants.

3. For the purchase of 5 cycles for each of 3,900 blocks at the rate of Rs. 200 per cycle and maintenance cost of Rs. 50 per cycle, the cost would be Rs. 48.75 lakh ($3900 \times 1000 + 250$).

4. It is estimated that the other expenditure involved in the travelling of block librarians, transportation of books from districts to the blocks, etc., may be about Rs. 46 lakh.

5. Thus the cost on village library circulating system would be as under :

	(Rs. in crore)
(a) Salary of itinerant library assistants.	1.56
(b) Cost of cycles and their maintenance	0.49
(c) T. A. & transportation charges	0.46
(d) Honorarium to primary school teachers who will be in-charge of circulating libraries in the villages	1.56
TOTAL .	4·07

APPENDIX VII

GENERAL READING MATERIAL FOR NEO-LITERATE

The number of adults to be covered under the programme of the first phase of literacy would be 30 million and they will be spread over all the villages in the country. The programme would be to supply general reading materials for these neo-literates by supplying 100 booklets duing the Fourth Plan for all the 51 lakh villages or the areas where the first phase of literacy has been taken up. These books would be supplied to primary school teachers in the villages through a wide net-work of block libraries and village mobile libraries, which will be responsible for circulating these to the neo-literates. The number of booklets required would be 5 crore (5 lakh × 100 booklets). The production charges of 5 crore booklets of 40 pages of demi size with 16 pt. type size at the rate of 60 paise per booklet, would be Rs. 3 crore. Out of Rs. 3 crore, the production charges of 5 crore booklets would be Rs. 2 crore and the rest for printing and paper.

ANNEXURE VIII

NATIONAL SERVICE PROGRAMME, YOUTH WELFERE AND PHYSICAL EDUCATION PROGRAMMES IN THE FOURTH PLAN

Compulsory NCC was started in 1962-63 to cover all able-bodied undergraduate boys studying in the first three years of the degree course. During 1966-67 NCC strength was about 10 lakh. Later on the Inter-University Board decided to reduce the period of compulsion from three to two years. During 1967-68 the strength of NCC dropped to 7.5 lakh. Recently the Inter-University Board have taken a decision to make NCC optional from 1968-69. The Ministry of Defence have indicated that the maximum ceiling for NCC (Senior Division) will be 3 lakh boys and 1 lakh girls.

2. The Education Commission (1964-66), in its report reviewed the position relating to Social and National Service and recommended that a programme of national service may be developed as an integral part of education which would run concurrently with academic studies in schools and colleges. The proposals have been considered, at various levels, and details have been worked out.

3. It is now proposed to develop in the universities an alternative programme to NCC in the form of National Service Corps (NSC). Students showing marked proficiency in games and sports would be given facilities of further improving their standard through National Sports Organisation (NSO). It has been agreed that during 1968-69 the National Service Corps programme will be developed on a pilot project basis on the initiative of the colleges and universities and the coverage would be 1 lakh students. The Central Government's share of expenditure is estimated at Rs. 100 per student per year and of the State Government at Rs. 50 per student per year.

4. It has been agreed that the programme will be optional but will be developed to attract the maximum number of students in worthwhile projects to be initiated by the students and teachers of the institutions. There will be emphasis on adoption of villages for literacy drives and constructional activities in cooperation and coordination with local authorities. In order to allow flexibility and initiative it is proposed that lump-sum grants be given in the beginning of the financial year on a per capita basis to the universities to make the programme effective. Annual evaluation will be published for the information of both State and Central Governments.

5. The Ministry of Defence, as indicated earlier, have suggested that the strength of NCC should not exceed 4 lakh despite the increase in enrolment visualised during the Fourth Plan. As far as NSC and NSO programmes are concerned, during 1968-69, in consultation with the Ministry of Finance, a provision of Rs. 1 crore has been approved to cover 1 lakh students—80,000 in NSC, 20,000 in NSO. It is proposed to progressively increase the coverage of students under this programme from 1 lakh in 1968-69 to about 6 lakh in 1973-74. Thus, by the end of the Fourth Plan, the coverage of students under NCC, NSC and NSO programmes would be 10 lakh as against the total projected enrolment of 12 lakh in all the faculties and classes of universities excluding intermediate, pre-university and post-graduate classes. The total enrolment in colleges and universities in 1968-69 is expected to be 17 lakh and this is likely to increase by 5 lakh by the end of the Fourth Plan. The

phasing of the programme in the light of the projected targets are indicated in *Table I.*

Table I : *Students Strength in NCC, NSC and NSO.*

(Figures in lakh)

Sl. No.	Year	N.C.C.	N.S.C.	N.S.O.	Total (3+4+5)
1	2	3	4	5	6
1	1969-70	4.00	2.20	0.50	6.70
2	1970-71	4.00	2.65	0.85	7.50
3	1971-72	4.00	3.10	1.20	8.30
4	1972-73	4.00	3.55	1.60	9.15
5	1973-74	4.00	4.00	2.00	10.00

6. The cost of covering NSC and NSO to 4 lakh sutdents by the end of the Fourth Plan has been worked out in *Table II.*

Table II : *Provision for NCC and NSO in Fourth Plan*

(Rs. in crore)

Year	Centre	States	Total	Targets of Coverage (Figures in lakh)
1	2	3	4	5
1969-70	2.70	1.35	4.05	2.70
1970-71	3.50	1.75	5.25	3.50
1971-72	4.30	2.15	6.45	4.30
1972-73	5.15	2.575	7.725	5.15
1973-74	6.00	3.00	9.00	6.00
TOTAL	21.65	10.825 (or 10.83)	32.175 (or 32.18)	

The total cost of the programme would be Rs. 32.175 crore, out of which Rs. 21.65 crore would be the Centre's share. It is expected that the State Governments will find their share of expenditure from the savings on account of the reduced strength of NCC as agreed to between the Centre and the States during various discussions and will form part of the non-Plan expenditure. The Central Government's share of the expenditure has been calculated to be Rs. 21.65 crore on the basis of the targets shown in Table I. If, however, the level of expenditure reached in 1968-69, is to be treated as part of non-Plan, then the Central Government's expenditure may be Rs. 16.65 crore.

Youth and Physical Education Programmes

7. The programmes of giving grants to national sports organisations, mountaineering foundations will be continued. Programmes of scouting and

guiding will be promoted. The physical education teacher training institution will be strengthened and programmes of Lakshmibai College of Physical Education will be expanded. The other programmes would be national physical efficiency drive, establishment of national sports centre, rural sports, holiday camps, etc.

8. The Ministry have set up a Study Group to consider the programmes of Youth Welfare in the Fourth Plan. The report of the Group is not available yet.

Planning Forums

9. This is a continuing programme which was started in 1956. The number of planning forums have steadily increased in the last decade and now more than 1000 forums are functioning throughout the country in universities and colleges. Through these forums a large number of teachers and students have been involved in the planning process. They raise their own local resources and with such assistance as they receive from the government these Forums organise lectures, talks, seminars, symposia, essay and debating competitions exhibitions and small-scale savings campaigns, and undertake socio-economic surveys, literacy drives, etc. In recent years, the scope of the programme has gradually increased and a welcome trend is the adoption of the aojoining villages and slum areas in an increasing number, by universities and colleges for sustained developmental and constructive work. This is intended to be the main focus in the Fourth Plan so that the universities and colleges play an effective and useful role in the formulation and implementation of the Plan programmes for the local area where they are situated. The following are some of the main activities which are proposed to be undertaken.

(a) Research studies, investigations and planning and local schemes;

(b) Preparation of town and city development plans;

(c) Participation in constructive work by institutional adoption of villages or slum areas for welfare extension work;

(d) Training of local voluntary workers for community development and welfare activities;

(e) Evaluation ; and

(f) Social education programme.

This expanded programme for which there is a good deal of popular enthusiasm, an outlay of about Rs. 1 crore, the same as provided in the Draft Outline of the Fourth Plan, will be necessary for achieving the target of 1800 Forums by the end of the Fourth Plan. This will mean that another 800 forums will be added during the course of the Fourth Plan with expanded programmes.

10. The tentative allocation for these programmes during the Fourth Plan would be as under:

	Rs. in crore
(1) N. S. C.	15.00
(2) Youth Welfare, sports, physical education, etc.	14.00
(3) Planning Forums	1.00
	30.00

The scheme-wise break-up of Rs. 30 crore is shown in the enclosed *tatement*.

STATEMENT

Proposed Outlay for Schemes under National Service Programme, Youth Welfare and Physical Education in the Fourth Plan.

(Rs. in lakh)

1	2	3
		Rs.
	A. PHYSICAL EDUCATION, SPORTS & GAMES	
1	Grants to National Sports Federations	30.00
2	National Institute of Sports and National Coaching Schemes	40.00
3	Coaching Camps, Purchase of Sports equipment etc	10.00
4	Promotion of Recreation	5.00
5	Establishment of National Sports Centre, Sports House and Sports Hostel in Delhi	40.00
6	Playgrounds (including Swimming Pools, Stadia, Gymnasia etc)	300.00
7	Development of Sports and Games in rural areas	80.00
8	Grants to Indian Mountaineering Foundation	3.00
9	Promotion of Scouting and Guiding	15.00
10	Laxmibai College of Physical Education, Gwalior	20.00
11	Strengthening of Physical Education Training Institutions and Physical Education Departments of Universities including N.F.C. Training Programmes	35.00
12	National Efficiency Drive	5.00
13	Promotion of Training and Research in Yoga	5.00
14	Other Physical Education programmes	12.00
	TOTAL	600.00
	B. YOUTH PROGRAMMES	
1	Scheme of Campus Work Projects	10.00
2	Health Services	60.00
3	Guidance & Counselling (Summer courses etc.)	10.00
4	Day Homes/Study Centres, Text-Book Library, Book Banks and subsidized food	120.00
5	Development of services for non-student youth through educational institutions	100.00
6	Youth Centres	100.00
7	National Integration programme of Youth	400.00
	TOTAL	800.00
	C. National Service and Vikas Dal	1500.00
	D. Planning Forums	100.00
	GRAND TOTAL	3000.00

CHAPTER IX

EDUCATIONAL ADMINISTRATION AND PLANNING IN THE FOURTH PLAN

In the guidelines issued to the State Governments, the following approach was suggested:

(a) Streamlining of the planning, implementing and evaluating machinery ought to be given the highest priority to ensure the most effective utilisation of investment. Each State Government may carefully evaluate the present strength of its cadres, its recruitment and training policies and the motivation provided to personnel at various levels, and provide for remedial measures. It would also be essential to streamline procedures and decentralise decision-making authority to facilitate planning from below and ensure effective involvement of the people and the personnel at various levels. It will also take into account the vast variation of needs at the local level. Maximum possible initiative may be given to the institutions.

(b) The Education Commission has recommended that the district should become the unit of planning and administration. The staff needs at the district level may be carefully assessed and provided for.

(c) The supervisory machinery, especially as regards subject specialists in science and mathematics at the secondary level, needs considerable strengthening. The school complex idea suggested by the Education Commission may make more effective supervision possible, a part from developing and cadre *corps* among the various educational institutions and teachers of various levels.

(d) The administrative machinery has to develop the capacity to change in response to the needs of new programmes and policies. An effective planning and evaluation cell directly under the DPI may be necessary.

(e) Various allied programmes within and outside the education budget, will need to be coordinated so that facilities created are fully utilised.

(f) The various institutions—State Institutes of Education, Institutes of Science Education, etc. may be brought together as an effective technical wing of the Directorate, which could keep in touch with the NCERT at the Centre.

The Planning Commission attaches very high priority to these programmes. A working Party was set up to consider in detail the schemes relating to educational planning administration and evaluation. The working Group has since submitted its report.

Objective

2. Gearing of educational administration to developmental needs requires to be emphasised. This would involve, among other things, striving decisively towards growth both in its quantitative and qualitative aspects. It also implies that a continuous and integrated process of planning for the future, an evaluation of the past and present experience and the provision of the widest possible opportunities for the professional growth of the administration, should receive a great emphasis in educational administration. Developmental administration is also oriented to service and is more outgoing and

open. It respects the individuality and freedom of educational institutions and teachers and emphasises the provision of essential guidance and extension services and strives to provide a free outlet for initiative, creativity and experimentation on the part of the schools and teachers. It is designed for a modern rising and rapidly changing society in which the emphasis is on individual development rather than on conformity. It is based on a close and continuous collaboration and cooperation between teachers and administrators and provides due scope for the professional leadership of teachers. It is both democratic and decentralized.

Special Unit Director of Education

3. In the present situation, the Director of Education, who is the pivot of administration at the State level, is so busy that he has hardly any time to review the various administrative practices and procedures and has no time to study these issues in any depth. It would be desirable that there should be strong statistical and planning units directly attached to the Director of Education which would provide him all such material to keep him fully abreast of the latest developments.

Recruitment of Administrators from the Teaching Profession

4. For developmental administration in the field of education, it would not be desirable to believe that an omnibus administrator could be effective. He would not have the necessary background and vision to transform the educational system. Administrators form hardly about 1% of the total teaching force and one of the urgent tasks should be to start the process of indentifying talented people in the teaching profession and then developing in them special skills for undertaking specified jobs in the various field of administration Providing the teachers opportunities for taking up administrative jobs and associating them with various academic bodies like the Panel of Inspectors, Boards of Secondary Education etc. will develop in them the feeling of commitment to programmes of educational development and open out to them the possibilities of rising up the educational ladder. It would also be necessary that the concept of once-an Inspector all-times An Inspector has to be given up. This would mean introducing parity in the scales of pay and attaching special allowances to the posts of administrators.

Rationalisation of work-load of Inspectorate and Subject Supervisors

5. The position regarding the present work-load of inspectorate varies from State to State but on the whole they do not find time to visit schools regularly. There is a need for further augmenting the strength of inspectorate. As regards norms to be adopted, it is desirable that at the primary stage, the target may be to have an inspector-Shcool ratio of 1:40 and at the secondary stage it may be 1:30. This should include subject inspectors as well. One of the serious defects of present day educational administration is that there are 'generalist' inspectors and not 'specialist' inspectors and, therefore, it is not possible to provide the necessary guidance and advice to the schools. This system has to be completely reversed.

Raising the Status of Educational Administrators at the District Level

6. In a number of States, the status of Inspectors of Schools/District Education Officers is that of Class II officer and as such they do not carry any weight in the District-*vis-a-vis* the other officers. In view of the fact that the

have to carry a very heavy responsibility, all these officers should be class I officers.

Recruitment Administrative Services

7. Various methods have to be used for making the Educational Service at the Centre and State more broad-based by making it possible for university professors, and others working in institutions of higher learning to take up administrative post on a tenure basis. It should also be made possible for the officers working in the State and Central Education Service to spend some time working in the field in order to get first hand awareness of the problems of education. The universities, colleges and eductional research institutions should accept the principle of agreeing to men of proven worth and scholarship working in administrative jobs to be eligible for teaching and research in the universities, for some time. This can be done by a suitable relaxation in the recruitment rules especially in regard to the matters relating to experience in teaching and research.

Training of Educational Administrators

8. The problem relating to the training and retraining of the educational administrators requires to be given a very high priority. For fresh entrants to educational administration, there should be induction courses to be followed by regular in-service programmes. The State Institutes of Education should take care of in-serive training programmes for junior officers and for other senior officers, there should be one or two seminars arranged for short duration. The training of senior officers in the Education Department, whose number at the moment is about 600 and is likely to increase to 900, should be provided at the national level at the proposed National Staff College of Educational Administrators. At this level, there should be cross-fertilisation of ideas among senior officers and this could be provided by arranging programmes at the national level where senior officers could come for short duration and through seminars and workshops exchange their ideas and experiences with their counterparts in other States. Besides providing training programmes through seminars and workshops, the National Staff College for Educational Administrators would also undertake researches in problems relating to comparative study of various procedures and practices in the country and also of such problems in other countries relevant to our situation.

Evaluation in Education

9. The question of evaluation in education and conducting systematic and scientific evaluation of programmes has been neglected so far. It would be necessary to identify important programmes requiring evaluation. It would be desirable to define the objectives of the programmes, their outcomes etc. It would also be imperative to have a continuous mechanism of evaluation which would help in periodically reviewing the programmes and suggesting appropriate modifications. While the State Governments would be concerned with internal concurrent mid-term evaluation as they were implementing programmes, the Centre should have a special role to play in this field because they are not directly involved with the implementation of programmes and their evaluation would be more objective and deep. Evaluation at the Central level can, however, be taken up only with the concurrence of the concerned State units etc. Evaluation of the Centre will have to be interdisciplinary and interdepartmental.

Institutional and District Planning

10. If districts have to be accepted as units for administration, planning has also to start from that level. In this connection, the idea of institutional and district planning has to be accepted as the most important programme which would bring about closer association of the community in the formulation of programmes and also for fuller utilisation of the existing facilities and augmenting the financial resources of the institutions.

Financial Implications of Educational Administration Programmes in Fourth Plan

11. For various programmes listed above, the financial allocation during the Fourth Plan would be as under:

Rs. in crore

1	2	3
		Rs.
1	National Staff College for Educational Administrators	0.70
2	Training of Educational Administrators at the State level through the State Institutes of Education etc.	3.00
3	Up-grading the posts of Inspectors of Schools and D. E. Os from Class II to Class I	1.00
4	Additional staff at the District level and Subject specialists and supervisors	9.00
5	Training of Headmasters/Inspecting Staff in institutional planning	2.00
6	Statistical Assistants and other staff in the offices of the District Education Officers and other staff	1.00
7	Full-fledged Statistical and Planning Units at the State Headquarters	3.00
8	Educational evaluation	1.00
9	Reorganisation of Educational Administration at the Centre	0.50
10	Publication of journals and other reading materials	0.50
11	Seminars & Conferences for Educational Administrations of Higher Education	0.20
12	Deputation of Central and State administrative personnel for inter-state studies and tours	0.10
	TOTAL	22.00

ANNEXURE X

PROGRAMMES OF NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING IN THE FOURTH PLAN

1. At the eighth meeting of the Steering Committee of the Planning Group on Education held on the 30th July 1968 under the Chairmanship of Shri G.K. Chandiramani, Education Secretary, the National Council of Educational Research & Training was asked to revise its fourth plan proposals keeping in view the recommendations of the NCERT Review Committee set up by the Government of India. The NCERT was also asked to prepare its Fourth Plan within the ceiling of Rs. 10 crore.

2. The NCERT Review Committee has not yet submitted its report nor has the Council considered its tentative recommendations. However, assuming that its recommendations are likely to be accepted, an attempt has been made by the office of the NCERT to indicate roughly the allocations for the major programmes, during the Fourth Plan. The schemes along with financial provisions are indicated below :—

I. PROGRAMMES

	Outlay
	(Rs. in lakh)
A. *Academic*	
(i) Primary Education	80·00
(ii) Secondary—Social Sciences and Humanities	52·25
(iii) Sciences- -(Secondary)	57·63
(iv) Educational psychology	37·44
B. *Technical*	
Central Science Workshop	63·05
Audio Visual	64·09
Survey & Data Processing	27·13
Evaluation & Measurement	19·05
Library & Documentation	58·39
C. Publication	125·50
D. Programmes at the Campuses of the Regional Colleges of Education, Teacher Education and Extension	33·48
E. National Science Talent Search Scheme	152·47
F. Cooperative Research and Research Grants (including Grant-in-aid to Approved Research Projects)	21·07
II. STAFF	
(For National Institute of Education and Regional Campuses)	30·00
III. BUILDINGS	
(For the campuses at Delhi and at Four Regional Campuses)	200·00
TOTAL	1021·55

The above figures *do not* include the following schemes but provision to the extent noted against each will have to be provided for in the fourth plan.

(1) Grant in aid to Extension Centres (Secondary & Primary) @ Rs. 26 lakhs per annum	130·00
(2) Adult Education	45·81
(3) Central Institute of Education	16·82

Further any new programme which might be allotted by the Ministry has not been indicated and no provision as such has been shown.

ANNEXURE XI

SCIENCE EDUCATION IN THE FOURTH PLAN

I. SCHOOL STAGE

Introduction

Considerable expansion in school education facilities has taken place in the first three Plans. During the Third Plan a number of steps were taken by the Government of India and the State Governments to effect qualitative improvement in the teaching of science at the school stage. However, all these attempts were able just to touch a fringe of the problem. The need for giving a high priority to the programmes of science education has become more urgent as the country needs more and more people who will be able to provide necessary technical manpower and appreciate the contribution of science towards the betterment of their lives and can use the scientific method in solving their problems.

Present position

2. Science in some form or the other is taught at the primary stage in all the States of the Indian Union. The physical facilities, the quality of programmes and the teacher competency are however far from satisfactory, with the result that this subject is mostly taught through reading activity as any other non-science subject and hardly contributes towards bringing about the desired attitudinal changes.

3. At the middle stage, science is prescribed as a compulsory subject in all the States, but in actual practice many of the schools where the necessary facilities of teaching science are not available, are allowed to offer other subjects in lieu of science as an optional subject. In the case of girl students, instead of science, domestic science is offered. Even today, in some States it is possible for a student to pass the middle stage without reading any science. At the high/higher secondary stage, different courses of science are available. In most of the States, the subject of general science is compulsory for all the students. In others, optional courses or elective courses of science of different duration are offered by the students. In some States it is even now possible for students to pass the high school/higher secondary examination without reading any science at this stage of school education.

3A. So far as the position of science teachers is concerned there is an acute shortage in some of the States, particularly in the rural areas and the girls' institutions.

4. According to the Second All India Educational Survey, out of a total of 64,981 teachers who are teaching science in secondary schools, only 65.1% possess the minimum qualification of a Bachelor's Degree. The number of trained science graduate teachers is even less. Even at the senior secondary stage, intermediates and matriculates who had no science education are also teaching the subject.

5. The shortage of post-graduate science teachers for the higher secondary sections is acute. There are about 5,500 post-graduates with science qualifications teaching at the higher secondary level out of which 50% possess the training qualifications also. Thus on an average, less than one post-graduate teacher is available for each higher secondary school against the minimum requirements of about 2.5 teachers.

6. At the middle school stage, very few trained science teachers with requisite minimum qualifications are available.

7. At the primary stage there is hardly any formal science equipment or a 'Nature Corner' available in any school.

8. At the middle stage, the position of science equipment and physical facilities are equally bad. A very few schools have a separate science room at this stage of school education.

9. At the high/higher secondary stage about 8,000 secondary schools are without any science laboratory and only 14,500 have a laboratory for general science. Individual laboratories for physics, chemistry and biology at the senior secondary stage are available in about 7,000, 7,000 and 3,000 schools respectively.

10. At the primary and middle schools stages, the science experiences are organised through a course of general science in all the States. During the recent years some of the States have revised their general science syllabus with a view to modernise and upgrade the content of science. The text-books for this stage are, however, far from satisfactory both in content and method of presentation. There are practically no teacher guide materials available for the help of teachers. At the senior secondary stage most of the science syllabi are outdated and provide very little practical work. Wherever a provision for such practical work exists, it is mostly of a verificational type, hardly contributing anything towards arousing the curiosity of the child and nurturing his creativity.

11. Very little attention is at present paid to the school science activities which play an important role in the teaching—learning of science. Only about 5% of the existing senior secondary schools have a science club in some form or the other. The activities are mostly of the collection, classification and model making type.

12. During the Third Plan period, 13 States have been able to set up a State Institute of Science or the Science Unit. Even these institutions have yet to develop fully to undertake the tasks which were envisaged for them.

13. At the primary level, there is hardly any provision for directing and coordinating the activities of science. At the district level there is no special supervision of the facilities for the teaching of science. In all the States most of the present supervisory staff has hardly any background of or contact with modern science and its developing methods.

Objectives

14. Realising the importance of science and taking into account the present position of science education in the country, the Fourth Plan should have the following objectives in the area of science education.

(i) Science education should be provided as an integral part of the general education programme at least up to high school stage.

(ii) To meet the challenge of explosion of knowledge in science, the teaching of this subject should be started from the beginning of the school stage and good foundation of the subject disciplines of science should be laid from the middle stage.

(iii) Science curriculum should be upgraded and modernised.

(iv) Necessary physical facilities of laboratory and equipment may be made available to as many schools as possible.

(v) Better pre-service and in-service programmes for improving competences of science teachers to handle the modern curriculum may be developed.

(vi) Agencies to play the leadership role at the State level may be strengthened.

(vii) Necessary administrative facilities for directing and coordinating the State science education programmes should be created.

(viii) A net-work of supervising agencies to ensure the implementation and proper development of the programme in the schools should be ensured.

(ix) Keeping in view the limitation of resources—both human and financial—a strategy may be developed to strengthen the middle and the senior school stages. The primary school stage may be covered through experimental programmes in selected schools so as to provide experiences for developing future large scale programmes.

(x) A network of in-service programmes should be organised to orient the existing teachers with the new curriculum.

(xi) Close collaboration between Central agencies in the field of science education and the State agencies responsible for leaderships should be established and exchange of materials and its adoption or adaptation should be constantly ensured.

(xii) Selected institutions may be encouraged to undertake activity programmes in science through science clubs and science fairs.

15. The work relating to modernisation of curriculum and development of different instructional materials *e.g.* text books, teachers' guides, curriculum guides, laboratory materials, equipment and kits should be done on a national level by the N.C.E.R.T. in collaboration with leading univercity centres and State Institutes of Science Education.

16. The syllabi for training programmes, both pre-service and in-service should also be developed by the N.C.E.R.T. at the national level in cooperation with universities and training institutes. The leadership training for the State personnel should be provided by the N.C.E.R.T. and its Regional Colleges.

17. At the State level the academic leadership should be developed at the State Institutes who should actively work in collaboration with the proposed university centres of science education. The administrative and organisational part of the science education programmes should be entrusted to the proposed Science Units at the directorate and its district supervisory staff.

18. For organising the training programmes, the key personnel from the State Institutes of Science Education and the district supervisory staff should be trained by the N.C.E.R.T.

19. The need for preparing better science teachers to handle modern curriculum should be met through the proposed new training centres both at the secondary and elementary levels. The existing teacher training colleges and teacher training schools should be adequately strengthened to handle both pre-service and in-service programmes required during the Fourth Plan period. A large network of in-service programmes for elementary school science teachers should also be developed through selected senior secondary schools which were equipped during the Third Plan period with necessary laboratory facilities.

Proposed schemes

20. Details of various programmes under elementary and secondary education are explained below.

ELEMENTARY

There are about 4,72,000 primary sections. Considering this large number, the emphasis during the Fourth Plan period should be on developing competencies of the primary school teachers for handling improved programmes of science. A selected number of schools may be equipped to develop experimental programmes and gather experience before large scale programmes are implemented.

(i) *Strengthening of existing* 1,400 *teacher training schools with laboratory and workshop equipment.*

There are at present about 1,400 teacher training schools preparing teachers for primary schools. There are no laboratory facilities in these schools. It is proposed that in the pre-service training, the content of science and its methodology should be included as an integral part of the course for all primary school teachers. To achieve this, each training school has to be adequately provided with science and workshop equipment so that competencies of demonstration and improvising science equipment might be developed in future primary school teachers. A provision of Rs. 1.40 crore is proposed for this purpose at the rate of Rs. 10,000 for each training school.

(ii) *Provision of science kits to* 21,000 *primary schools.*

It is proposed to provide science equipment kits to 21,000 primary schools (60 primary schools per educational district) at the rate of Rs. 200 per kit. This will enable these schools to teach the new courses of general science more effectively. The total cost of this programme will be Rs. 42 lakh.

(iii) *In-service training of* 21,000 *primary school teachers of selected schools.*

With a view to enable selected primary teachers to teach new courses of general science, the teachers of 21,000 primary schools (which are proposed for a supply of science kits) will be trained through a two month in-service programme in 700 selected neighbourhood higher secondary schools/training schools. The total cost of this programme will be Rs. 41.3 lakhs.

(iv) *Provision of mobile laboratory*-cum-*training vans.*

To improve science teaching at the primary stage and provide in-service training to a large number of teachers through well-trained staff, it is proposed to provide 150 selected educational districts in the country with a

mobile van unit fitted with projector, a small laboratory and library. Important topics of the syllabus will be taught by the staff of these mobile units in selected primary schools, where teachers of the neighbourhood primary schools will observe and discuss the teaching. Each van will be provided with a trained science graduate, an under-graduate and a driver-*cum*-projectionist. The total cost of this programme will be Rs. 1.29 crore.

MIDDLE STAGE

(v) *Establishing 150 science training centres in selected science colleges.*

The Kothari Commission has recommended that science from the middle stage should be taught as individual disciplines of physics, chemistry and biology in place of the existing courses of general science. In order to achieve this, each middle school with a single section would need at least two science and mathematics teachers competent to teach modern courses of physics, mathematics, chemistry and biology. To train such teachers, it is proposed to run a new two-year course for matriculates who will be trained as science and mathematics teachers for middle classes. 150 such training centres are proposed to be opened. The yearly intake of each centre will be 80. The non-recurring expenditure on buildings, hostel facility and equipment is estimated at Rs. 5 lakh per centre. The training cost is estimated at Rs. 600 per annum per trainee. Each trainee will be paid a stipend of Rs. 500 per year. These centres will prepare candidates for a course leading to diploma in science education to be awarded by the universities. The course will consist of content methodology, and practical work. The cost of this programme will be Rs. 7.50 crore non-recurring. The recurring cost of the phased programme will be Rs. 9.24 crore.

(vi) *In-service training programme for existing teachers of science and mathematics working in middle schools.*

There are at present about 90,000 middle schools where science is taught as an integrated course of general science. In order to train the existing teachers of these schools to teach science course as individual disciplines of physics, chemistry, mathematics and biology, a two-month in-service training course will be organised through selected teacher training colleges. During the Plan period about 40,000 teachers at the rate of two teachers each from a middle school will be trained to handle the new courses in science and mathematics. The cost of this phased programme will be Rs. 89 lakh.

(vii) *Provision of a science study-room and equipment for senior elementary schools.*

In order to have the desired effect through a programme of science teaching, it is necessary for children to have first-hand experiences of science. To achieve this, it is proposed that 20,000 selected middle schools may be assisted to build a science study-room and equip it fully, for conducting demonstrations and doing some individual pupils' laboratory work. A sum of Rs. 5,000 per school as building grant on a matching basis and another Rs. 5,000 for purchase of furniture, storage facility and equipment is proposed. The cost of this programme will be Rs. 2 crore (non-recurring).

SECONDARY STAGE

(viii) *Strengthening of State Institutes of Science Education.*

State Institutes/Units of Science Education were established towards the end of the Third Plan to develop curriculum in Science and mathematics to prepare better textbooks, teachers' handbooks, etc. to organise in-service

training courses and generally to assist the State Directorates of Education in all matters relating to the teaching of science in schools. In some of the States, the Institutes have not been set up so far and in others, the Institutes are not staffed and equipped properly. It is proposed to provide for the development of the Institutes a sum of Rs. 3 lakh every year. For 20 Institutes, the cost will come to Rs. 3.00 crore.

(ix) *Science Units in the Directorate of Education.*

At present there are no techinical units in the Directorates of Education to guide and administer the development programmes in the field of science education. This is proving to be a major hindrance in the efficient implementation of these programmes. Accordingly, it is proposed to set up 20 science units at a cost of Rs. 50,000 per year. The cost will be Rs. 50 lakh.

(x) *Science Supervisors in the Districts*

The need for science supervisors attached to the District Inspectors' office is now accepted. It is proposed to appoint about 150 science supervisors during the Fourth Plan at a cost of Rs. 12,000 per annum per supervisor. The cost of this programme phased over a period of 5 years will be about Rs. 54 lakh.

(xi) *Pre-service training*

The present arrangements for pre-service training of science and mathematics teachers have been found far from satisfactory as in these courses very little emphasis is laid on the content of science. It is considered advisable to entrust this work to the Universities who with the assistance of their science and education departments can organise specialised pre-service courses for content and methodology. To begin with, these courses may be organised in 15 universities during the Fourth Plan. A sum of Rs. 75 lakh as non-recurring at the rate of Rs. 5 lakh per centre for building additional hostel accommodation, equipment, etc. is provided for this scheme. The recurring cost of the phased programme for staff and stipends will be Rs. 1.40 crore.

(xii) *Construction of additional laboratories*

According to the Second All India Educational Survey, there are more than 8,000 secondary schools where there are no laboratory facilities available. As science is proposed to be made a compulsory subject for all students throughout the school stage, it will be necessary to assist these institutions to construct new laboratories. The average cost of construction of a composite laboratory with its fixtures and fittings is estimated at Rs. 15,000. The total cost of providing laboratories to these existing schools will be Rs. 12 crore. Besides this, it is expected that 4,000 new secondary schools will come up during the plan period. The responsibility for providing laboratory buildings may be taken by the State Governments for which an additional provision of Rs. 6 crore will be needed.

(xiii) *Supply of equipment to new and existing institutions.*

It is proposed to provide science equipment at a cost of Rs. 10,000 per school to all new high schools (about 4000 in number) and assist another 8000 existing high schools at a cost of Rs. 6,000 per school. This will enable these schools to teach science up to class X as recommended by the Kothari Commission. The total cost of this programme will be Rs. 8.8 crore.

(xiv) *Provision of laboratories, equipmet for elective courses in scie nce in 12-year schools.*

Some of the States have decided to adopt the higher secondary course of two years' duration as recommended by the Kothari Commission. The higher secondary classes will be started either in the colleges or in selected good schools. In some of the States 11-year higher secondary classes already exist. Some of these schools may be upgraded to the new pattern. It is therefore, proposed to establish elective courses in science in the two-year higher secondary classes in about 500 higher secondary schools at an average cost of Rs. 1.0 lakh per schools to cover the cost of laboratory rooms, science equipment, books etc. The cost of this programme will be Rs. 5 crores.

(xv) *Provision of science equipment for the laboratories of the existing teacher training colleges.*

In spite of starting new pre-service programmes for secondary school science teachers, a majority of the science teachers for the high schools will continue to be prepared for quite some time by the existing teacher training colleges. Efforts are being made to improve the science and mathematics programmes being offered in these colleges by including the content of science along with its methodology. The training colleges have, however, no facilities of laboratory to develop the practical skills and demonstration techniques in future teachers of science. To enable them to handle such programmes, it is proposed that each of the existing 250 teacher training colleges may be assisted to equip science laboratories for physics, chemistry and biology and develop a small workshop at a cost of Rs. 20,000 per institution. A sum of Rs. 50 lakh is proposed for this purpose.

(xvi) *In-service training programme for secondary school teachers.*

With the upgrading and modernising of the science curriculum, it will be necessary to retrain the existing science and mathematics teachers of the senior secondary classes. It is proposed to train 10,000 secondary school tearchers through a two-month in-service course through selected teacher training colleges with the active assistance of science colleges. A provision of Rs. 72 lakh is proposed for this programme.

21. The out-of-class science activities proposed for inclusion in the Fourth Plan are detailed below :—

(i) *Establishing Science Clubs in Secondary Schools.*

The science courses offered through the schools curriculum are mostly directed to cater to the needs of the average learner. Experience in different countries has shown that the science clubs provide an excellent forum to cater to the needs and to arouse the curiosity and nurture the talent of the gifted students in science. It is proposed that 10,000 secondary schools may be assisted during the plan period with grant of Rs. 1,500 per school to establish science clubs. A sum of Rs. 1.5 crore is proposed for this purpose.

(ii) *Organising Science fairs at various levels.*

To constantly energise the science clubs, it is necessary to provide them with a forum to exchange ideas and to inculcate a spirit of competition for constant improvement in their performances. The science fairs provide an opportunity to achieve these objectives. It is proposed that during the Plan period each district should organise a science fair for its schools and similarly each State should also organise a science fair where the district competitors could compete and share their experiences with other schools. The State

Institute of Science and the district supervisors can organise these activities at the State and District levels. The NCERT may organise a National level science fair which will provide a forum to locate gifted students in science. A provision of Rs. 10 lakh for the Plan period is proposed for this activity.

(iii) *Training courses for science club sponsors.*

Experience during the Second and Third Plan periods has shown that the activities in science clubs become static at the level of classification, collection, duplication and model making, unless the science clubs sponsors are oriented to develop new ideas. It is proposed that the State Institutes of Science should organise orientation courses for science clubs sponsors of those schools which will receive assistance for establishing science clubs. A provision of Rs. 10 lakh is proposed for this activity.

(iv) *Establishment of State Science Museums*

Science museums play a very important role in helping the children as well as adults develop a correct understanding of science and appreciate its role in life and national economy. It is proposed that during the Plan period 10 such units may be developed at the State Headquarters at a cost of Rs. 5 lakh per unit. These State Museums will ultimately provide an excellent forum to organise the State level science fairs and give impetus to science club movement in general. The cost for this scheme during the Plan period will be Rs. 50 lakh.

Conclusions

22. A statement showing the details of the provision suggested for various schemes of science in the Fourth Plan is given in Appendix A.

23. The objectives would be achieved only if all the schemes proposed for science education are properly coordinated.

24. At present a number of agencies like the N.C.E.R.T., N.S.C.E. and U.G.C. at the national level and S.I.Sc. Edn., Science Units, State Institutes of Education and different school boards at the State level are working on science curriculum and other related programmes. All their work needs to be coordinated towards a total national programme to avoid, overlapping and duplication. Upgrading and modernisation of syllabi, making available the necessary instructional materials, providing necessary physical facilities, training of teachers and providing an effectve supervision will all have to go hand in hand. For this purpose an adequate machinery at the State level will have to be developed to ensure a proper coordination and implementation of the various schemes from the beginning of the Plan period. Simultaneously it will be necessary to encourage and involve professional organisations of science teachers in the total task of the development of science education.

25. The entire success of the programme would depend on the availability of motivated teachers of science. Unfortunately, there has been an acute shortage of science teachers and the present emlouments have not attracted an adequate number of teachers to work in rural schools. Another factor has been that many new avenues of employment with higher emoluments are now available to science graduates. New incentives may therefore be provided to science graduates to join the teaching profession. There could be advance increments or higher salary scales. This matter will have to be considered by the State Governments to ensure an adequate supply of science teachers.

APPENDIX A

Details of expenditure on various proposed schemes on School Science Education in the Fourth Plan.

	Rs.	Rs. in lakhs
I. ELEMENTARY		
(i) Laboratory and workshop equipment and books for 1400 training institutions @Rs. 10,000		140·0
(ii) Science kits to 21,000 selected primary schools @ Rs. 200		42·0
(iii) In-service training of 21,000 primary school teachers—Two month course for batch of 30 at 700 centres :		
Cost of one course		
(a) T. A. of 30 participants @ Rs. 10	300	
(b) Boarding of 30 participants @ Rs. 75 per month	3,500	
(c) Lodging of 30 participants @ Rs. 200	400	
(d) Chemicals, contingencies including workshop for improvisation, raw material etc.	300	
(e) Honorarium to two higher secondary school teachers @ Rs. 75 per month each and Rs. 25 per month for Headmasters/Principals	350	
(f) Honorarium for clerical and laboratory staff	50	
	5,900	
TOTAL—700 such courses		41·3 lakh
(iv) Mobile van-*cum*-laboratory—150 units :		
Cost of one unit		
(a) Van	25,000	
(b) Projector and filmstrip projector	5,000	
(c) Generator	1,000	
(d) Wheeled laboratory table fitted with water cistern and basin	200	
(e) Equipment portable kits in two boxes, chemical etc.	1,000	
(f) Films and film strips	5,000	
(g) Charts and models	2,000	
(h) Books	800	
	40,000	

	Rs.	Rs. in lakhs
Staff		
One B.Sc., L.T. = 300 × 12—3600 + 3 × 25 + 12 = 900		
One High School LTC = 150 × 12—1800 + 2 × 25 × 12 = 600		
One Driver-*cum* Projectionist = 150 × 12 = 1800 × 2 + 25 × 12 = 600		
One conductor-*cum*-bearer = 120 × 12 = 1440 + 2 × 25 × 12 = 600		
8640 + 2700		
	Rs.	
Pay	11,340	
Petrol charges Van + Generator	2,000	
Maintenance	1,000	
Contingencies	500	
Rec. for one year	14,840	
for three years	44,520	
increments	980	
TOTAL	45,500	
(Non rec.)		60·0
(Rec.)		69·0
II. MIDDLE		
(i) 150 pre-service training centres in selected science colleges		
(a) Laboratory and hostel building equipment, furniture @ Rs. 5 lakhs (N.R.)		750·0
(b) Staff salary and other recurring expenditure (50 institutions) each year for the first three years (Rec.)		925·0
(ii) In-service training of middle school teachers.		
Cost of one course		
(a) T. A. of 40 participants @Rs. 20	800	
(b) Boarding of 40 participants @ Rs. 75	6,000	
(c) Lodging of 40 participants @ Rs. 200	400	
(d) Chemicals, contingencies including workshop for improvisation, raw materials etc.	500	
(e) Honorarium to training college staff @ Rs. 600	1,200	
	8,900	
TOTAL for 1000 courses		89·0
(iii) Science study room and equipment for middle schools		200·0
(a) Building @Rs. 5000 per school for 20,000 science study rooms	100 lakhs	
(b) Furniture, storage and equipment @ Rs. 5,000 for 20,000 schools	100 lakhs	
III. SECONDARY		
(i) Strengthening of State Institutes additional staff and programmes for State Institutes @ Rs. 3 lakhs per year for 20 units		300·0
(ii) Science units in the Directorate of Education—20 units @ Rs. 50,000 per year		50·0
(iii) Science supervisors in Districts :		
150 District Science Supervisors with supporting staff and contingencies @ Rs. 12,000 per annum per unit Phasing—50 supervisors each year beginning from the second year.		54·0

	Rs.	Rs. in lakhs
(iv) 15 University training centres for science and mathematics teachers :		215·0
(a) Building, additional hostel accommodation equipment etc. @ Rs. 5 lakhs per school (N.r.)	75 lakhs	
(b) Recurring cost on staff contingencies phasing of 5 centres each year beginning from second year	140 lakhs	
(v) Construction of additional laboratories		1800·0
(a) Laboratories in 8000 existing secondary schools @ Rs. 15,000	1200 lakhs	
(b) Laboratories for proposed 4000 new high schools @ Rs. 15,000	600 lakhs	
(vi) Equipment to new and existing institutions		880·0
(a) Equipment to new 4000 high schools @ Rs. 10.000	400 lakhs	
(b) Equipment to existing 8000 high schools @ Rs. 6000	480 lakhs	
(vii) Laboratory building, equipment for elective course in 12 year schools		500·0
(viii) Strengthening laboratories of existing teacher training colleges.		
Supply of laboratory and workshop equipment and science books to 250 training colleges @ Rs. 20,000 per college		50·0
(ix) In-service training of secondary schools teachers Expenditure on a two month course for science teachers from Secondary Schools for batches of 50, through 30 selected training colleges.		
(a) T.A. of 50 participants @ Rs. 50	2,500	
(b) Boarding of 50 participants @ Rs. 5 per day	15,000	
(c) Lodging of 50 participants @ Rs. 500 p.m.	1,000	
(d) Chemicals, contingencies including field trips, workshop, raw materials etc.	2,000	
(e) Hon. to college lecturers and clerical staff of the training college	500	
	20,000	
Cost of 200 such courses	40,00,000	
Salary of part time lecturers @ Rs. 3200 for each college for two courses	32,00,000	
TOTAL for all courses		72·0
IV. OUT OF CLASS SCIENCE ACTIVITIES		
(i) Science clubs in secondary schools 10,000 clubs @ Rs. 1500 per school		150·0
(ii) Science fairs :		
350 district level fairs @ Rs. 250		
20 State level fairs @ Rs. 5.000		
1 National level fair @ Rs. 12,500		
TOTAL		10·0
(iii) Training of science club sponsors 80 courses for 20 sponsors each @ Rs. 2,500 per year		10·0
(iv) Science museum :		
10 museums @ Rs. 5 lakhs each		50·0
Grand Total : Rs.		64.57,30,000

Present Position

1. A notable feature of higher education in India in the past two decades has been a relatively rapid increase in the number of persons graduating in science and technology. It represents a growing awareness and desire for education in science and science-based courses. It is also stimulated by the larger possibilities, on the whole, of employment open to graduates of Science and technology. The following statistical data relating to science and science-based education at the university level will be of interest. The total enrolment in 1965-66 was about 1.73 million and this included 0.75 million in science and science-based courses. This represents 45% of the total enrolment. The break-up of the enrolment is indicated below :—

1965-66	I. Total Enrolment	17,28,773	
	II. Science-based Courses	7,48,344	45%
	(a) Science	5,65,254	32·7%
	(b) Eng./Tech.	8,555	4·9%
	(c) Medicine	70,088	4·0%
	(d) Agriculture	51,190	3·0%
	(e) Vet. Science	6,257	0·4%

2. The position with regard to post-graduate and research enrolment in the universities is as shown below :—

1965-66 : *Post-graduate and Research Enrolment*

I. Total Enrolment	1,00,463	
II. Science-based Courses	33,048	33%
(a) Science	24,270	24·1%
(b) Eng./Tech.	1,818	1·8%
(c) Medicine	3,429	3·4%
(d) Agriculture	3,058	3·0%
(e) Vet. Science	473	0·5%

3. The distribution of this enrolment in the universities according to faculties and stages is given below :—

1965-66 : *Enrolment according to faculty and stage in the university level*

	Total	I Degree level	Post-graduate	Research (including diplomas)	Pre-Professional
1	2	3	4	5	6
I. All Courses	17,28.773	15,90,673	91.830	31,039	15.231
II. Science-based Courses . .	8,48.344	7,23.379	28.954	10.780	15,231
(a) Science . . .	5,65,254	5,40,727	20,858	3,669	..
(b) Eng./Tech. . . .	85,555	74,216	1,540	2,642	7,157
(c) Medicine . . .	70.088	55,812	3.336	3.893	7,047
(d) Agriculture . . .	51.190	47,063	2,797	466	864
(e) Vet. Science . .	6,257	5,561	423	110	163

4. For purposes of comparison, it would be worthwhile to take the position of enrolment in science and science-based courses for a five-year period 1961-62 to 1965-66. The position is as indicated below :—

Comparison for five year period : 1961-62 *to* 1965-66

1	1961-62 2	1962-63 3	1963-64 4	1964-65 5	1965-66 6	% increase 7
I. Total . . .	11,55,380	12,72,666	13,34,697	15,28,227	17,28,773	49·6
II. Science-based Course .	4,64,527	5,41,460	6,10,388	6,68,497	8,48,344	82·6
(a) Science . .	3,36,722	3,86,374	4,35,925	4,78,702	5,65,254	67·9
(b) Others . .	1,27,805	1,55,086	1,74,463	1,89,795	2,83,090	121·5

5. The output of science graduates and in science-based professional courses has increased nearly fourfold in a period of about 15 years. The output of the post-graduate level over the same period has been almost seven times and that of the Doctorate holders in science and technology nearly six times. The number of degrees awarded in 1950 and 1965 and expressed as percentage of the corresponding age-group are given in the following table:—

1	No. of degrees awarded		Percentage of the corresponding age-group		Average annual (compound rate of growth)
	1950	1965	1950	1965	
	2	3	4	5	6
B.Sc.	9,628	38,230	0 14	0·44	9·6%
M.Sc. (excluding Mathematics) .	851	5,525	0 013	0·067	13·3%
M.A./M.Sc. (Mathematics) .	251	2,292	0 004	0·028	15·9%
Bachelor Degree in Technology (Engineering and other subjects)	1,660	9,739	0·026	0·12	12·6%
Bachelor Degree in Agriculture and Veterinary Science . .	1,100	6,599	0·017	0·08	12·7%
Doctorate Degree in Science and Technology	100	522	..	..	12·0%

6. It would be evident from the comparison given in para 4 above that the increase in enrolment in science courses and science-based courses is of the order of 68% and 83% respectively, against an overall increase of approximately 50% in a five-year period. In the present situation where the attraction towards engineering courses is likely to be less at least in the course of next five years and a phased reduction in intake has been suggested by the Government of India, the enrolment in the Science courses at the university level will increase at a greater rate. Even otherwise it is recognised that it is desirable to

have a first degree in science before admission is made to the engineering courses and this suggestion is likely to find increasing acceptance in the next few years. All this would require a concerted approach to make facilities available for science education in the universities and colleges reasonably adequate if these additional numbers have to be accommodated and given the education in science which is required for making them suitable for pursuit of professional courses at a later date.

Another factor which should be reckoned is the existing state of regional imbalances in science and science-based education in the different States in the country. Regional imbalances in science and science-based education is a feature associated with a developing country like India. There is wide variation in the facilities for science and science-based education amongst the different States in the country. Enrolment in science courses expressed per unit of the total population is highest in the southern States and is of the order of 2,200 per million and ranges down to about five hundred per million in some of the northern States. These regional imbalances in science education and even more so in technology have direct effect on the pace of industrial development in different regions of the country. Efforts need therefore to be made to bring about an adequate synthesis between industrial and agricultural development and the potential of a region on the one hand and the availability of facilities for education in science, technology and agriculture on the other. This would mean that in those States where the enrolment in science is far above the average, the main emphasis will have to be on the improvement of quality and in the case of those States where the enrolement is much below the average, the attention has to be given not only to increase this to the required level numerically but also to provide for the quality in order to bring them to the required standard.

7. This would mean providing for necessary physical facilities as well as training of teachers required for providing instruction to these increasing number of science students at different levels of university education.

8. Besides the regional imbalances in enrolment in science education in the country, the other major problems relating to science education are listed below :—

(i) Inadequate and low standards of instruction and outdated curricula and examination system.

(ii) Problems of teacher training and retraining.

(iii) Inadequate facilities of scientific equipment and textbooks.

(iv) Wastage and under-utilisation of science graduates.

(v) University type of research undertaken outside the universities.

(vi) Research unrelated to economic and develpoment needs of the country.

Science Policy in the Fourth Plan

9. The university-based science complex in India is generally faced with the twin problems of expansion to accommodate increasing enrolments and the maintenance of proper standards. This is particularly true of the first degree level and more so in the colleges affiliated to the universities which account for more than 80% of the total enrolments. Several programmes taken up for assistance to colleges providing science education at the first degree level, such as, the introduction of the three-year degree course, expansion of science education, assistance for improvement of laboratory

and library facilities have helped to strengthen to some extent the essential base required for a purposeful science education; but viewed against the background of the enormous numbers of students seeking science education and the number of institutions to be covered, the efforts made so far have had only a very limited impact. It would, therefore, appear necessary that a selective approach for improvement of facilities in a limited number of colleges and university faculties should be initiated in the Fourth Plan period.

10. There is an urgent need, in general, for revising drastically the undergraduate and postgraduate curricula to bring them on par with the level and contents of the university courses in some of the scientifically advanced countries. The importance of field work and environmental studies in Biological and Earth Sciences needs to be stressed. Industrial and Agricultural applications of Science subjects should be clearly and forcefully brought out and listed in terms of local industries and experience accessible to students. In the case of the physcial sciences, proper balance needs to be maintained between the experimental and the theoretical aspects of education. In the fields of chemistry studies, areas such as synthetics, chemicals, fertilisers, pesticides, chemistry of natural products, petro-chemicals, synthetic fibres, should be more practical based and closely related to industry. There is an urgent need also to introduce an element of flexibility and innovation to encourage study of border line and inter-disciplinary subjects which are rapidly developing as in areas of major study and reasearch. As one of the important steps towards linking education with practical life, it would be desirable for universities and engineering institutions to enrol qualified industrial workers for part-time education in science and technology through correspondence courses, etc. The examination system has to be reformed so that the assessment of the students performance continues throughout the academic year.

11. The problems indicated above have been dealt with the utmost care and detailed in the Education Commission's Report with reference wherever appropriate to the programme already undertaken or proposed to be undertaken by the University Grants Commission.

12. The emphasis, as has been the case in the past three Plan periods, has to be on improvement of quality at the postgraduate level. The postgraduate courses occupy a key position in the university system and also represent a sector of manageable dimensions. Improvement of postagraduate education will have an immediate impact on the quality of teachers and good teachers have a multiplying effect on the quality and standard of the entire educational system. Better postgraduate education will also lead to better research. It has been pointed out by the education Commission that the facilities for postgraduate education should be more than doubled within a period of five years, if the demands for science education at different levels of educational system as a whole have to be adequately met.

13. While the general approach to meeting the needs of science education in the universities and colleges would be to assess their needs for improvement of laboratory, library, workshop and other physical facilities and appointment of academic and technical supporting staff, it would be most essential to initiate as well as strengthen some of the programmes specifically aimed at improvement of quality of science education and research in the universities and colleges. Some of these programmes are listed below :—

(1) Establishment of Centres of Advanced Study.

(2) Development of selected institutions, selected courses of study in applied and interdisciplinary subjects.

(3) Curriculum reforms and examination reforms.

(4) Organisation of summer institutes, refresher courses and college development programmes.

(5) Award of scholarships and fellowships for advanced study and research.

(6) Support for scientific research.

(7) Production of texbooks.

Establishment of Centres of Advanced Study

14. An urdent need in the field of higher education in India is the strengthening of postgraduate teaching and research and chanelling of the existing limited resources effectively for this purose. The University Grants Commission has therefore undertaken in consultation with the universities a scheme for developing selected university departments for advanced training and research in certain specialities. The scheme is intended to encourage the pursuit of 'excellence' and team-work in studies and research and to accelerate the realisation of 'international standards' in specific fields. With this object in view it is proposed to give active support and substantial assistance to promising departments in the universities carefully chosen on the basis of the quality and extent of work already done by them, their reputation and contribution to research, and their potentiality for further development.

15. A beginning was made by providing assistance to certain university departments for obtaining competent and promising teachers and research workers and procuring essential equipment. To be viable, such centres of advanced study have to exceed a certain 'critical' size as regards their staff. The departments concerned would therefore have a fairly large staff of professors, readers and research associates/fellow of outstanding ability and qualifications who are actively engaged in research and advanced training. A substantial proportion of the team would be a kind of 'floating staff' coming to these centres for long or short periods on deputation from their universities/institutions and possibly from abroad. Adequatlely staffed and properly organised, these departments are expected to make an appreciable impact, direct and indirect, in raising the standards of teaching and research in our universities.

16. As they would be functioning on an all-India basis, they would attract teachers and scholars from all over the country and help in maintaining and strengthening the corporate intellectual life in the country. Another advantage accruing from the scheme would be that the personnel trained in the centres would in course of time be available for strengthening the staff of other university departments—thus helping to meet to some extent the present difficult position experienced by the universities in securing qualified and competent teachers in adequate numbers.

17. At present there are 17 centres of advanced study in science subjects and 13 in Humanities and social sciences. They function on an all-India basis and are intendend to serve as breeders of more such centres in the future—excellence breeding more excellence.

18. The establishment of Centres of Advanced Study or "centres of excellence" is a step of considerable singnificance in universities. In case, centres of this kind are not built within the universities, such institutions will inevitably grow or be provided outside the university system. The result would be grossly disadvantageous to universities and would seriously weaken them.

19. The Education Commission has specially emphasised the need for establishment of more such centres of advanced study and also clusters of such centres within a few selected universities in related subjects to serve as national centres of training and research in worthwhile subjects as well as to accelerate programmes of inter-disciplinary and intra-disciplinary research.

20. The development of centres of advanced study can only be done if substantial assistance over a fairly long period can be provided centrally to the universities. The assistance for the Centres of Advanced Study at present is initially for a period of ten years and any assistance subsequent to that would be mainly for initiating new programmes rather than for consolidation. This assistance over a ten year period can be further broken up into two phases : (a) first five-year period where the emphasis would be to strengthen and bring to the critical size -one or two major groups in certain disciplines within the department and (b) the next five-year period to provide for suitable expansion of the facilities created in the first phase. On the basis of the past experience and the requirements, the capital expenditure required for each science centre would be of the order of Rs. 15 lakhs and a recurring expenditure of Rs. 3 lakhs over a plan period. This would mean that establishment of every new centre of advanced study in Science subject would require an outlay of Rs. 30 lakhs. This is in comparison to about Rs. 20 lakhs required for each Centre to be established in Humanities and Social Sciences subjects. On the basis of the requirements of the existing centres of advanced study and the new centres proposed to be established in the next five years, the total requirements would be of the order of Rs. 20 crores.

Development of Selected Institutions

Selected Courses of Study in Applied and Inter-disciplinary Subjects.

21. The programme for the Centres of Advanced Study aims at developing training and research at an advanced level but will be restricted to a very small number of university departments. Side by side with the development of such centres, measures must also be taken to ensure that the excellence generated in the centres of advanced study is gradually extended to other universities and affiliated colleges so that the standards in the entire system of higher education are upgraded in due course. Here again one is faced with the question if large numbers of institutions and students and selective approach to limit such development to a few faculties in the universities and a few selected colleges within the country becomes necessary in view of the limited resources. There are at present about 70 universities and nearly 800 colleges providing for science education up to the first degree level and amongst this, most of the universities and about 20% of the colleges have facilities for post-graduate training also and some related research. The development of a few faculties in a science subject in a few selected universities and colleges on a selective basis would help bring them to the level, comparable to those prevailing in good university institutions, such developments will no doubt involve considerable investment, both men and material and naturally cannot be fully met within the available resources.

The development of the faculties of science particularly in basic science subjects and with emphasis on training at the undergradute and the post-graduate level could be taken up in three or more successive phases by selecting suitable institutions which have reached a certain stage of development and making available to such institutions reasonably substantial funds to improve their laboratories, scientific equipment, libraries and providing qualified teachers in required numbers. Such concentrated attention and channelling of the available resources to a few institutions will yield positive results and make the required impact on the development of the science training programme at the first degree level.

22. If the science faculties in at least one fourth of the existing universities have to be brought up to the required level, each such faculty would require on an average Rs. 50 lakhs for all its science departments. This would mean a provision of Rs. 750 lakhs for 15 such university faculties. Similarly the amount to be provided for each college science faculty should be of the order of Rs. 10 lakhs. This would require a provision of Rs. 1600 lakhs for 160 colleges to be included in the first phase of such development.

23. An allied problem is that of offering more accelerated courses of study in basic science subjects at the under-graduate level for potential scientists particularly the young students selected under the N.C.E.R.T. scheme of science Talent Search. It is suggested that such students may be given instructions in a more stimulating environment under the guidance of carefully selected teachers. If necessary the possibility of establishing a separate science college with adequate hostel facilities may be explored. Such institution should be given freedom to experiment with its own methods of teaching and evaluation. One of the Regional Colleges of Education might be selected for the purpose.

Support for scientific research in the Universities and Colleges

24. Besides the awards of scholarships and fellowships for new scholars to take up advanced study and research, it is essential to provide special support for teachers and groups of research workers to take up research projects in their own specialities. If research in basic sciences is not adequately supported within the university system, there is the inevitable danger of such research being done outside the unversities and in a situation divorced from post-graduate teaching and lack of contact with fresh young and creative minds. The present situation is that the university departments have to depend on the support available to them from various research organisations within the country to some extent and mainly for the support available from such sources as PL 480 research projects etc. Such reliance on outside support for basic scientific research in the university system is an unhealthy feature of the Indian universities. This has to be remedied as early as possible. By making a beginning to provide at least Rs. 1 lakh per annum for support of scientific research within the universities, this would mean a plan provision of Rs. 500 lakhs.

25. The importance of a comprehensive scholarships programme for undergraduate and postgraduate students in universities and colleges can hardly be over-emphasised. It would be necessary to initiate a comprehensive scholarship programme to encourage meritorious students to take up study of science subjects. The emphasis may be on loan scholarships so that a self generating fund may be created. In view of the fact, however, that the allocations for scholarships have been provided separately, no amount has been included in these estimates.

Summer Institutes, Refresher Courses and College Development Programmes.

26. Another important programme initiated by the University Grants Commission relates to the organisation of summer institutes, seminars, symposia, refresher courses etc. designed for training and retraining of teachers. The programme of summer institutes, which has been taken up in collaboration with the National Science Foundation, U.S.A. has grown in numbers and impact over the past five years with the result that nearly 200 summer institutes are organised in science subjects during the year. The organisation of summer institutes for school teachers in the universities, apart from those organised for college teachers, brings the school teachers in close contact with the university teachers and helps the participants to imporve their subjects matter competence, learn new methods of teaching, use of educational materials etc. and in this way to reform their own teaching in their schools. Provision is also made for the organisation of summer institutes for the benefit of talented students in science and mathematics. The number of participants in these institutes for the past five years is over 7000 college teachers and school teachers.

27. The programme of summer institutes is supported by suitable projects of college development, student and teachers participation in short term research work and preparation of textbooks and other educational material designed for improvement of teaching of science subjects at the school and 900) college levels.

28. During the Fourth Plan it would not only be necessary to maintain the existing tempo of activity but to increase it considerably if the bulk of teachers in the schools and colleges who need to be refreshed is taken into account. The average expenditure per summer institute of about 40 participants is of the order of Rs. 50,000/-. If 200 summer institutes are to be organised annually for college teachers only, the plan provision required would be of the order of Rs. 500 lakhs.

Organisation of special short-term courses in Applied Science Subjects

29. A good proportion of the science graduates (say roughly 50%) coming out of the universities are not gainfully employed in occupations which require a training or knowledge of science and most of them would be acceptable to industry, agriculture etc. if they were given a suitable short term training in certain applied science subjects which are job oriented. The Education Commission in its report has drawn attention to this fact and has also listed types of courses that could be offered to B.Scs. as well as M.Scs. Courses of such type should be instituted in almost every university campus having faculties of science, engineering and agriculture and also medicine and should be organised on an inter-departmental collaboration basis by making use of the facilities already available to a large extent. Nevertheless certain special facilities would be required to be developed to suit the individual courses to be offered. If facilities for 10,000 graduates both B.Sc. and M.Sc. are to be provided for such short term courses, the additional expenditure would be of the order of Rs. 1,000 per student . a plan provision of Rs. 100 lakhs.

General development of science facilities in the universities and colleges

30. In order to develop the existing science laboratories by providing suitable equipment in adequate numbers and science libraries and journals required for a purposeful instruction at the first degree level and also at the postgraduate level in the colleges and the universities, special provision has to be made over and above the average expenditure likely to be incurred at the higher education level. This would include the increase in cost of scientific equipment to be obtained, replacement of obsolete and worn out equipment and some provision for fabrication of equipment in the workshops to be essentially developed in every science teaching institution in the university. This would require a per capita expenditure of Rs. 500 (non-recurring) for about 9 lakh students. During the Fourth Plan, the total requirement would be of the order of Rs. 4500 lakhs.

31. It is also essential that the faculty strength particularly the number of specialists in various branches of Science should be suitably increased. Further, really eminent science teachers should be appointed and allowed to work wherever the academic atmosphere is conducive to their work. For this purpose, supernumerary posts should be created and financed by the Central Government so that these teachers are not subjected to local pressures.

Special efforts for development of Mathematics

32. The Education Commission has repeatedly drawn the attention to the immediate need of making a deliberate effort to place India on the world map of mathematics. Besides establishing a few centres of advanced study in mathematics, at least some of the major departments of mathematics in the universities should be encouraged to take an active interest in providing instruction to specially gifted students in mathematics. For this purpose, the Education Commission has suggested establishment of one or two special secondary schools within the university system. If a beginning is to be made in this direction to provide for training of at least 100 gifted students with unusual mathematical ability annually in two such centres during the plan period and to provide for suitable schoolarships and other facilities the expenditure would be of the order of Rs. 1 crore.

Development of instrumentation workshops, computer facilities, museums etc.

33. Every college and university department of science should be encouraged to develop workshop facilities so that the students would learn to use the workshop tools and get acquainted with some of the essential laboratory techniques and practices. Suitable incentives should be given to the institutions to develop the design and prototype of scientific equipment. In our science departments a proper balance between experimental and theoretical aspects should be maintained and instruction in physical sciences should be essentially workshop and laboratory based. It is also necessary to emphasise field training in biological and earth sciences and to provide necessary teaching collections. Teaching collections are much more important than museums and should be built by students, staff and research scholars. The universities should be encouraged to build such museum collections related to the teaching programmes rather than acquire rare and unusual specimens from different countries.

34. A special effort would need to be made to provide facilities for computation and training in programming and computer technology in most of the major university centres. The Education Commission has desired that by the end of the Fourth Plan period at least 25 to 30 universities should have reasonably good computers installed to serve their research community. It is estimated that the development of workshop/museum and necessary computer facilities would be of the order of Rs. 2.5 to 3 crores with at least 30% of it in foreign exchange.

35. For the proper development of scientific research, there is need for a closer cooperation between the industry and scientific institutions. Universities in different regions may be encouraged to devote themselves to basic research work in science and technology which would come up after 5-10 years. A sum of Rs. 50,00,000 is recommended for the purpose.

36. Another important sector, which must be attended to is the preparation of textbooks for college students. Suitable inducements may be given to groups of university teachers to undertake writing of textbooks as well as small monographs on various scientific subjects.

37. The summary of the financial implications of the programmes proposed above for the improvement of science education and research in higher education is given below :—

Sl. No.	Schemes	Outlay proposed (Rs. in crores)
1	Centres of Advanced Study	20·00
2	Development of selected institutions and faculties	23·50
3	Support for scienctific research in universities	5·00
4	Summer Institutes, etc.	5·00
5	Short-term courses in applied sciences	1·00
6	General development of science facilities	45·00
7	Special effort for development of mathematics	1·00
8	Development of workshops, etc	3·00
9	Basic Research work for Industrial Development	0·50
	TOTAL	104.00

ANNEXURE XII

TECHNICAL EDUCATION IN THE FOURTH PLAN

Introduction

There has been phenomenal expansion both at the first degree and diploma levels. The annual admission capacity of the technical institutions for the first degree courses in 1951-52 was about 4,790 students and that for diploma courses in polytechnics 6,220 students. The expansion since then has resulted in an admission capacity of about 24,000 students to the first degree courses and over 48,000 students to the diploma courses. Because of the present unemployment situation and other problems, the Government of India has suggested to the States to reduce admissions to the first degree and diploma courses on a selective basis. Admissions to institutions that have been started recently as also to those institutions, where the necessary instructional facilities are inadequate, may be restricted. The present plan is to bring down the admission to about 15,000 to 16,000 students to the first degree courses and about 37,000 to 38,000 students to diploma courses. Should there be, in the course of the next 5-10 years, a radical change in the economic situation of the country demanding additional technical personnel, it would not be difficult to meet the situation by restoring the admissions to the original level, namely 25,000 to the first degree courses and 48,000 to diploma courses.

2. According to tentative estimates, there are today about 50,000 engineering graduates and diploma holders who are unemployed. On the basis of the present enrolments in technical institutions, each year about 15,000 graduates and about 25,000 diploma holders will turn out. During the Fourth Plan period 1969-74, the total additional stock of technical personnel available will exceed 200,000 engineering graduates and diploma holders. The total stock of graduate engineers and diploma holders who are in employment at present does not exceed 300,000. Therefore, the immediate concern should be to formulate adequate measures to effectively utilise the manpower that will be available during the Fourth Plan period. This responsibility must be shared fairly and squarely by authorities/organisations responsible for various economic development projects in the Fourth Plan. It would be necessary to ensure that such measures are reflected in the plans and programmes of the concerned organisations/authorities.

3. During the period 1969-74, we should make intensive efforts to consolidate existing technical institutions and improve the standard and quality of training. To that end, the following specific programmes should be undertaken :—

Faculty Development

4. Since the teacher is the heart of the programme of good education, we should organise on a continuing basis various programmes for the pre-service and in-service training of teachers. As for pre-service training, we should designedly reorient our present programme of training teachers for engineering colleges to suit the actual needs of institutions. We must bring to the training centres serving teachers who have not had the benefit of post-graduate training and prepare them for the Master's degree and also equip them with professional competences. This would require a practical arrangement with engineering colleges to get the teachers on long study leave of two-three years. During that period the colleges should have adequate supernumerary posts to take care of the normal teaching work. An extension of the

same process will include preparing selected teachers for the Ph. D. degree and equipping them for higher faculty positions. For the in-service training of teachers, a wide range of programmes are needed. These include summer institutes, sequential courses, practical training or apprenticeship in industry, seminars and workshops and so on. A network of facilities for in-service training on these lines must be organised throughout the country.

Reorganisation of Diploma Courses

5. Diversification of diploma courses and re-orienting them functionally to the training of technicians for industry is an urgent problem. To that end, our polytechnics should be brought designedly into intimate relationship with industry for conducting sandwich courses, co-operative courses, part-time courses and so on. We must identify on a continuing basis the precise needs of the industry for technicians and reflect those needs in the types of courses to be conducted by polytechnics, their curriculum and methodology. A built-in flexibility in our polytechnic education is needed to enable the institutions to be responsive to industrial needs. For that purpose, we must organise at selected centres special groups for curriculum development, preparation of teaching units and instructional materials, including textbooks and designs of instructional aids. Further, efforts must be made to train serving teachers for the new curricular changes and equip them with necessary competences for new forms of polytechnic education. The training programme should also include organised apprenticeship or practical training for teachers in industry and other organisations.

Post-graduates Engineering Studies and Research

6. Although a good beginning has been made in this field, through our Institutes of Technology and other centres, much still remains to be done to consolidate the courses and bring them upto the highest standards possible. We have today over 2,000 places for postgraduate courses and research but the necessary instructional facilities including faculty development have still to be organised. In extension of the programme and to establish first rate centres of postgraduate engineering studies and research, we must select 8-10 well-established engineering colleges that have experience of post-graduate activity and develop them into Institutes of Technology. Preliminary discussions on this question have already been held and the Government has agreed, in principle, to develop about 10 established engineering colleges in different parts of the country into Institutes of Technology in the next five years.

U.G.C.'s Assistance to University Departments

7. It has been estimated that the provision required for the development of university departments in engineering and technology, which are financed through the University Grants Commission an amount of Rs.12.3 crores would be needed in the Fourth Plan. Provision has also to be made for the development of Indian Institute of Science, Bangalore.

Curriculum Development and Preparation of Instructional Materials

8. An all-out effort should be made at selected centres for the development of curriculum and preparation of instructional materials for the first degree and diploma courses. For degree courses, our Institutes of Technology, in association with selected engineering colleges in their respective regions would be very good centres. For polytechnics, our Technical Teachers Training Institutes in association with selected polytechnics in their areas would be the best centres. Groups of experts who have an understanding of the problem of engineering education and industrial needs should be set up

at these centres to work intensively on curriculum development and preparation of instructional material. Simultaneously, they should also work on designing scientific equipment and apparatus needed by technical institutions for their laboratories, Prototype of apparatus and equipment should be made and their production should be undertaken either at a central workshop or in regional workshops to be set up sepecifically for the purpose.

Apprenticeship Training in Industry

9. The present unemployment among engineering graduates and diploma holders has not only indicated the weaknesses in our manpower policies but also emphasised the importance of apprenticeship training in industry. On an emergency basis, we have increased the training facilities from about 2,000 places to over 7,000 places. It is proposed to organise 10,000 to 12,000 places in the Fourth Plan with the cooperation and support of industry. The crux of the problem of good apprenticeship, however, is adequate supervision. Lack of well laid out programme of training and its supervision by industry is the chief weakness of our present scheme and every effort should be made to correct it during the Fourth Plan period. To that end, we must set up apprenticeship boards in each State/region in close collaboration with industry and service the boards with adequate technical personnel. It is proposed to amend the Apprentice Act of 1961 to include the training of engineering graduates and diploma holders. The Central Apprenticeship Council duly reconstituted together with State Regional Apprenticeship Boards should be in complete charge of the practical training programme.

Vocationalisation of Secondary Education

10. This is an area in which new ground should be broken in the light of the recommendations of the Education Commission and on the basis of our experience of junior technical schools, multipurpose schools, technical high schools, and vocational schools. A detailed scheme for reorganising and developing secondary technical education has been formulated by the Ministry and sent to all State Governments. Keen interest has been evinced in the scheme by certain States and A.I.C.T.E. at its meeting held on 25th May, 1968, recommended to them to adopt or adapt the scheme to suit their needs and reorganise their vocational/technical schools. The important point is that there should be a close tie up between technical vocational schools and DGET for purposes of trade certification and apprenticeship in industry on the one hand, and on the other, with polytechnics for training the correct type of entrants to diploma courses. It is also important not to impose from the top a rigid, uniform and highly structured programme on the States but to leave it to the States to take the main initiative to formulate their own pogrames according to their needs and implement them within their own resources.

Setting up National Manpower Board

11. It has been recognised that there was need for setting up a National Manpower Board to formulate the national manpower policy and to assess manpower requirements for the future so that the expansion of technical training programmes could be modified from time to time in the light of that assessment.

Financial Outlays for Technical Education Programmes

12. To complete the schemes that have already been undertaken, and for new schemes to be initiated along correct lines, an outlay of Rs. 213.00 crores is needed, Rs. 107.00 crores in the Central sector and Rs. 106.00 crores in the States' sector. The tentative estimate for individual schemes are as indicated in the attached statement.

Financial Outlays for the Fourth Five Year Plan of Technical Education

	Estimate in Rs. crores
I. Central Sector	
A. *Central Government Institutions*	
1. Indian Institutes of Technology	
For completion of schemes already undertaken For further development including advanced centres in aeronautics, materials science, etc.	10·0
2. Indian School of Mines, Dhanbad	0·5
3. National Institute of Foundry and Forge Technology	1·8
4. Central Institute of Printing, Technology	0·5
5. All India Institutes of Management, Calcutta and Ahmedabad	0·5
6. Centre for Industrial Design (at IIT, Bombay)	0·5
7. School of Planning and Architecture	
For completion of schemes For further development	0·5
8. National Institute for Training in Industrial Engineering	0·25
B. *Development Programmes for Engineering Studies including Post-graduate Courses and Research*	
9. Development and consolidation of post-graduate courses and research in engineering and technology in state and non-government institutions	10·0
10. Upgrading ten selected engineering institutions for advanced studies and research on the pattern of IITs.	10 0
11. Part-time degree and diploma courses(completion of schemes already sanctioned)	1·0
12. Development of non-government technical institutes according to schemes already approved and in process of implementation (Central Aid)	5·5
13. Practical Training of graduates and diploma-holders (Expanded Programme)	16·0
14. Management Studies at universities and other centres	2·0
15. Development of Regional Engineering Colleges (completion according to original plan and for specialised courses)	10·0
16. Loans for construction of hostels (completion of projects already approved and for limited expansion of hostel accommodation)	10 0
17. Specialised courses to be conducted in cooperation with industry as pilot projects and refresher courses for personnel from industry	1 0
C. *Quality Improvement Programmes through Central Effort*	
18. Technical Teachers' Training for college level teachers, In-service training, summer institutes and other programmes for faculty development both for college level and polytechnic teachers	6·0
19. Technical Teachers Training Institutes for Polytechnic Teachers	4·0
20. Research in technical education including curriculum development, preparation of instrumental materials and text-books, design of laboratory equipments etc.	2·15
21. Improvement of salary scales of technical teachers (spill-over of commitments)	1·0
22. Other miscellaneous items including planning and supervision at the Centre	0.5

D. *Schemes Implemented by U.G.C.*

23. Development of technical education in university institutions including post-graduate courses, management studies etc. (on-going programmes) .	12·0
24. Indian Institute of Science, Bangalore	1·0
(For all other new programmes to be undertaken in universities provision has been made under appropriate items)	
TOTAL OF THE CENTRAL SECTOR SCHEMES	Rs. 107·00 crores

II. STATES' SECTOR

25. Development of technical institutions for the first degree and diploma-courses according to schemes already undertaken and in process of implementation	60·0
26. Revision of staff structure in technical institutions	5·0
27. Construction of staff houses	5·0
28. Scholarships to students	2·0
29. Students' Welfare and Amenities	2·0
30. Diversification of diploma courses, reorganisation of polytechnic education including Commerce and consolidation of polytechnics . . .	12·0
31. Reorganisation of technical vocational schools and vocationalisation of secondary education	15·0
32. Other schemes of technical education including planning, administration and supervision	5·0
TOTAL OF STATES PLAN SCHEMES	Rs. 106·0 crores
TOTAL FOR TECHNICAL EDUCATION	Rs. 213·0 crores

ANNEXURE XIII

Central and Centrally Sponsored Sector

(Rs. crores)

Sub-head	Total	State	Central	Centrally sponsored	Central (Columns 4+5)
1	2	3	4	5	6
1. Elementary Education . .	330·00	329·83	0·17	..	0·17
2. Secondary Education . .	201·00	200·98	0·12	..	0·12
3. University Education . .	255·00	82·50	172·00	0·50	172·50
4. Teacher Education . .	120·00	102·35	17·65	..	17·65
5. Social Education . . .	40·00	22·801	3·20	14·00*	17·20
6. Cultural Programmes . .	20·00	5·00	15·00	..	15·00
7. Languages and Book Production	50·00	10·00	10·00	30·00	40·00
8. Physical Education . .	30·00	10·00	20·00	..	20·00
9. Educational Administration .	22·00	20·40	1·60	..	1·60
10. N.C.E.R. & T. . .	10·00	..	10·00	..	10·00
11. Vocationalisation of Education	4·00	..	4·00	..	4·00
12. Other Schemes . . .	5·00	2·00	3·00	..	3·00
13. Technical Education . .	213·00	106·00	77·00	30·00	107·00
TOTAL .	1300·00	891·76	333·74	74·50	408·24

*Functional Literacy : This is part of an integrated programme of Functional Literacy and Farmers' Education. Under Agriculture this has been shown as a Centrally sponsored programme. This has been accepted and is likely to be the position in Education also.

Item 3 (ii)—EDUCATIONAL DEVELOPMENT IN THE FOURTH FIVE-YEAR PLAN (1969-74)

Recommendations of the Planning Group on the Report of the Steering Committee

The Planning Group while discussing the report of the Steering Committee, desired that the various alternatives or choices before the country in the field of educational development might be posed squarely with their implications to enable a fruitful debate to take place on the subject.

Basic considerations

2. A certain number of considerations will have to underlie all possible alternatives. These are :

(i) The inevitable expenditure must be met. This consists of maintainning the present momentum (leaving out the abnormal interrugnum of 1966-69) of educational development and providing for the commitments already entered into. The present momentum may again be reviewed from two angles : qualitative improvment and quantitative expansion. So far as quantitative expansion is concerned, it was agreed that providing for expansion on the basis of the past trend of increase in enrolment, which was a measure of the social demand for education, might be regarded as a priority in the sense that it might be difficult to resist it even if it might be desirable to do so on other considerations. Qualitatively, roughly speaking, it would be necessary to provide at least the expenditure which was incurred on these programmes in the Third Plan after applying the correction factor of increase in prices. The maintenance of the tempo of existing schemes does not rule out—as a matter of fact requires—the possibility of dropping some schemes that may have become redundant or comparatively unimportant.

(ii) As the demand for resources will always be greater than their availability, it is essential to provide for all the economies that are possible to effect through the use of improved technologies, a more intensive utilisation of facilities and creation of those facilities that are required more urgently in the economy or are more significant from the point of view of greater national cohesion, as a first charge on the finances available.

(iii) For the same reason, it is essential to tap new resources in the community for educational development by the stimulus of suitable organisational changes such as linking the school more effectively with community-needs, devising a machinery where the fruits of taxation are assured for the communities/organisations which bear its burden, decentralisation of administration so that greater initiative is placed in the hands of the community concerned and rights and responsibilities are more clearly linked, etc.

Inevitable expenditure

3. The inevitable expenditure, duly rationalised in the light of the above considerations, is indicated below :—

Table 1. *Inevitable Expenditure*

(Rs. crores)

Elementary Education	430
Secondary Education	195
University Education	195
Teacher Education	25
Social Education	12
Cultural Programmes	15
Physical Education	10
Languages and Book Production	28
Administration	10
NCERT	5
Other Programmes	5
Technical Education	150
TOTAL	1080

4. The additional enrolment in the major sectors that will be obtained by the above expenditure will be as follows :—

Table 2. *Additional Enrolment in Major Sectors*

	Unit	Third Plan (additional achievement)	Fourth Plan (targets—additional)
Classes I-V	lakhs	165	150
Classes VI-VIII	lakhs	38	60
Classes IX-XI	lakhs	25	33
University Education	lakhs	5	9
Technical Education : admission capacity	'000	..	..
Diploma level		25	(—)10*
Degree level		11	(—)8*

*As regards Technical Education, the Ministry of Education has advised the States to reduce their admissions in 1968-69 to this level in the light of the present unemployment among engineers (even if an optimistic rate of growth of the economy is assumed, the present studies show that the supply from existing institutions will outstrip the demand) and with a desire to limit admissions to the extent of facilities available. More careful studies in the light of targets of industrial production, the rates of growth etc., that might be assumed for the Fifth Plan targets for technical education will be laid down and the figures revised, if necessary.

5. The new departures in approach and strategy apart from the three basic considerations mentioned in para 2—that have been assumed for the above tasks and expenditure are :—

(i) An average pupil-teacher ratio of 1 : 45*, as against the present 1 : 40, for primary classes—mostly through the adoption of the shift system in classes I and II. The average pupil-teacher ratio today in some States is as high as 55 and the adoption of the shift system should enable such states to bring the class size down to a manageable size within the limits of existing resources. The amount of Rs. 130 crores saved thereby is proposed to be ploughed back to improve the quality of primary education which is most urgently needed, especially to reduce the present heavy wastage and stagnation in primary classes. Many of the steps needed for the purpose do not require finance but purely organisational changes like limiting the admission in class I to the first one or two months of the year, discontinuation of examinations in early classes, adjusting the vacation to the need for labour at the time of the harvest and the sowing seasons, etc. Other measures which would have financial implications are :—

(a) paying an allowance to teachers who work in the second shift or teach in part-time classes ;

(b) linking the school with the community and paying remuneration to teachers who do adult education work ;

(c) providing free books to students ;

(d) providing tools for kitchen gardening ;

(e) providing guide books for teachers and interesting reading material and test-books for students ; and

(f) providing the minimum necessary teaching aids and other equipment required in primary classes.

(ii) Development of part-time education at the middle and college stages ;

(iii) Correspondence courses for secondary and higher education and for teacher training ;

(iv) Streamlining and modernising the administration ;

(v) Emphasis on functional literacy though on a limited scale ;

(vi) Emphasis on languages and book production ;

(vii) Emphasis on consolidation in technical education ; and

(viii) All scholarships at the university stage to be generally loan scholarships.

6. If no additional resources are available and the above programme alone is implemented then the implications would be :

(i) Further postponement of the constitutional directive as regards of elementary education. The Education Commission had recommended that effective primary education of 5 years should be provided to everyone by 1975-76 and of 7 or 8 years by 1985-86. The target dates of the Steering Committee were 1980-81 and 1990-91 respectively. With the resources indicated for elementary education under the 'inevitable' expenditure, the dates by which these goals could be achieved would get postponed to 1983-84 and 1993-94 respectively.

(ii) Secondary education will continue to produce students who will only rush to the universities in the absence of effective alternatives.

*This means an average attendance of 40 pupil per teacher.

(iii) University education will continue to be at its present low quality and turn out people largely unemployable.

(iv) The vast adult population will not be effectively brought into the developmental process.

Manoeuverability and alternatives

7. If additional funds are provided the area of manoeuverability will be the amount provided minus Rs. 1080 crores and a number of choices will present themselves. Some of these will run through all sectors while others will pertain only to particular sectors. These are :—

(i) In regard to overall decisions it might be possible to take a view that we must link education effectively with productivity. So we could concentrate all the resources on these programmes which would increase productivity. These are :—

—At the school stage (up to Matriculation). providing work experience in agriculture and industry and creating through appropriate teaching methods those attitudes which are required for self-employment initiative, resourcefulness, spirit of enquiry, leadership, etc.

—Provision of vocational education of an intensive character, especially oriented to self employment, on a large scale, keeping in view the actual demand in the organised sector and the possibility of creating self-employment at the end of the elementary and secondary stages.

—Provision of technical education on a large scale largely oriented to self-employment.

—Emphasis on research and design.

—Organisation of extension education including functional literacy, on a large scale so that the practising farmer is brought under the impact of education. Part-time education and training ought to be provided for upgrading the labour force within industry. This is a most promising but hitherto neglected area.

The expenditure on each programme may be determined in the light of the resources available. Another limiting factor would be the feasibility of gearing up the educational system for various programmes in the light of the limitations of personnel and the possibility of changing the present structure. Educational changes are very difficult to effect and, unless prepared carefully through a stage of pilot projects result in considerable wastage.

(ii) Elementary education may be expanded to the utmost possible extent. The limits here again are those of feasibility apart from financial resources. It is felt that it may be difficult to push forward this programme beyond what is visualised under the inevitable programme, except to bring in an additional 30 lakhs of children at the primary stage and another 10 lakhs (through part-time courses) at the middle stage. The funds required for this purpose are Rs. 50 crores. Considerable research and experimentation must be undertaken to evolve an effective programme to eliminate wastage and stagnation which is as high as about 60 per cent at the present time.

A view could be taken that as the entire nation shares the benefits accruing from elementary education and also as this stage could enable us to lift and indentify talent, it should get the highest priority and whatever resources are required for turning it into an effective programme ought to be provided. Such a course will not only be socially just but will also ensure effective participation of the people as a whole in national programmes of

social and economic development and lay a sound foundation for the growth of our basic institutions like the cooperatives and the Panchayats etc. In view of the fact that most of our people will not go beyond this stage of formal education and, therefore, whatever new in the matter of practices and attitudes we have to introduce, we should do so at this stage, the importance of concentrating our resources on this stage of education becomes obvious. Further, as we go to higher stages the benefit to the individual and to organised groups becomes more pronounced and hence it should be easier to shift the burden of education to the beneficiaries, which is not the case at the elementary stage. Again in developing countries the most important and difficult problem is to give the large mass of the people elementary skills through which they can process raw materials in the environment into usable goods. This task can best be accomplished through a suitably oriental elementary education. To put to productive use those trained at the higher stages require capital which in developing countries is scarce.

iii) A view can be taken to concentrate all additional available resources on the improvement of the quality of university education either over the entire field or in certain selected areas of excellence. If resources are spread over the entire field it may be difficult to produce appreciable impact. Concentration of resources on 'centres of excellence' could create foci of dynamism in our entire social, political and economic life.

(iv) A view can be taken that the teacher is the most important factor in education, and, therefore, all additional resources ought to be concentrated on teacher education. The quantitative aspect is well taken care of by the funds provided under 'inevitable expenditure'. The quality of teacher training, however, could be emphasised and all its requirements met within the constraint of resources available and the feasibility of the programme.

(v) The significance of functional literacy in a country, 50 per cent of whose national income comes from agriculture, is obvious. The limitations are the vast size of the problem, the limitations of personnel required for handling the programme effectively and the absence of effective techniques required to solve the problem with utmost economy. The problem of motivation is again serious. If functional literacy is to be provided to all within the age-group of 14-45 within the next 10 years the amounts required would be Rs. 450 crores * :

(vi) In the field of technical education one could follow other countries by increasing the output of engineers and technicians, as they bring in maximum returns if properly utilised. The demands of the organised sector, however, are seriously limited according to all indications. If we could orient our technical education towards self-employment, these personnel could become the means of building the country in addition to creating avenues of employment. The only limitation to an advance in this direction is the capacity of the system to be oriented towards self-employment within the time period under reference. Considerable experiments will need to be conducted before any effective orientation of technical education on a large scale can be a reality.

Desirable mix : Examination of Steering Committee's Report

8. No single alternative could perhaps be accepted to the exclusion of other and the task before the Planning Group is to suggest the proper 'mix'.

*The number of illiterates in the age-grups 15-44 in 1978-79, i.e., ten years hence, will be 150 million. The cost involved in making an illiterate adult literate is estimated to be Rs. 30. On this basis the cost of eradication of illiteracy among 150 million illiterates would be Rs. 450 crore during the next 10 years. This means that the average cost per year would be roughly Rs. 45 crores.

The Steering Committee has suggested one such 'mix'. Comments on this 'mix' are as follows :—

(i) The requirements of *elementary and secondary* education will need to be revised upwards as subsequent information about the existing pupil teacher ratio has shown that the assumption that some of the additional enrolment will go into existing schools was not warranted. The requirements of elementary and secondary education will now be Rs. 391 crores and Rs. 229 crores respectively against Rs. 330 crores and Rs. 201 crores respectively. Secondly, the figures of elementary education are on the basis of the ratio of 1 : 45 through the introduction of the shift system. On the basis of the existing ratio of 1 : 40, the expenditure will be Rs. 156 crores more for an enrolment of 180 lakhs assumed by the Steering Committee. The Planning Group supports the idea of the shift system in classes I and II on the ground that the children of this tender age cannot remain engaged in academic work for more than 3 hours. They are, however, strongly of the view that this should not be used as a means of further lowering the already extremely inadequate per capita expenditure on primary education. The money saved thereby should be redeployed to strengthen primary education as indicated in para 5(i).

(ii) In *teacher education*, the Planning Group tentatively suggests the reduction of outlays from Rs. 120 crores proposed by the Steering Committee to Rs. 84 crores in view of the fact that in June 1968 there were 1.5 lakh teachers who had registered themselves with the employment exchanges. The situation should be carefully reviewed by a small committee. This committee should go into the situation in each State.

(iii) While the Planning Group attaches the highest importance to the *salaries and service conditions* of teachers, they have not made any recommendations in this regard, because it has been decided to keep the improvement of salaries of teachers outside the Plan. Their estimate of this additional liability to government during the Fourth Plan is roughly of the order of Rs. 200 crores.

(iv) In *university education*, while it is difficult to provide adequate quality in all our colleges and universities, it is necessary to create certain 'centres of excellence' where we provide all the facilities up to the optimum level so that top men can be produced who can occupy key positions in the various walks of national life. The Planning Group is of the view that at least 15 per cent of the undergraduates* and post-graduate enrolment in science, which will mean 1.10 lakh students may be provided laboratory and library facilities at the rate of Rs. 25,000 per student for post-graduates and Rs. 5,000 per student for under-graduates. This will mean and additional cost of Rs. 50 crores. The most immediate need and challenge in the field of higher education is the improvement of the quality of post-graduate work and research. To meet this challenge certain physical inputs are necessary. But what is even more imperative is the sense of urgency and commitment in the academic community and their initiative and resourcefulness.

(v) In regard to the reduction already effected in admissions in engineering institutions the Planning Group is strongly of the view that any deliberate reduction of seats on the basis of the present unemployment among engineers would not be advisable. For one thing as institutional development is an integral whole and cannot be adjusted to reduced admissions later on, reducing admissions subsequently leads to under-utilisation of facilities provided and higher per capita costs. Again, so far as the need of engineers in a developing country is concerned, it is unlimited. Only the country

*Excluding the PIC and the Intermediate students.

cannot employ them at the levels of wages to which they have got accustomed If salaries could be lowered then many more engineers could be employed than are employed today. But this question of the salaries of engineers is connected with the total wage and salary structure in the country. These salaries are today much higher than the country can hardly afford to pay. The Planning Group realises the limitation in government operating a mixed economy to control salaries and wages over the entire range of the economy. Therefore, the best perhaps that government can do is to provide seats according to current demand and allow the market conditions of demand and supply, to determine the salaries of engineers. Artificial limitation of admissions by a government decision may not be desirable except in the case of institutions which do not have space, equipment or teachers. The government in the case of engineers, as in the case of others, however, takes no responsibility for providing employment at any fixed level of income to those who take up these courses of their own free will and over whose future deployment government has no control. The government could assist by orienting technical training towards self-employment so that the engineers through their increased competence to handle natural resources are able to find profitable openings for themselves and help open up the country in addition. An abundance of engineering graduates could also lead them to go into other than traditional channels and lead to the development of intermediate technologies. It could also lead them to go into sales, marketing, management, etc. which should have considerable impact on increasing returns from investments made in production, as has been so forcefully pointed out by Prof. Blackett.

(vi) In regard to the National Service Corps, the Planning Group recommends the appointment of a small committee to suggest the activities that should be taken up under it and the phasing of the programme.

Adjusted for the changes indicated above, the allocations in the Steering Committee's report will need to be revised as follows :—

Table 3. Distribution of an outlay of Rs. 1300 crores

(Rs. crores)

	Steering Committee's allocations	Revised allocation proposed
Elementary Education	330	486
Secondary Education	201	229
University Education	255	305
Teacher Education	120	84
Social Education	40	40
Cultural Programmes	20	20
Physical Education	30	30
Languages & Book Production	50	50
Administration	22	22
NCERT	10	10
Vocationalisation	4	4
Other Programmes	5	5
Technical Education	213	213
TOTAL	1300	1498
	or Rs. 1500 crores approximately	

9. The Planning Group realises that the allocations they have recommended for education are higher than those indicated in the Draft Outline but in view o the National Policy Statement where the nation has resolved to spend 6 per cent of its national income on education, presumably in the next 15-20 years, this order of expenditure in the Fourth Plan becomes inescapable. This will raise the educational expenditure to 4 per cent of the national income in 1973-74.

Item—3(iii) MAIN CONCLUSIONS OF THE MEETING OF THE PLANNING COMMISSION ADVISORY PANEL ON EDUCATION HELD ON 4TH AND 5TH OCTOBER, 1968

General

(1) The level of development in the field of education varies from State to State and within the State from district to district. In view of this fact the decisions taken in the field of educational planning have to be related to individual States and within the States to individual districts. This would visualise decentralisation of educational planning at various levels. At the national level only broad policy decisions can be taken and detailed planning can take place only at the State and district levels.

(2) There is a strong case for improving the salary scales of all types of teachers. The question of improvement of salary scales of teachers, both for school and college/university, should be treated on the same level. The policy of encouraging the State Governments to improve the salary scales of college/university teachers by providing assistance outside the Plan and denying such assistance for improving the salary scales of school teachers, has widened the gap in the emoluments of these two categories of teachers. This type of treatment should be avoided in the Fourth Plan. The greater responsibility of the Central Government in the sphere of higher education was, however, also noted.

(3) In view of the scarcity of resources it may not be advisable to spread these too thin by trying to take up various types of programmes of improvement in all institutions. On the other hand, it may be desirable to select, on the basis of certain objective criteria, 5 to 10 per cent of institutions in various parts of the country and preferably in rural and slum areas, which could be developed as pace-setting institutions, where facilities may be provided on optimum level.

(4) All new programmes of improvement and development, which are to be implemented, should first be taken up on an experimental basis and institutions given sufficient freedom to develop them. Large scale expansion of such programmes should take place after the effectiveness of such programmes is fully tested out.

(5) Correction of regional imbalances in the field of education should be an urgent task to be taken up on a high priority basis in the Fourth Plan. Positive measures have to be devised, both by the Central and State Governments, to reduce the regional imbalances by the end of the Fourth Plan

School Education

(6) The main national goal should be to provide primary education for all the children in the age-group 6-11 by 1975. Towards this end, the State Governments should prepare detailed programmes, taking into consideration, among other things, the requirements of backward districts, hilly areas. problems connected with enrolment of girls and of children of backward classes and also the steps to be taken to reduce wastage and stagnation.

(7) The second national task, in order to modernise the country, should be to provide literacy to the illiterate population in the age-group 15-25 by 1975. In this national task of high priority, all educational institutions, particularly the students in colleges and universities and secondary schools should be involved in the actual process of imparting literacy. The eradication of illiteracy should be one of the most important tasks to be undertaken under the programme of National Service during the Fourth Plan.

(8) Science education has to permeate the whole educational system and, towards this end, the main task in the Fourth Plan should be to expand and develop science education both in elementary and secondary stages of education. This would involve, among other things, appointment of a large number of well-qualified science teachers, training and retraining of existing science teachers, organisation of summer courses, production of standard quality of equipment etc.

(9) The main programme of improvement at the secondary stage should be the vocationalisation of education. It would be necessary to draw up details of this programme which may vary from State to State.

(10) Common school idea may be a desirable goal, in the long run, but immediately high priority needs to be given to improve the existing facilities in local body schools where the bulk of students study.

Higher Education

(11) In order to meet the requirements of social justice and the principle of equity, it may not be possible to adopt a policy of restrictive admissions. It would be desirable to encourage students, belonging to under-privileged sections of the community, to attend higher education courses by reservation of seats for them. To make higher education available to a larger number of people, without increasing the costs and at the same time maintaining standards, it would be desirable to have increasing emphasis on part-time, own time and correspondence courses.

(12) The artificial gap in the development of scientific and technological education has to be reduced by adopting various policies like reducing the cost of technical education, increasing the cost per capita on science education, increasing the proportion of students going for technological education, bringing technical education increasingly within the orbit of university education. It was, however, noted that this gap was largely due to the market demand for scientists and technologists which determined their salaries and enrolments.

(13) There has to be greater emphasis on the provision of reading seats, text-books and libraries. The responsibility of providing books which are the minimum essential tools to the students has to be accepted by the various Governmental agencies.

(14) The universities will have to be involved in a bigger way in the problems of school and adult education. In order to achieve this, it may be desirable to encourage universities to have schools attached to them so that various types of experiments take place in which the university community gets directly involved. Further, National Service programme should take up areas adjoining to the universities for intensive development.

(15) In a good number of Indian universities, there is a large number of affiliated colleges. The universities have no mechanism to guide and advise the affiliated colleges, which form the backbone of higher education in the country. It should be an important task of the universities to devise measures for improving the status and conditions of the affiliated colleges and give them suitable guidance and advice.

Technical Education

(16) There is a need to evolve a national manpower policy. Scientific methods need to be evolved to determine the demand for technical personnel on a continuing basis.

(17) During the Fourth Plan period, the expansion which has taken place in technical institutions, should be consolidated so that the quality of engineering education improves and the existing wastage, which occurs at various levels, is plugged.

(18) Taking a long-term view of the problem, it may not be desirable to reduce admissions in engineering institutions, especially as it is not always easy to reduce them in relation to available facilities. The present phase of unemployment among engineers may not last long if there is buoyancy in the agricultural sector, which apart from creating its own demand will give a fillip to the economy all round. Numerous methods can and should be adopted to deploy the surplus engineering personnel.

(19) The existing training programme in polytechnics should be completely reoriented in order to make their products more useful to industry. The quality must also be attended to so that the existing wastage, which is of the order of 50 per dent, may be reduced.

(20) In order to raise the standards and improve the quality of technical education, both at the degree and diploma levels, considerable emphasis will have to be placed on the in-service training of teachers, refresher courses, summer institutes, preparation of reading materials, curriculum development, etc.

(21) The training provided in engineering institutions should be more job-oriented and industry-oriented so that, on successful completion of the courses, the students do not experience difficulty in finding employment. Instead of providing stipends to the existing unemployed engineers for practical training, which, as it exits today, is practically useless, it may be better to orient existing courses towards industry. Industries have to be involved in this task in a big way. It was explained on behalf of the Education Ministry that adequate steps were being taken to make this training effective.

(22) In order to postpone specialisation, so that supply can be more easily adjusted to changing demand, it may be useful to provide engineering courses at the degree level to persons who have completed their B.Sc. courses.

(23) In the sphere of technical education, where results are of direct benefit to the private sector, it may be useful to involve them in meeting some share of the cost involved in technical education. Appropriate fiscal policies may be devised by which through tax rebates industry could be motivated to spend on technical education.

(24) Technical education programmes should have management education closely integrated into it.

Educational Administration

(25) The Panel accepted generally the recommendations contained in the report of the Planning Commission Working Party on Educational Planning Administration and Evaluation. The need for decentralisation of the planning process and involving the teachers, both in the formulation and implementation of programmes, was emphasised. It was also agreed that the programmes of educational administration, which had been neglected in the previous Plans, should be given a very high priority.

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ITEM 3—(iv) FOURTH FIVE YEAR PLAN IN EDUCATION

Some Difficulties and Problems*

By

J. P. Naik

1. The Planning Commission indicated that the total outlay on education in the new Fourth Five Year Plan is not likely to exceed 1,210 crores, the allocation made to education in the draft outline of the old Fourth Plan. The proposals prepared by the different Bureaux and Divisions totalled more than Rs. 1,000 crores. The Steering Committee of the Central Planning Group has revised and reduced them to Rs. 1,300 crores which it regards as the minimum allocation needed for the Fourth Plan.

2. There are two main issues that arise in this context. The first is the limited issue of sectoral allocations, namely, assuming that a total allocation of 1,300 crores is available, one can discuss whether this is the best way of distributing the allocation between the different sectors or betwween the different schemes in a given sector. But I do not propose to enter into this discussion in this paper. I would rather confine myself to seven other fundamental points which will make a qualitative difference in planning and which need urgent attention. These are :—

(1) How will this allocation of Rs. 1,300 crores be divided between Central, Centrally-sponsored and State sectors?

(2) Will this allocation of Rs. 1,300 crores be available?

(3) To what extent will it be possible to reduce regional imbalances?

(4) How can we ensure the proper implementation of national programmes?

(5) What improvements are needed in the present system of planning?

(6) How can additional resources for education be raised? and

(7) How can available resources be most intensively and effectively utilized?

II

Central, Centrally-sponsored and State Sectors

3. *The first important issue relates to the break-up of the total allocation of Rs.* 1,300 *crores into Central-Centrally-sponsored and State Sectors.*—Under the Draft Outline, the State sector (including the States' share of the Centrally-sponsored schemes) was supposed to be Rs. 887 crores and the Central Sector (including Centre's share of centrally-sponsored schemes) was supposed to be Rs. 323 crores, making a total allocation of Rs. 1,210 crores. The thinking which led to these conclusions was based on two assumptions : (1) In the First three Plans, the Centre had assumed much greater responsibility than it should have

*The views expressed in this note are purely personal.

on the basis of the Constitution which makes education a State subject; (2) The Central and Centrally-sponsored sectors should therefore be reduced and there should be a step-up in the allocations made to Education in the State sector. Both these assumptions have remained almost unchanged and the only modification since made is that the size of the Centrally-sponsored sector should be reduced still further. On these assumptions, it appears that the total outlay of Rs. 892 crores, a Central sector (including the Centre's share of Centrally-sponsred schemes) of about Rs. 408 crores. If anything, this is a generous assumption for the Central (centrally-sponsored) sector which may ultimately be even smaller.

4. The main question to be decided is this : How far and to what extent are these assumptions valid? In this contest, I would like to refer to the discussion that took place when the draft outline of the old Fourth Plan was being finalised. At that time, the assumption was that the State Sector, would provide Rs. 887 crores (or 12.4 per cent of the total State Plan outlay) and the Central sector, Rs. 323 crores. I challenged these assumptions. Briefly, my argument was as follows :—

(1) Education has, throughout the first three Five-Year Plans, received about 10 per cent of the total outlay on the State Plans. This proportion is likely to go down, rather than rise up, because higher priorities have been given to agriculture, irrigation, industry and family planning and because the scheme of improving teachers' salaries which takes a good proportion of the funds available and which was formerly included *within* the Plan, is now being treated as *outside* the Plan. Under these circumstances, the best assumption that could be made was to hope for an allocation of 10 per cent of the State Plans to education. This would be the maximum and not the minimum.

(2) The total size of the State Plans was Rs. 7,000 crores. The States would, therefore, have to provide 12.4 per cent of their total plan outlay on education to provide Rs. 887 crores for the education sector. This will not be possible and that, at best, the allocation for education in the State sector would come to Rs. 700 crores (i.e. 10 per cent of the total outlay).

(3) The total allocation to education in the Plan would thus come to Rs. 1,023 crores (Rs. 700 crores in the State sector and Rs. 323 crores in the Central sector). There would thus be a shortfall of about Rs. 200 crores.

(4) The only way to avoid this shortfall was to increase the Central sector from Rs. 323 crores to about Rs. 450-500 crores. Unless the Central sector was thus increased, there was no possibility of realising a total allocation of Rs. 1,210 crores.

5. The note which I had then prepared on this subject is given in Annexure I for convenience of reference. This was discussed in the Planning Group at that time and my contentions were not accepted. But subsequent events showed that the arguments were valid. The total allocation to education in the State Plans actually came to about Rs. 723 crores and as the Central sector remained at Rs. 326 crores, the total allocation to education fell down to Rs. 1,049 crores from the original figure of Rs. 1,210 crores.

6. My submission is that we should not repeat these mistakes. As I see it, the picture of the new Fourth Plan seems to be somewhat as follows :—

(1) The total outlay on the State sector in the old Fourth Plan was about Rs. 7,000 crores. In the new Fourth Five Year Plan, this outlay is not likely

to be increased and may, in all probabilities, comes to about Rs. 6,000 crores only.

(2) *The total amount that would be provided for education in the State sector will therefore be about Rs.* 600 *crores* as the outside limit. It may even be about Rs. 480 crores.

(3) Even if Central sector is raised to Rs. 408 crores, (there will be very strong pressures to reduce it to about Rs. 300 crores or, at best, to keep it at its present level of Rs. 326 crores), the *total amount available to education in the new Fourth Five Year Plan would vary between Rs.* 800-900 *crores.*

III

The Need for a Large Central Sector and Earmarked Grants to States for Educational Purposes

8. The chances of the allocation rising to Rs. 1,300 crores, therefore, appear to be remote. The problem of the total allocation to education, therefore, hinges upon two things :—

(1) There should be a considerable increase in the Central sector including Centrally-sponsored sector, and

(2) The States should be persuaded to accord a high priority to education.

My submission is that if education in the country is to develop properly we will have to emphasize both these approaches. In particular, there is no escape from the need for the Government of India to assume larger responsibilities for education and provide larger allocations in the Central Sector.

9. This is the crux of the matter. The policies which we adopt at present in deciding allocations to education are the following :—

(1) *The Centre tries to restrict its allocations to the Central Sector in education,* mainly on the ground that education is essentially a State responsibility and also because there are competing claims from other sectors like Agriculture, Industry or Defence. The Chief Ministers of States also support this stand because they are interested in seeing that the Central sector in the Plan is reduced, as much as possible, in the hope that the State sector will then increase in proportion.

(2) *The Chief Ministers of States are also keen to abolish the Centrally-sponsored sector or, at any rate, to reduce it to the minimum.* They have some administrative grounds for reduction of the Centrally-sponsored schemes no doubt. But these problems are not beyond solutions and it is not necessary to abolish the Centrally-sponsored schemes on their account. However, since the main interest of the Chief Ministers lies in increasing the State sector, they are up in arms against the Centrally-sponsored schemes also.

(3) There would have been no objection, in principle, to the reduction of the Central and Centrally-sponsored sectors as indicated above, provided the State Governments themselves gave adequate priority to education and provided the necessary funds in their plans. *But they do just the opposite so that the amount provided for education in the State sector also gets reduced.*

10. In such a system where for some reason or the other, every sector—Central, Centrally-sponsored or State—gets reduced, education can never hope to have adequate financial allocations. If therefore we really desire to

do justice to education and provide adequate allocations, a new policy will have to be adopted on the following lines :—

(1) *The Central Sector in Education should be expanded.*—Education is a national concern and there are several programmes for which the Centre has a responsibility. In particular, it alone can take the long-term, coordinated and national view of education. It is, therefore, the responsibility of the Centre to provide funds for programmes which will safeguared these aspects of national Policy on Education. In addition to programmes in the Central sector, the Centre will provide finance for those programmes in which "coordinated action on the part of the Centre and the State Governments is called for". We may briefly describe these as *national programmes.* All funds needed for these programmes will have to be included in the Central or Centrally-sponsored sector, preferably in the former.

(2) *The Centrally-sponsored sector will have to be retained and even expanded.*—The difficulties that are experienced at present in the practical administration of this sector will have to be studied closely and overcome. They are not insurmountable and it would be a mistake to abolish the Centrally-sponsored sector on the only ground that it has not been wisely administered so far.

(3) *The State Government also will have to accord higher priorities to education.* All methods of persuation should be tried for this purpose. But if it becomes necessary, *the Centre should not hesitate to earmark a part of its assistance to the State plans for specified programmes of educational development.*

If this new policy is adopted, education can be assured of the best allocations possible under any given set of circumstances. This is, therefore, the policy that we should strike to evolve.

IV

Regional Imbalances

11. It has been the declared policy of the Centre that it will strive to reduce regional imbalances in the educational development. This has been the recommendation of the National Integration Council. It has also been reiterated in the Government Resolution on the National Policy on Education. But are we sure that regional imbalances will be reduced under the policies of financing education that we are currently adopting ? I am afraid not. *In my opinion, regional imbalances will increase rather* than decrease if our present policies continue unchanged.

12. Let me illustrate.

(1) The States which are comparatively under-developed in education have a greater task ahead. The States which have been comparatively advanced in education have a comparatively smaller task to perform. If regional imbalances are to be reduced, therefore, it follows that the rate of development in the backward States will have to be higher than that in the advanced States. *The allocations to education in the educationally under-developed States will, therefore, have to be larger than those in the educationally advanced States.*

(2) The Central assistance to the States is now proposed to be given on some definite principles. The States will then be asked to raise their own resources. The total size of a State plan will thus be equal to the Central

assistance *plus* the local resources raised. I am afraid that the educationally backward States, which are also economically poorer, will not be able to raise large resources of their own, and even if the Central assistance is weighed in their favour to some extent, it is still likely that their total States plan will be much smaller, per head of population, than those of the educationally advanced States. These States will also not be able to accord a very high priority to education because they are backward in other sectors also. In other words, the proportion of their State plans allocated to education will be even smaller than in the advanced States. *The total allocation to education in the backward States will thus tend to be much smaller, per head of population, than in the advanced States.*

There is thus an inherent contradiction in the present system; its objective of reducing regional imbalances will actually need larger educational allocations, per head of population, in the backward States. But its financial policies are such that these States will only have comparatively smaller allocations.

13. An illustration will suffice. Bihar has a population of 5 crores or 10 per cent of the total of the country. If the total State sector of the education plan is Rs. 600 crores, the Bihar plan should be Rs. 60 crores; and as it has considerable lee-way to make, it will have to be even larger. But very likely the size of the Bihar plan will be about Rs. 30 crores only.

14. *The only way out of this difficulty is for the Centre to come forward and to make special grants for educational development in the backward States, especially for primary education.* These may be made contingent upon the States themselves making a prescribed minimum effort. But unless such grants are made, there is hardly any possibility of the backward States coming up quickly or the regional imbalances decreasing. *This is another strong reason why the Central sector in education will have to be increased in future.*

V

National Programmes

15. There is another important question of policy which refers to *national programmes, i.e.*, programmes in which coordinated action on the part of all States and the Centre is called for. These programmes are like a 'package deal', that is to say, though some of their parts are to be implemented by the Centre and others by the States, the country will not get the best results unless both the Centre and the State act together in a properly coordinated way. The problem to be faced is, therefore, this : *How can we ensure that, once a decision is taken to have a national programme, the Centre as well as the States will fall in line and provide the necessary resources so that the programme makes a satisfactory progress?*

16. Let me make it quite clear that this idea is not new and that there are instances in which it has already been acted upon quite satisfactorily. For instance, let us go back to the year 1963 when the NCC was made compulsory for university students. In the wake of the Chinese aggression, this was looked upon as a national programme. Once the decision was taken, all universities in the country bowed down to it and framed status to declare it compulsory and every State provided for its own share of funds in its budget. There was thus a tripartite agreement between the Universities, States and Centre and it was so well kept by all that the programme could be implemented

as a package deal and as a national programme. What I want to emphasise is that this technique has to be extended to several other programmes as well; and if that can be done, one need worry little about the classification of the programmes as Central, Centrally-sponsored or State or any combination of these.

17. What are the national programmes I have in view for the Fourth Five Year Plan? Here are some tentative proposals :

(1) *Science Education.*—The development of science-from primary to university stages—is a national programme of the highest priority. The Working Group has prepared a good paper on it. The cost is also not high. Some parts of this are in the Central sector, some in the State sector and some can be brought under a Centrally-sponsored sector, although this is not possible at present. What I suggest is that this programme should be accepted as a national programme and that all funds needed for it should be provided, as agreed upon, by the Centre and by every State.

(2) *Book Production.*—This programme has four sub-programmes : (a) production of books for supplementary reading for children; (b) production of higher quality textbooks; (c) production of books in regional languages for the university stage; and (d) production of indigenous books in English to reduce our dependence on imported books.

(3) *Institutional structures for Qualitative Improvement of Education.*—For improvement of School Education, we need the development of the NCERT at the Centre, State Institutes of Education or other counterpart organisations at the State level, involvement of university departments, and some reorganisation of the State Education Departments by strengthening the staff at the District level. The best results will not be obtained unless the entire scheme is taken up and implemented as a package deal.

(4) *Primary Education.*—Progress in primary education is not possible unless at least three things are done : (1) a national programme for reduction of wastage and staganation is developed; (2) education at least in classes I-V is made free in all parts of the country; and (3) every State comes up to a minimum prescribed level of enrolment, say, 80 per cent, of the age-group 6-11 by 1973-74. This does not seem to be feasible at present.

(5) *Youth Services.*—This is yet another neglected programme which needs to be developed on a priority basis. This will include programmes for the development of games and sports, provision of textbooks and adequate guidance services.

(6) *Programmes of National Integration.*—This will include a number of programmes of exchange of teachers and students, etc. recommended by the National Integration Council.

The general idea should be that national programmes (1) *should be few ;* (2) *should be carefully selected in consultation with the States and:* (3) *should be of crucial importance. But once these are selected, the Centre and the States should provide their respective shares of funds on a priority basis (or, the States share of funds could be earmarked or included in the plan as a Centrally-sponsored scheme).*—There could also be a suitable machinery to guide the development of these programmes and to evaluate them from time to time.

18. The need to develop the strategy for development of such national programmes is obvious; and it again highlights the need to increase the Central or the Centrally-sponsored sector to earmark funds for education in the overall grants-in-aid to States.

VI

Some Improvements in Planning

19. It is also necessary to improve our present process of planning in education. The following points need consideration from this point of view :—

(1) The Centre of gravity in educational planning has shifted, and rightly, to the State level. But unless we take effective steps to strengthen planning at the State level, this change will not yield the desired results. What is needed is that (a) each State should review its own educational developments over the last 20 years, (b) indicate broad perspective of educational development over the next 20 years, (c) devise its Fourth Plan against this background, (d) pass an Education Act, and (e) create the institutional structure needed for a proper implementation of its programmes. *This work has started but it is unlikely that it will be completed till the end of the current year. It is necessary to continue it more vigorously and complete it by the end of* 1969-70.

(2) The planning undertaken in the first three Plans is singularly innocent to cost-consciousness. Several programmes have been undertaken where the cost is prohibitive, unnecessarily high and often consists of several elements which are snobbish or characteristic of conspicuous expenditure rather than quality as such. A merciless review of such programmes is needed. Evaluation is an important tool of planning, but it has been almost totally neglected. *If it will be possible to carry out evaluation of at least the major programmes, the efficiency of implementation will increase and costs will come down.*

(3) *A broad-based and decentralised system of planning should be adopted.*—with the preparation of coordinated plans at the institutional, district, state and national levels. Every attempt should be made to involve teachers with the formulation and implementation of educational plans.

(4) Emphasis should be placed on these programmes where effort rather than additional financial investment is needed. In other words *labour intensive programmes should be emphasised as against capital-intensive ones.*

(5) For proper implementation of all the above plans, *reorganisation of administration, both at the Centre and in the States, is called for and should be attempted on a priority basis.*

VII

Raising Additional Resources

20. The allocations provided in the Central and State Plans for education cover only the expenditure from Central and State funds. In addition, funds for education are raised through (a) revenues of the local authorities, rural and urban, (b) fees, and (c) voluntary contributions of local communities, parents, etc. In a situation where one finds severe restraints on the revenues which State and Central Governments can raise for or allocate to education

it becomes essential to adopt measures which will stimulate the contributions from these other sources. Some concrete suggestions from this point of view are discussed in the paragraphs that follow.

21. The major assumptions on which these proposals are based are the following :—

(1) There is an immense hunger for education among the people. They are, therefore, prepared to make considerable sacrifices for the education of their children.

(2) At the same time, people have lost faith in the capacity of Government to provide basic welfare services. Their general impression now is that payment of taxes (or increased fees) to Government is a one-way traffic in which the tax-payer parts with his money but does not get any return from the same. It is, therefore, becoming politically more and more difficult for Government to raise additional taxes.

(3) If however, a mechanism can be devised by which people will be convinced that whatever additional amounts they pay as taxes or otherwise will definitely return to them in the form of concrete improvements in the education of their children, they are still willing to pay for education. This willingness increases if they can also be sure that the amounts paid by them, augmented by State grants to some extent, are replaced at their disposal so that *they* can decide how these total funds could be utilized to expand or improve the facilities for the education of their children.

(4) It is possible to increase the tax on agricultural land to a considerable extent, especially because of the rise in the prices of agricultural commodities and the increase in agricultural productivity. An effective way to do so would be to assign the land revenue, as well as all increases therein, supplemented by appropriate grants from State revenues, for improvement of educational facilities, especially primary education, in rural areas. This may best be done by creating District Education Boards on the broad lines recommended by the Education Commission and by making them responsible for provision of primary education at least within their areas.

(5) The urban local authorities are now having a concentration of wealth in their areas. There is, therefore, no reason why, like the rural areas, they should not be made to pay for provision of educational facilities in their midst, especially for primary education. An effective way to do so would be to establish municipal school boards on the broad lines recommended by the Education Commission and to make them responsible for the provision of primary education at least in their areas.

(6) The contributions of local communities, parents, etc., can be stimulated through the institution of "Education Funds" in all educational institutions on the broad lines recommended by the Education Commission. This might be supplemented by making rules for raising local contributions for non-recurring expenditure for the development of local educational institutions. Special drives on the lines of the 'School improvement conferences' programme in Madras State can also be developed with the same end in view.

(7) It is true that the State has to shoulder an increasing responsibility for support to education. But the policies for financing education which we have followed in the last eighteen years have generally led to two disastrous results. Firstly, they have often substituted expenditure from voluntary sources

by that from public funds which, on the whole, is a costlier and more wasteful method; and secondly, they have increased dependence on State support very unduly as is seen, for instance, in the large extension of the system of 'deficit' grants. Reviewing these trends is not easy, but there is no escape for it if adequate resources are to be raised for the support of education.

22. *Financing Primary Education.*—For financing primary education in rural areas, district school boards should be created as recommended by the Education Commission. The entire land revenue in the district should be transferred to these boards and, in addition, a block grant should be given to them in such a manner that the amount of the land revenue plus the block grant would be able to meet the existing level of expenditure and leave a small surplus for minimum increases or essential adjustments. The future increase in educational expenditure should be met by the levy of an educational cess on land revenue. The levy of a minimum cess should be made obligatory and no grant-in-aid should ordinarily be available for this levy. But for all increases of cess beyond this minimum, a proportionate grant should be given by the State Government. This might preferably be planned on the basis of equalisation, i.e. the richer districts will get grant at a lower proportion while the poorer ones will get it at a higher proportion. The entire proceeds of the education cess thus collected and the grant-in-aid thereon should be available to the district school boards for expansion and improvement of primary education.

23. The district school boards should try to supplement their resources through contributions of local communities, parents, etc. The local community should be expected to share the non-recurring expenditure on constuction of buildings (or additions thereto) and on construction of quarters for teachers. It should also collect some funds locally for purchase of equipment for which grant-in-aid, on an equalisation basis, should be available from district school bords. It should also be possible to make the local community responsible for some recurring expenditure on primary education also. It may be desirable, as suggested by the Education Commission, that the district school boards should bear the entire expenditure on salaries and allowances of teachers or on 'teacher-costs'. The 'non-teacher costs' may, however, be made the responsibility of the local community. It could meet this expenditure partly from contributions of local village panchayats, voluntary contributions raised from the people, and a suitable grant-in-aid received from the district school board.

24. A programme of school improvement conferences on the lines of Madras State should be developed in all parts of the country. Under this programme, lists of minimum requirements of primary schools according to criteria laid down are prepared and the parents are requested to contribute in cash or kind so as to bring the schools up to the required levels at least. The programme is so intensively organized and such great interest is created therein that, every year, popular contributions of some cores of rupees are rair sed. Given proper leadership, it should be possible to develop this programme in all States and Union Territories and to bring up all primary schools to minimum standards at least and to raise some of them (say 10 per cent) to even optimum levels.

25. For financing primary education in urban areas, similar programmes can be designed under specially created municipal school boards.

26. *Financing Secondary and Higher Education.*—In financing secondary and higher education, it is possible to raise additional resources through (a) increase in fees; (b) establishment of education funds; and (c) voluntary contributions.

27. There is no point, at the present juncture, in abolishing fees in secondary and higher education. On the other hand, it would be desirable to increase fees, especially in higher education, and provide for more free or half-free-studentships. Since a wholesale increase in fees is not politically feasible, it may be desirable to allow individual institutions to charge 'development fees', within limits prescribed by Government, and utilize the proceeds for expansion or improvement of existing services or provision of new ones. Such developments can be stimulated by providing grants-in-aid of development fees on a basis of equalization.

28. As recommended by the Education Commission, efforts should be made to establish education funds in all secondary schools and colleges. The fund would consist of (a) voluntary contributions of the community or PTAs, and (b) proceeds of 'betterment' fees levied from the students in accordance with the rules made by Government. This fund should also receive grant-in-aid from State funds on a basis of equalisation.

29. It may also be desirable to prescribe criteria for facilities to be provided in secondary schools and colleges at two levels—minimum and optimum. The financial implications of this should be worked out for every institution and an appeal should be made to the local community to raise funds to bring these institutions at least to the minimum level. A grant-in-aid, on a basis of equalisation, should be available to them for all the local contributions.

30. *Deficit Grants.*—The system of deficit grants kills local initiative, and encourages extravagance and over-dependence on State support. The grant-in-code should, therefore, be scrutinised carefully and the system of deficit grant, wherever it exists, should be reformed on the lines recommended by the Education Commission to stimulate initiative and local contributions.

VIII

Reducing Expenditure-Orientation

31. It must be realized that, even with the best mobilization of resources available, the total amount that will be raised for educational development can only be limited in a poor country like India. We must, therefore, develop techniques of planning which emphasize human effort which we can make rather than investment of large monetary resources which we cannot afford. But, unfortunately, all our planning has developed a strong expenditure-orientation.

32. What do I mean by the expression 'expenditure-orientation' of our educational plans? It really implies an over-emphasis on money based on the naive belief 'that there is no defect in education that more money cannot set right'. It is true that all educational plans will have financial implications and will need some investment of money for their implementation. But there is a world of difference between an educational plan which has financial implications and a basically financial plan which proposes to incur a given expenditure of money on certain educational programmes. In fact, this

difference is as wide and as fundamental as that between 'eating to live' and 'living to eat'. We have not realised this basic difference and have given an unusual expenditure-orientation to all our plans. The cost of the plan, rather than its content, has become more important to us and a more integral part of our thinking on the subject. We consider that the Second Plan was 'better' than the First because it was 'bigger' in financial terms. The third is considered better than the second for precisely the same reason. I heave a sigh of relief because the old fourth plan is now dead and gone. But it was considered to be the best of all because it provided for an expenditure which was larger than all the three Plans put together. The assumptions implicit in this mode of thinking are obviously not valid; but we continue to accept them and to build on their foundations. Consequently, we were fairly successful in implementing simple expansion programmes which depend essentially on monetary investment, such as the establishment of new institutions, appointment of additional teachers, revision of teachers' salaries, construction of buildings or purchase of equipment. But when expansion programmes had other dimensions that could not be met by expenditure of money alone, our successes have been limited. For instance, we have not succeeded well in adult literacy programmes in which the basic problem is to motivate the adults to learn and this cannot be done by money alone. At the primary stage, we have failed even more miserably in reducing wastage and stagnation because these programmes need human effort rather than money. Similarly, we have not succeeded in restricting enrolments at the secondary and university stages because this needs a changing of public attitudes rather than expenditure of public funds. We have also not been able to give a good account of ourselves in programmes of qualitative improvement where, by and large, money plays a minor role. Other examples of this weakness can be readily given, but are hardly needed. I am, however, tempted to quote one of our able Vice-Chancellors with whom I was discussing this problem. He said that in so far as his university was concerned, the one recommendation of the Commission which needed the largest financial investment—the revision of teachers' salaries—had been fully implemented. But other recommendations which involved human effort rather than expenditure such as examination reform, revision of courses, teacher-student contact, etc. were at a preliminary stage of consideration and that he hoped 'something would be done some day'.

33. What I have said is enough to clarify the point I am making : we have been able to achieve, by and large, what could have been achieved by expenditure of money. But where such expenditure of public funds had to be supplemented by expenditure of thought or by human effort, we have not been able to raise to the occasion and the results have been rather indifferent. Unfortunately, it is much easier to spend money rather than thought, especially if it is somebody else's money. But unless one spends thought, no really worthwhile results can ever be obtained. Rich countries sometimes try to make up for the shortages of intellectual inputes by investing larger amounts of money. But a poor country like ours cannot afford this luxury. It will either have to make up for the shortages of physical and monetary investments by larger inputs of human effort or be content to be swept aside by the strong currents of history.

34. I consider this weakness—the expenditure-orientation of our plans—to be fundamental. If it is remedied, we shall get a much better return, not only for the additional funds we invest in education, but also for the high level

of investment which has already been reached. But if it is not remedied, any further monetary investment in education will largely add to the existing wastage. But when I say this, I should not be misunderstood to suggest that education received plenty of funds in the last eighteen years. My definite view is that education has been comparatively starved of funds in all these years and it has been accorded a low priority. But I do mean that the resources we did get were not properly utilised and that they could have been used to much better purposes. I should also not be understood as suggesting that education can be expanded or improved without money. If we have to create a national system of education, adequate in quantity and quality, to meet the needs and aspirations of the people, our investiment in education will have to be increased several fold. But the point I am driving at is this : while emphassing the need for additional funds, we should also emphasise two other points:—

(1) Education cannot be improved by money alone; the adage that there is nothing wrong in education that more money cannot set right is not only fallacious, but actually dangerous.

(2) Money plays only a minor role in the most crucial sectors of educational improvement and factors like human effort and ingenuity assume for greater significance.

No country can affortd to ignore these non-monetary essentials of educational progress, and least of all a poor developing country like ours. The first major weakness of our system of educational planning has been that we have neglected them too long in the past. It will simply be disastrous to continue to do so, especially because the availability of the resources themselves has become so limited.

35. How shall this expenditure-orientation be removed? The only way to do so is to develop a few technique of planning based on cost-consciousness, intensive utilization of available resources, research for the development of less costly techniques, selective approach and human effort. I have spelt out the details of this new approach in the NEHRU MEMORIAL LECTURE, 1968, which I delivered at the Regional College of Education some time ago (Annexure II). The main ideas discussed therein need our earnest attention.

ANNEXURE I

FOURTH FIVE YEAR PLAN FOR EDUCATION :

ALLOCATION BETWEEN CENTRAL, CENTRALLY—SPONSORED AND STATE SECTORS

THE PROPOSALS OF THE PLANNING COMMISION

The Fourth Five Year Plan for Education proposes a total outlay of Rs. 1,210 crore which is divided as follows :

	Rs. crore
Central sector	243
Centre's share of Centrally sponsored schemes	80
State sector (including Union Territories)	887
	1,210

The National Development Council, which examined these provisions, suggested a reconsideration of the Centrally sponsored schemes. The demand of the Chief Ministers was that there should be no Centrally sponsored schemes and that all the funds provided in the Centrally-sponsored sector should be transferred to the State sector. No decision could be taken at the meeting of the Council and the matter has been referred to a committee which is yet to meet. It is anticipated that, when the final decision is known, the Centrally-sponsored sector may not disappear but would be considerably reduced.

There has been no dispute about the Central sector.

I understand that the probability is that the Centrally-sponsored sector may be reduced to about Rs. 60 crore so that the final allocation for the Fourth Five Year Plan between the Central, the Centrally-sponsored and the State sectors is likely to be as follows:—

	Rs. crore
Central sector	243
Centre's share in the Centrally-sponsored sector	57
State sector (including Union Territories)	910
	1,210

THE PROPOSALS OF THE MINISTRY OF EDUCATION

2. The proposals of the Ministry of Education are different from what has been indicated above. The Ministry has held the view that there should be large Central and Centrally-sponsored sectors in order to implement a national policy in education. This has also been the recommendation of the Education Commission. The Ministry of Education has, therefore, proposed

a slightly different allocation for the Central, Centrally-sponsored and State sectors as given below :

	Rs. crore
Central sector	252
Centre's share of Centrally sponsored schemes	86
State Sector (including Union Territories)	872
	1,210

3. I do concede that the proposals made by the Ministry of Education are a little better than those of the Planning Commission. But I must point out that the difference between them is more nominal than real. In so far as the Central sector is concerned, the Ministry has asked only for Rs. 9 crore more. In the Centrally-sponsored sector, it has asked for Rs. 6 crore more than the allocation proposed by the Planning Commission. The difference between the proposals of the Planning Commission and the Ministry of Education, in so faras the Central and Centrally-sponsored sectors are concerned, is thus of Rs. 15 crore only. Whatever way the decision is taken on this matter, the result is likely to be equally bad in so far as the interests of education are concerned.

IS THE ESTIMATE ABOUT THE ALLOCATION TO EDUCATION IN THE STATE PLANS REALISTIC ?

4. In arguing its case for a larger allocation to the Central and Centrally-sponsored sectors, the PCU has taken the stand that these are crucial for educational development and must be enlarged. I agree. But I would like to press the case on an entirely different issue which has not been referred to either in the note of the Planning Commission or in that of the Ministry of Education. My basic contention is that a State sector of Rs. 887 crore (as has now been proposed by the Planning Commission) or even of Rs. 872 crore (as is proposed by the Ministry of Education) is very unrealistic. I do not think that the State sector in education in the Fourth Five Year Plan, will exceed Rs. 700 crore and, for all that one can see, it may be much less, probably about Rs. 600 crore only. My reasons for this statement are given below :

(1) In the Second Five Year Plan, the total outlay on State Plans was Rs. 2,226 crore out of which Rs. 209 crore only was allocated to education. In other words, the allocation to education in the State plans during the Second Plan was only 9.4 per cent of the total outlay. This indicates the relative priority which education receives in State plans.

(2) The picture was not very different in the Third Five Year Plan. According to the latest data available, the total outlay in the State sector on the Third Plan is estimated at Rs. 4,155 crore. Of this, education received only Rs. 408 crore. This works out at 9.8 per cent of the total.

(3) The first drafts of the Fourth Five Year Plan prepared by the State Governments are available. They show a total outlay of Rs. 9.9875 crore. Of this, education has been allocated only Rs. 972 crore. This works out at 9.9 per cent of the total outlay.

(4) It will thus be seen that in the second and third Plans, as well as in the first exercises of the Fourth Plan, education received about 10 per cent of the total outlay. The best that we can hope for is that this priority will continue in the final Fourth Five Year Plan as well. We must remember, however, that the priority allocated to education in the Fourth Plan is likely to be *lower* because higher priorities have been accorded to agriculture, irrigation and power. In the first year of the Fourth Plan, for which data is available, education has received only 5.7 per cent of the total outlay in the State plans. In my opinion, therefore, education will receive only about 8 per cent of the total outlay in the State plans at the highest. Even if this argument is not conceded and it is generously assumed that, on the basis of past trends, education will be allocated 10 per cent of the total outlay in the State sector, education in the State plans will receive only about Rs. 740 crore (the total allocation for the State Plans has now been fixed at Rs. 7,400 crore).

(5) In spite of this reality, if the proposals made by the Ministry of Education are to materialise, education should receive about 12 per cent of the total outlay in the State sector in the Fourth Five Year Plan (Rs. 872 crore in a total of Rs. 7,400 crore). According to the estimate of the Planning Commission, it should receive, a higher priority. Can anything be more unrealistic?

5. There is hardly any need for me to say anything more. But to clinch the issue, I would like to quote from the speech of Dr. V. K. R. V. Rao at the Eduction Ministers' Conference held last year in Srinagar. He said :

> "As I told you earlier, education is essentially a State subject and it is on the willingness of the State Governments not only to raise adequate resources but also give necessary priorities which on the success of educational planning will depend. From this point of view, I have been rather perturbed by the draft memoranda on the Fourth Plan that has been received from the State Governments. While the total outlay on general and technical education proposed by the State Government is of the order of Rs. 972 crore or slightly in excess of the amount proposed in the Planning Commission's Memorandum that has been approved by the National Development Council, this is in the background of a total State plan proposal of Rs. 9,875 crore, as against which the Planning Commission's figure is in the context of a total of Rs. 7,660 crore. In other words, the proportion assigned by the Planning Commission to education is 12.4 per cent of State Plan outlay, while the corresponding figure proposed by the States is only 9.9 per cent. I specially wanted to refer to this because there is a confusion between the figures put forward by the States and the figures put forward by the Planning Commission. I wanted to point out that the figure put forward in the States Memoranda is in the context of a larger outlay. The Planning Commission's percentage of total outlay for education was 12.4 and the percentage of total outlay suggested by the States is 9.9. I am referring to the global total of the States; the figures of course show variation between the individual States. I also find that the percentage allotted by the State Governments to education is exactly the same as in the Third Plan performance, even though the Planning Commission and the National Development Council have allotted it a higher percentage in the Fourth Plan. We are taking

up this question with the Chief Ministers of the States when we start discussing with them individually their total plan outlays as well as the sectoral distribution thereof. Meanwhile, I thought it my duty to draw theattention of the State Education Ministers to the need for taking up this question themselves. They must remember that as the total plan outlays proposed by the States exceed the amount available by more than Rs. 2,200 crores or about 30 per cent, there is bound to be a cut in these outlays. If the cut falls on education, there is no hope of fulfilling the educational programmes visualised by the Planning Commission."

The logic of the above argument of the Member (Education), Planning Commission, is even more forceful today than what it was a year ago. On the one hand, the total size of the State Plans is now even smaller than the figure which he mentioned. On the other hand, agriculture, irrigation and power have been allocated a higher priority and the cost of these programmes has gone up considerably because of devaluation. There is no question of any State now allocating 12.4 per cent of its Plan to education. We should thank ourselves if we can get as much as 8 or 9 per cent of the total allocation to education.

THE NET RESULT—A REDUCTION IN THE TOTAL ALLOCATION FOR EDUCATION TO ABOUT RS. 1,000 CRORE

6. What will be the net result of these policies? Even assuming that the proposals made by the Ministry of Education are accepted, the Central and Centrally sponsored sectors will stand at Rs. 338 crore and, in the usual course, about Rs. 330 crore would be spent. State plans would come up, at the most, to Rs. 700 crore. The total outlay on education in the Fourth Five Year Plan would thus come to Rs. 1,030 crore. If the proposals of the Planning Commission were to stand, this would be reduced to Rs. 1,000 crore or even less.

7. This rather dark picture is supported on other grounds as well. The allocation to education in the first year of the Fourth Plan was only Rs. 95 crore and I think that actual expenditure may not exceed Rs. 85 crore. During the next year, the available data show that the allocation to education will not go beyond Rs. 125 crore and that the expenditure may not exceed Rs.110 crores. In other words, the first two years of the Fourth Plan would have accounted for an expenditure of Rs. 200 crore only. Unless Herculean attempts are made, the expenditure in the remaining three years may not exceed about Rs. 800 crore and the Fourth Plan may ultimately end on a total outlay of Rs. 1,000 crore for education.

8. If this is the real intention, viz., to limit the outlay on education to about Rs. 1,000 crore, and if the figure of Rs. 1,210 crore is being dangled before the public for political considerations, I have nothing to say. But if the honest intention is to improve education in a big way and to make a larger investment therein, our expectations of the State Plans will have to be made more realistic.

A PROPOSAL

9. My suggestion is that we should press for a total investment of about Rs. 450-500 crore in the Central and Centrally sponsored sectors. I do not hold any particular brief for the Centrally-sponsored Sector. (It may be abolished and the entire money included in the Central sector and part of it may be used

to give earmarked grants to State Governments for specific programmes.) But unless a Central and Centrally-sponsored sector of this size is visualised, it would be impossible to implement the ideas underlying the Fourth Five Year Plan, to say nothing of the proposals made by the Education Commission.

10. I would urge the Ministry of Education to press the above point before the Planning Commission and if necessary to take the matter to the Cabinet. It would serve no purpose to make a compromise with the Planning Commission now for a small sum of Rs. 15 crore and to put our demand for the Central and Centrally-sponsored sectors at Rs. 338 crore. I understand from the Planning Commission that the revised Fourth Five Year Plans from the State Governments have been called for before the end of this month and that discussions on these plans will begin on the 3rd October and will be finished by about the 15th of November. By that time, the picture would be clearer and we shall know exactly how much amount has been allocated to education in the State Plans. The minimum that we should do, therefore, is to press the Planning Commission to postpone a final decision on this issue till about the middle of November when the picture of the State Plans will be known and to demand that the difference between the allocation of Rs. 1,210 crore and the actual amounts provided for education in the State sector should be included in the Central and Centrally-sponsored sectors.

J. P. NAIK
Adviser.
8-9-1966.

ANNEXURE II

EDUCATIONAL PLANNING IN A POOR COUNTRY

A STATEMENT OF THE PROBLEM

There are many who believe that a poor country does not need a plan or cannot have one. What can you plan, they ask, when there is nothing to plan with? On a similar basis, there are some who argue that the Planning Commission should be abolished and that India should now give up planning altogether. According to this group of thinkers, planning of education in the first three five year plans was worthwhile because resources of a reasonable size were available. Now that the resources position is very unsatisfactory, would they prefer to abandon planning altogether. The obvious implication is that planning is necessarily an exercise for a time of plenty. I am afraid I cannot share this view. Planning is essentially an exercise for a time of scarcity; and the greater the scarcity, the greater is the need for planning. This is why a rich man, a millionaire, for example, can afford to live without planning his purchases or his menus for breakfast. But a poor man cannot live without planning every purchase and, if necessary, every meal. Similarly, a poor country needs planning more urgently than a rich country. America has no national plan and no Planning Commission. Probably it does not need them. But India cannot do without a Planning Commission or without Five Year Plans. I, therefore, think that the need for planning is greater now than at any time in the past for the very reason for which it is proposed to be abandoned, namely, the resources available to us have shrunk to very low levels. If they were to shrink further, the need for planning would become greater still, and *not* less.

There is another important point to be noted in this context. What do we precisely mean when we observe that a poor country does not have 'resources' to plan with. There are several types of resources. What is called a rich country in common parlance is one which has plenty of material resources; but its human resources may be limited. In a poor country, as generally understood, the material resources are limited, but there could be plenty of human resources. India is particularly rich in human material. We have only one per cent of the world's GNP. But we have one-sixth of the world's population or its potential pool of talent. The basic conditions between the rich and the poor countries being thus totally different, it is obvious that the techniques of planning in one cannot be applicable to another. For instance, waste can be tolerated in a rich country because resources are plentiful. In a poor country, on the other hand, one cannot afford any waste at all. In a rich country, physical resources are used to make up for the shortcomings of manpower. In a poor country, manpower has to be utilised to make up for the shortcomings of material resources. Unfortunately, this important point is often lost sight of and a common mistake committed by the developing countries is that they adopt, rather thoughtlessly, the techniques of planning and development which they find in use in the developed countries. This absurd attempt generally leads to frustration and creates impression that planning itself is wrong or unwanted.

A good illustration of this was brought to my notice even as I as coming here. Your principal was apologetic about this temporary pandal in which today's function is being held and regretted very much that this college does not yet have an assembly hall. I do agree that, like educational institution in all rich countries, you should also aspire to have an assembly hall. It will

cost some lakhs of rupees and you will use it only for a few hours in a year. The cost of utilization per hour of your assembly hall would therefore run in to fantastic figures. But what does that matter? As Dr. Kothari says, "It is always easier to spend money than thought, especially when it is someone else's money." But let me raise an important issue: what is wrong with a pandal of this type? It may be that it cost some money to put it up on every occasion. But this amount will be small in comparison with the cost of the assembly hall or even its maintenance; and it has the added advantage of providing some work for the poor people. I will certainly have no objection to assembly halls when we shall be able to afford them. But until that time is reached, I would prefer pandals of this type; and where even pandals are not available I would welcome open air meetings which can easily be arranged at a convenient time of the day and in appropriate months of the year. It is in situation of this type that I am reminded of the valuable advice given by Mahatma Gandhi. He used to say two things: (1) India is a poor country; and (2) do not run it like a rich country till it actually becomes a rich country. These are simple things no doubt. But we often forget them and land ourselves into difficulties.

In my opinion, the developing countries need to develop 'the art, science and philosophy of planning for a poor country'. They cannot get this expertise from the rich countries. You know the well-known story of Marie Anteinette of France who advised the people to eat cakes if bread were not available. Here is an example of a well-intentioned rich person trying to plan for poor people and one can easily see how absurd and futile the result is. The attempt of a rich country to try to plan for poor countries often becomes equally ridiculous. A good example of this is the American advice that a poor country like India should establish four year integrated courses in special non-university institutions like the Regional Colleges to solve the problem of her teacher education. This techique is of doubtful utility and too costly to be repeatable. It will never have any significant impact on our system of teacher education and the immense resources that were wasted on it could have been utilised to vitalise the 250 training institutions that serve the real needs of this country. I would, therefore, suggest that it is for the poor countries themselves to work together and develop the new techniques of planning which can be of assistance to them. As the old proverb goes; it is the poor that helps the poor.

II

SOME SPECIAL ASPECTS OF PLANNING FOR A POOR COUNTRY

Educational planning in a developing society is subject to several limitations which will have to be kept in view while formulating what I have described as 'the art, science and philosophy of planning for a poor country'. Some of the more important of these have been mentioned below :

(1) In absolute terms, the financial resources available for planning in a developing country are extremely limited. For instance, India spends about Rs. 16 or a little more than 2 US dollars per head of population on education, while America spends about 180 dollars per head of population for her education. In fact, what we spend on education is probably equal to what an average American spends on sedatives or sleeping pills. The gap between two levels of expenditure is frighteningly wide and, as time passes, it is tending to become wider still.

(2) In spite of their low revel of investment in education in absolute terms, it has to be remembered that the poor countries are making a relatively more intensive effort to develop education than the rich ones. For instance, India is spending about 3 per cent of her national dividend on education when the total national dividend is only about 80 dollars. As against this, America is spending 6 per cent of her national dividend of about 3,000 dollars. The intensity of the effort to invest in education is related to 'savings' or the gap between the total national dividend and the minimum required for subsistence. This gap is so small in India and so wide in America that one would be justified in concluding that an investment of 3 per cent of the national dividend on education in India (at the 80 dollar level) implies a far harder effort on the part of the people than that of 6 per cent of the national dividend in USA (at the 3,000 dollar level).

(3) Money is undoubtedly a very difficult thing to find in a poor country; and yet, paradoxical as it may seem, finances for the development of education are often more plentifuly available in poor countries than 'real' resources in terms of materials. For instance, it is easier to get money in India for construction of buildings than either cement or steel. Grants for scientific equipment or libraries are obtained far more easily than the equipment itself or good books. This is all the more so where the equipment or books have to be imported. In other words, in planning for a poor country, there are often severe restraints of physical resources which are even more stringent than the monetary ones.

(4) This paucity of available resources in money or materials for purposes of planning in a poor country is only equalled by the absolute immensity of the tasks it is required to perform. For instance, in the USA, the problem of adult illiteracy does not exist. Not only primary, but even secondary education has been made universal. In expansion, therefore, the country has to concentrate mainly on two areas, higher and adult education. The standards of education are also fairly high so that the qualitative tasks before the educational system are also not formidable. And yet, for the performance of these residual tasks, the country has immense available resources. On the other hand, India has a far vaster task to perform than the USA. She has to liquidate a mass illiteracy of about 70 per cent. She has not yet been able to provide even universal primary education and the expansion of secondary and higher education is as yet very limited. The quality of her schools is far from satisfactory; and in every other important respect, it has still a very great leeway to make. For all this immensity of task, however, the resources available to her are pitifully small in comparison to those of the USA. This is yet another point of contrast: the gap betwen 'needs' and 'resources' is far wider in the developing countries than in the developed ones.

(5) The rich countries which have now come to have well developed educational systems related to productivity find themselves in a 'golden' circle. Because they are rich, they can afford to invest large amounts in educational development. This leads to considerable increase in national income and in its turn, enables the country to make a still larger investment in education; and so on. In contrast to this, a poor country is caught, sooner than later, in a 'vicious circle'. Because it is poor, it is not in a position to invest much in education and to develop it in a big way; and as its educational system is generally unrelated to productivity, even such investment as it makes in education does not necessarily lead to a proportional increase in national income. This failure to develop the educational system in a poor country affects the quality of its human resources and the nation tends to become poorer still.

In view of these fundamental limitations, the system of educational planning for a poor country will have to be based on the following five basic principles amongst others:

(1) *Cost Construction* : Poor countries often adopt educational plans without due regard to the cost involved as resources available to them are very limited and have to be used in the most economical manner; every scheme they undertake should be submitted to rigorous cost-benefit analysis. Alternative uses for the investment of available resources will have to be carefully weighed and priority will always have to be accorded to those programmes which yield a better result for a given investment or require a smaller investment to produce the same result.

(2) *Intensive Utilisation of available Resources* : Since funds are limited in poor countries, they have to take special steps to ensure that all available resources are most intensively utilised at the existing level of investment. In fact, it should be a matter of policy in planning that additional investment to ensure a better return from existing facilities should be accorded high priority; and subject to this reservation, new investments should be permitted only when the maximum possible utilisation of facilities has been obtained at the existing level of investment.

(3) *Research for the Development of Less Costly Techniques.*—An important contribution of science is to make it possible, through research and mass production to produce things of higher quality at lesser cost. Such a programme has not yet received the attention it really deserves and it is tacitly assumed that better education is necesarily costlier or what is even worse, that costlier education is necessarily better. The rich countries have not seriously felt the need for such research. But the poor countries cannot do without it.

(4) *Selective Approach.*— There is a general tendency, while planning for education, to undertake too many schemes, and to spread the available resources over too wide an area. This always leads to waste and it is, therefore, necessary to adopt a selective approach on the basis of rational and well-defined priorities. This is necessary even in rich countries because there is always a gap between needs and resources. But in poor countries, this gap is very wide and the need to determine priorities becomes both extremely urgent and difficult.

(5) *Human Effort.*—The vicious circle in which poor countries find themselves—a poverty leading to non-development of education which, in its turn, leads to still greater poverty—can best be broken through human effort and hard, dedicated and sustained work on the part of all concerned. In fact, as stated already, poor countries have deliberately to utilise greater human effort to make up for the shortfall of material and monetary resources.

It is these five basic principles which I would like to discuss in some detail this evening.

III

Cost Consciousness

Let me begin with the idea of cost-consciousness. Since resources are scarce, the poor countries have to use them in the most economical manner. But this cost-consciousness has not been much in evidence in our Five-Year

Plans. On the other hand, we have developed an expenditure-orientation to our plans under which progress of education is judged more by the expenditure incurred than by any other criteria. Consequently, there is often a competition in spending more and the plans are undertaken without reference to the cost involved—No cost-benefit analysis of any major schemes has ever been undertaken. Sometimes even an actual preference is shown for schemes where in money can be spent easily and plentifully. Such techniques of planning have no place anywhere, not even in the richest of the countries, and even if they had, no poor country, least of all India, can afford these luxuries.

Some illustrations may be given of the general disregard of cost-considerations which is a feature of our educational planning.

(1) *Size and Location of Educational Institutions.*—There is a close relationship which may vary from one category of institutions to another, between the size, cost per student and efficiency of an educational institution. There is, therefore, an optimum size for each category of institutions at which its efficiency is the best and the cost per student is the lowest. This important aspect of the problem has received little attention so far and there are far too many institutions of too small a size which prove to be very costly. I will give some illustrations of what I have in mind.

(a) In Madhya Pradesh, the policy adopted is that every secondary school must be a higher secondary school. Where we can have an enrolment of about 300—400, the cost per student is reduced to its lowest level, and there can be no financial objection to this proposal. But if it is decided to convert *every* secondary school to the higher secondary pattern, and if rural schools, which generally have enrolment of less than 100, are made higher secondary, the cost per student amounts up to prohibitive levels because each school needs a minimum staff of six lecturers. The proper policy to be adopted in this country is to adopt the ten-year school as the ordinary pattern especially in rural areas, and to convert only selected schools to the higher secondary pattern in view of social needs and financial considerations.

(b) *Sanskrit Departments in Affiliated Colleges.*—A subject like Sanskrit is not popular at the university stage, but for cultural and other reasons. We have to make an effort to provide adequate facilities for its study. But this does not mean that we should totally disregard enrolments or provide these facilities in every college in a city or a big town. Recently, I made a study of Sanskrit Departments in colleges of Bombay city and found that they were all small and the cost per student was as high as about Rs. 2,000 per year or even more (as against the average cost of Rs. 400 per annum for the popular subjects) and that the cost could be lowered to about Rs. 500 or so if these facilities could be provided in one or two institutions only instead of being scattered over eight or ten. A proper planning of facilities for Sanskrit education can thus save a lot of money. But these aspects of the problem have received no adequate attention so far.

(c) *Adoption of Costly Patterns.*—It is true that we shall have to make larger investments to improve quality. But one has to make an intensive effort to identify elements which really contribute to quality and ensure that unnecessary expenditure unconnected (or only thinly connected) with quality is avoided. One concedes the point that an IIT will cost more than an ordinary engineering college. But one does not feel sure that all the expenditure that is now incurred on IITs is really necessary for quality. In fact, I have a feeling that there is a good deal of snobbish or prestige expenditure incurred on these

institutions which can be easily cut dow.. with no adverse effect on quality and, in some cases, with a positive gain. The standards that we adopt in the construction of our buildings, especially in higher education, are often based on ostentation and one cannot help feeling that our expenditure on buildings can be substantially reduced. There is no gainsaying the need to build up high quality postgraduate departments in universities. But this does not necessarily justify over-investment in university buildings. The heights of the university towers are not necessarily proportional to its academic development.

The regional colleges of education themselves are a good example of our lack of cost-consciousness. There are two patterns of teacher-education, the integrated pattern adopted in the U.S.A. where the professional education of teachers is combined with their general education at the under-graduate stage and the U. K.. pattern where professional education is provided, after the first degree. There is no reason to assume any marked superiority of the U.S.A. pattern over the U.K. one, not at all to justify the large investment needed in the former. And yet we undertook this idea of eating cakes when bread is not available regardless of our capacity to generalise it.We also did not weigh the pros and cons of starting these courses in universities with good science departments already in existence. This would have been far cheaper in cost and much better in quality—had we started them in new non-university institutions like the regional colleges where everything had to be started from scratch and where costs were bound to be prohibitively high. What is worse, we did not even utilise this opportunity to do something different from what the universities were doing. Something which is really integrated and instituted and not a mere repetition of the university courses at greater cost and lesser efficiency. There can hardly be another such example where the intellectual inputs were kept at the minimum and monetary ones at the maximum. This is precisely what planning for a poor country should *not* be.

Several other examples to illustrate our general lack of cost-consciousness can be given. But they hardly seem to be necessary. What I have said already is enough to show the need to be more careful in this regard in future and to ensure that our investme it in education is made in the most economical manner possible.

IV

Intensive Utilisation of Available Resources

The resources available to the educational system are, by no means, plentiful and there is an urgent need to make larger investments in education to increase them. But even a casual study of our educational system shows, not so much the lack of resources as the under-utilisation of even such resources as already exist. In fact, the extent of under-utilisation is often so flagrant as to seem almost criminal.

Some illustrations—particularly the utilisation of buildings and equipment—will show what I have in mind. We are told institutions do not have adequate and satisfactory buildings. But can we say that all the existing buildings are fully and intensively utilised? The answer is definitely No. Studies made by the Education Commission show that the vast majority of the educational buildings are utilised only for about five to six hours per day. In most buildings, the utilisation of differen: rooms shows considerable variations and, in several instances, room after room is used only for a few hours a

week. The laboratories and the libraries, which should really be used for at least 10 to 12 hours a day and for all days of the week and all the months of the year (including the vacations) are rarely used for a few hours a day on working days only. But the educational buildings and hostels remain largely unutilised in vacations because no useful vacation projects are generally organised. These general observations will apply, *mutatis mutandis*, to equipment as well. A good deal of equipment, sometimes of a costly type, is often found to remain unutilised for want of proper maintenance. Even when it is in working condition the utilisation is far from intensive and given a careful plan, it is possible to use it more intensively and over longer periods.

Several imaginative headmasters of secondary schools, whom I have known personally, have devised programmes for a better utilisation of their existing facilities at the cost of a very little additional investment. I give below a few examples which come to my mind.

(1) One important means of raising standards, especially with regard to children from the poorer classes or slum areas in cities, is to provide them with better conditions for study. They do not generally have all the textbooks that are needed. Most of them live in small tenements where they do not get adequate space or quiet which are so essential for good study. They also receive no guidance at home because their parents are generally less educated than themselves. What is needed to improve the attainments of these children is to provide them with all the textbooks, some individual guidance and a quiet place where they can do their home work undisturbed. This does not necessarily require heavy additional investment. A friend of mine has designed the building of a secondary school in such a way that a number of beds are built into the walls, as in a railway compartment. These are folded and the classrooms in the building can also be used as dormitories. The additional expenditure in this type of construction was very meagre, about Rs. 50 per bed. But it enabled him to invite the poor children from slum areas who attend school to live on the premises. They go home only for their meals. As a rule, they come to the school after taking their supper at 8 p. m., study till 10 or 11 p. m. and again in the morning. Then they go home at about 10 a.m., have their meals and come back at 11 a. m. when the school reopens. They remain in the school till 5 p. m., play till about 6 or 6.30 p. m. and then go home for supper. One or two teachers remain present in the school at night and again in the morning to provide guidance to students and are suitably remunerated. There is a good textbook library in the school so that all students have easy access to the textbooks that they need. The additional expenditure on this programme is very small—it works out to about Rs. 20 per child per year—but the results show a magnificent improvement in the attainment of these students.

(2) I can give another example of an interesting vacation programme—which is being tried out by some secondary schools in Bombay. These are attended by children from the lower middle or working classes who are too poor to send their children outside the city during the summer vacation. Moreover, they generally live in such small and crowded houses that they are virtually compelled to wander on the streets throughout the day when their school is in vacation. To meet the special needs of such children who form the bulk of their enrolment these enterprising headmasters convert their school buildings into a hostel in the summer vacation. The children who want to avail themselves of this programme are allowed to spend their entire time on the school campus, going home for meals only. A number of teachers work with

them, supervising their reading, guiding their studies and providing opportunities for them for play or cultivation of hobbies. The only expenditure involved is on the remuneration of teachers and some materials and works out at about Rs. 10 per student for the entire vacation. But the advantages of the programme are immense. The students feel greatly refreshed, and improve in studies.

(3) Yet another interesting programme has been developed by a friend of mine, a teacher in Poona University. He uses psychological tests and identifies the most talented children in all the secondary schools in Poona city. He then brings them together and arranges special guidance and teaching for them, with the help of some of the best teachers available, in the last year of their school. The results have been outstandingly good and the expenditure is compartively very small. There is no reason why attempts of this type to identify talent at a fairly early age, say about 13 or 14 years, and to develop it intensively should not be made in every city.

(4) There are several teachers I know who organise a number of vacation programmes, not only for children from their schools but also for those from other schools in the neighbourhood and even for non-attending children who can participate with advantage; for instance, several of them run special libraries for children during the summer and winter vacations and these are availed of largely and enthusiastically by thousands of children. Some teachers keep the craft-sheds working in the vacations to provide scope for development of hobbies. In some cases, the laboratories are kept open in vacations in order that teachers and students of primary schools in the neighbourhood, who do not have these facilities, may come to receive instruction and do practical work. There are schools which run circulating libraries for schools in their neighbourhood and I have known of one which sends round its film projector to schools in the neighbourhood. In one State, workshop facilities are not generally provided separately to individual schools but are created in central places and shared by a number of neighbouring schools in common.

(5) Intensive utilisation of failities will have, as indicated above, important advantages for students of the institutions concerned. But they can also be so utilised for two other purposes of great significance. The first is to make the facilities in the educational institutions available to non-student youth who desire to keep up their interest in studies and personal advancement; and the second is to make them available to the adult community for programmes of continuing education. In fact, every educational institution can be an effective community centre and serve both the young and the old in its neighbourhood through a more intensive use of available facilities and with very little additional investment. But unfortunately, these programmes have not received much attention so far.

I do not think that further elaboration is needed and I might close this discussion with a quotation from the Report of the Education Commission.

> "*Adequate Utilization of Institutional Facilities.*—One more aspect of the very costly technique to provide and maintain the physical plant of educational institutions, it becomes necessarry to utilize it as fully as possible, for the longest time on each day and for all the days in the year by making suitable administrative arrangements. Teachers and students would continue to have their own hours of work and vacation as recommended above. The libraries, laboratories, workshops, craftsheds, etc. should be open all the year round and should be utilized for at least eight hours a day, if not longer. Special vacation programmes should be arranged to utilize institutional facilities for community service adult education, temporary hostels for day students, enrichment programmes for gifted

students and supporting programmes for retarded students. It is not necessary to indicate all the different ways in which the institutional facilities could be utilized all the year round. If an understanding is developed that educational institutions are like temples of learning and should never remain closed and if a proper climate for sustained work is created, teachers, students and the local communities will themselves discover innumerable methods of utilizing school facilities to the maximum potential throughout the year. When it is difficult to expand educational facilities adequately and a waste to under-utilise existing resources, such programmes demand urgent attention."

(V)

DEVELOPMENT OF LESS COSTLY TECHNIQUES

In a poor country, it is absolutely essential to keep down the unit costs consistent with maintenance of standards. Educational research organised on proper lines can be of very great use from this point of view.

Let me take one interesting example, namely, the teaching methods in primary schools. The methods of teaching which we now try to adopt in our primary schools and generalise through our training institutions have almost always been borrowed from the industrially advanced countries of the We t because we hvae not yet carried out any worthwhile research to discover new techniques which are more appropriate to our conditions. But these methods are suitable only for classes of small size which have now become general in these countries. It could also be pointed out that these countries can afford classes of small size,partly because of the ample resources available to them and partly because they have a low brith rate and consequently a comparatively smaller number of children to educate. But the conditions in the developing countries are just the opposite. They have meagre resources and a high birth rate which results in their having a comparatively larger number of children to educate. These countries are, therefore, under a financial compulsion to adopt a larger class size. This will, however, not be possible unless methods of teaching appropriate to larger class-sizes are evolved and universally adopted.

I must point out that this statement of mine has to be taken with certain limitations. I do not mean that there is a method of teaching appropriate to any size of the class and I do concede the point that there is an upper limit class size beyond which the efficiency of teaching begins to be adversely affected. There is also a lower limit to a class size which is generally dictated by financial and administrative considerations and the efficiency of teaching does not necessarily improve when the class-sizes fall below a critical level. But between these two extremes which cover a fairly wide range, there is no special sanctity about any particular class size. There are certain methods of organisation and teaching which can be used only if the total size of the class is small while there are others which can be used, without any deterioration to tandards, in classes of a much larger size. If the proper techniques are adopted, it is thus possible to obtain fairly good results in any class size, within the given range, which might be found to be financially necessary.

It is possible to show mathematically that there is a close direct relationship between the birth rate and class size at the primary stage where universal education has to be provided. Hence countries with a large birth rate will be under a financial and administrative compulsion to adopt a larger class size. This is so in all developing countries and especially in India. Unfortunately, the teaching profession in this country has not accepted the large class as an inescapable necessity and it is not also trained academically to handle it in an

efficient manner. Yet the average situation in the country is such that six teachers out of ten are called upon to face classes of very big size. It is this contrast between the training of teachers and their expectations on the one hand and the needs of the social and economic realities on the other, and not the large classes as such, that causes the present malaise in India. If we could only accept a large class-size as an economic necessity for the next 10 to 15 years, if we could concentrate on the evolution of teaching methods suitable for large classes and if we could train our teachers properly in the handling of these methods, the educational standards could materially improve in spite of the large size of the classes.

There are several other low-cost programmes for the development of education which we can adopt with advantage. For instance, programmes of part-time education and correspondence courses will have to be developed in a big way both at the secondary and the university stages. This will reduce recurring as well as non-recurring expenditure and, what is even more important, make educational facilities available to all those persons who desire to educate themselves further but cannot afford to join full-time educational institutions. Development of programme instruction can be another technique which can help us to spread education and to improve its quality at a comparatively small cost. Other illustrations are not hard to come by.

The developing countries have limited resources no doubt. But they rightly aspire to create an educational system which is comparable to that in the industrially advanced countries of the West, both in coverage and in quality. They will have no resources to create such an educational system if they were also to imitate the Western techniques which are generally costly and beyond the reach of poor nations. In fact, any attempt to create a western system of education with all its objectives, programmes and techniques in a poor eastern country is as absurd as that of trying to force an elephant into a whisky bottle. The only way out, therefore, for the developing countries is to develop low-cost techniques within their reach which can enable them to catch up with the educational systems of the industrially advanced nations in quantity and in quality. In this context, I can do no better than quote from the address of Dr. D. S. Kothari to the Education Commission at its inaugural function on 2nd October, 1964. He said :

> "It is important to recognise that one of the characteristics of science is that things of quality should not necessarily be expensive. If enough thought is devoted it should be possible to have education of quality and yet cheap enough to be within our means. Science brings today within the reach of the common man things which at one time were not available to the very rich. The same can apply to education, but to bring this about would need hard work and much serious thinking and research into the process of education. The new techniques and instruments of education, such as Correspondence Courses, Programme Learning, Audio-Visual Aids can soon be of great value to us; but much of the new techniques required will have to be discovered and developed by ourselves. In fact in this matter we can and ought to be able to do more than the advanced countries. I am reminded of what my former teacher at Cambridge, Lord Rutherford, the pioneer of Nuclear Physics, said when he was told that America was going ahead in Nuclear Physics because they have a lot of money. He was asked what England should do. He replied in the robust way of his "Americans have money, we do not have it, and so we have got to think". There is no substitute for hard and serious thinking, and with sustained and serious thinking; and with sustained and serious effort we should be able to go a long way even with our meagre resources and capital. This perhaps explains why the Minister has appointed the Commission. Its real justification will lie if we could do hard and realistic thinking so that the education we need to meet our requirements material cultural and spiritual—could also be brought within our reach".

VI

SELECTIVE APPROACH

Let me now come to fourth important technique of planning which I propose to discuss with you, namely, the selective approach in the development of educational institutions. In a poor country the resources available are limited and the number of educational institutions is disproportionately large. It is, therefore, not possible to improve all educational institutions; and it is also not desirable to improve all educational institutions; and it is also not desirable to improve none of them. The only rational way out therefore is to select *some* institutions for development in the first instance, and to increase their number as more resources become available. Theoretically, therefore, a poor country has no alternative to the adoption of a selective approach in the development of its educational institutions.

And yet, whenever this idea of a selective development of educational institutions is put forward, there is a strong opposition from every quarter. The egalitarians oppose it on the ground that it is undemocratic, that it will discriminate in favour of the haves and against the have-nots, and that it will widen the inequalities in the existing system by making the good schools better and the poor schools, poorer. The politicians oppose it because they would prefer a system which enables them to distribute favours to as many institutions as possible without being called upon to have awkward questions about priorities or principles. The administrators also oppose it on the ground that the present system based on a few simple rule-of-thumb principles is easier to administer and that a system of selective development where they are required to use their judgment and discretion is likely to expose them in spite of their best efforts, to charges of casteism, favourtism or even corruption. What is worse, the educational institutions themselves oppose it with great vehemence. The reason is quite understandable. Each institution tries to weight the chances of its being selected for special development under such a programme; and if it finds that such chances are bleak these will necessarily be so for the vast majority of institutions—it generally decides to oppose the idea itself. Consequently, the proposal is voted down by a large majority, the weakest institutions generally playing the most vociferous role in shouting down the innovation. It is very significant to remember that the Education Commission's idea of selected development of few universities was most vehemently opposed by the universities themselves. Even the good institutions are not very enthusiastic about it because they feel that this move which is initiated ostensibly to support them may ultimately be subverted by politicians and other influences to benefit undeserving institutions with a political pull in preference to those institutions whose only strength lies in the excellence of their work. All things considered. it soon becomes evident to the planner that the selective development of educational institutions has no friend in any worthwhile quarter.

How can we meet this situation ? In my opinion, the opposition to selective approach is based, partly upon some wrong applications of the selective approach which has been tried in our modern educational history, and partly upon certain misconceptions about the problem. If, therefore, we can dispel these misapprehensions through proper presentation and apply the techniques of selective approach in the right way, there is every possibility that the present opposition to the proposal will disappear and be replaced by strong popular support. This is what we would try to do and, in the course of the next few minutes, I shall indicate some ways in which this can be attempted.

It may be convenient to begin with one or two dont's. My first suggestion is that a selective approach should not adopt the planning techniques of what I might designate as the "Anglo-Indian Suburbs". The British bureaucrats who ruled in India found that they had to live and work in towns and cities most of which were unplanned and dirty and that they were also required to pay a few visits to villages which were even more insanitary. The idea of improving conditions of life in all the villages, towns and cities of India was something which they always shrank from as an impossible achievement. They, therefore, concentrated their efforts in creating artificial islands of prosperity in the country in which they could live and work happily and forget the dirt, disease and destitution in the remaining areas. They thus created new Anglo-Indian suburbs for themselves—New Delhi for the Government of India and Civil Lines and Cantonments for almost all other cities and towns—and beautifully located, well-furnished and well-maintained Dak Bungalows or Rest and Ciruit Houses to dot the entire countryside. This was an easy programme to implement and not very costly to administer and yet it gave them all the advantages of being able to live in islands of prosperity and thereby ignore the poverty and misery that was India.

This attempt to escape into artificial and unnatural islands of prosperity can be seen in education also. Take for instance, the public schools, a public school is undoubtedly a good institution. But what role does it precisely play in education? The number of public schools is very small about 50 with a total enrolment of about 25,000. Their cost is also fabulously high so that they are beyond the reach of all but the very rich families. The public schools therefore are like an artificial island of prosperity in education which help the very rich people to get good education for their children. The public schools are like sky scrappers in the midst of millions of hovels. But any number of such skyscrappers will not be able to hide the misery and poverty of the millions of huts that surround them.

I am afraid that this escapist policy of building up a few giants while allowing the rest of the society to be a pigmy will not work. For us, a better planning technique is indicated by prayer in *Fra Lippo Lippi*;

> "*Make no more giants, God.*
>
> *Raise up the whole race at once.*"

The creation of a few peaks of excellence here and there cannot inspire the entire educational system to move upwards. Very often, they become a source of despair because they are so obviously beyond the reach of the average institution. What is worse, the resources spent on building them up reduce the funds available to other institutions to such an extent that the pace of their development is reduced even further.

These considerations can be applied to the improvement of teacher education in India. The main objective here should be to raise, as soon as practicable, the standard of each one of our training institutions—their number is about 250 at present. There is a place for creation of a few pace setting institutions in this programme. But these institutions should be reputable and inspire and help the others to follow them. The Regional Colleges, as they have now been constituted, do not qualify themselves for this role. They are very costly ventures and unrepeatable. I doubt their claims to be considered as peaks of excellence. But their expenditure is so high that it can never be possible for the average training institution to reach it. What is worse, the establishment of these institutions had definitely prevented us from making an earnest

effort to improve the training institutions in the country. I very strongly feel that if the large resources which we have been sinking in these white-elephants had been made available for the improvement of the training institutions for secondary teachers, the cause of education in the country would have been promoted more fruitfully.

There is a second don't which I would emphasise. In developing selected institutions, care should be taken to see that quality does not become allied to privilege. The facilities to educational institutions selected for qualitative improvement should be available to all on the basis of equality and notre stricted to a privileged few. The Regional Colleges of Education are not fortunately open to this charge. But the Indian Institutes of Technology (IITs)are. The Education Commission carried out a study to find who gets admission to the IITs. The data showed that 87 per cent of the students who are admitted to the I.I.T.s belong to families whose monthly income is more than Rs. 500. In other words, 87 per cent of the admission go to the top one-half per cent of the population. Do we seriously allege that there is no talent in the remaining 99.5 per cent population of the country? Is it not to participate in the Industrial Revolution of the country at all? Are they merely the *Pavayas* who have to exist on the charity of the great ones? It is also interesting to note that 50 per cent of the students who got admission to some I.I.T.s came from English medium schools. This is understandable because their entrance examination is held in English. But is it fair that English-medium schools whose enrolment is less than one per cent should get 50 per cent of the admissions to the I.I.T.s. This is where one sees privilege and quality getting tied up together. Who sends their children to the English-medium schools? It is the Government servants, rich businessmen, and others who form a small top-class. "It is the children of these privileged groups who are admitted to the IITs and are enable to get big jobs in due course. So a small top-circle of society is helped to perpetuate its privilege under the name of quality.

I stand for quality, but the poor people also must have a share in this quality. I have no objection to someone eating cakes every day provided I also get a bite at them now and then. But if I am not to get a cake at all, I will certainly get irritated and try to see that no one will ever have a cake. This revolt will come up amongst the poor people if quality and privilege are always allied. Please remember that these ivory towers which we are creating are all built on sand because the common people have no stake in them. If this separation between the masses and quality continues, if privilege and quality always remain together, the people of this country will rise in revolt one day and will throw out both quality and privilege.

I shall now come to the positive aspect of the problem and indicate a few criteria which are essential for the successful implementation of a policy of selective development of educational institutions.

(1) It must be remembered that the ultimate objective is to develop all educational institutions and that a programme of selective development is proposed as a means of reaching this objective as quickly as possible. The programme of selective development should therefore be so designed that it helps to hasten the general development of the system as a whole and that, under no circumstance it hinders such development.

(2) The first round of institutions selected for development must be sufficiently large to meet all legitimate aspirations. The Education Commission, for instance, recommended that 10 per cent of the institutions in a given category should be selected for development.

(3) The level of development visualised should not be so high as to be beyond the reach of the average institution. In fact, the cost per pupil in the fully developed institutions should be about thrice that in an ordinary institution. This will make the experiment repeatable in the sense that excellence of this type could be expanded to other instances with comparative ease and in a shorter time.

(4) Simultaneously with the launching of the experiment, a complimentary scheme should also be launched under which institutions not selected in the first round can still be assisted to develop their potential and can thus hope that they too may get into the selected gruop if they show performance and promise. Similarly, the selected institutions should also be given to understand that their selection is not a once-and-for all-time affair and that it is contingent upon continued good performance. In other words, the category of selected institutions should be an open and ever-widening community into which members not selected at a given stage can hope to get admission upon fulfilment of certain conditions just as members once selected may also be compelled to go out for failure to comply with these conditions.

(5) The admissions to institutions thus selected for development should be made with due regard to the principles of social justice and every care should be taken to ensure that this attempt to improve quality does not get allied to privilege.

(6) The institutions selected for development will naturally have better facilities than many others. It should be an objective of policy to enable these institutions to share their facilities with others. For instance, it may not be immediately possible to give a film projector, a good library, or a good laboratory to every school. But when these facilities are created in selected institutions, it should be possible to develop programmes under which such facilities can be shared by other institutions in the neighbourhood.

(7) The scheme will have to be administered with vision, imagination and impartiality. The selection of schools for special development should be on the basis of academic criteria and receive the support of the academic community. This will create a healthy competition between educational institutions in developing excellence.

The point which I woud like to empahsise is this: There is no escape in a poor country like India from adopting the selective approach for development of educational institutions. It is unfortunte that the strategy adopted for development of selected educational institutions in the past was wrong and its disastrous consequences have made people suspicious of the programme itself. But in the larger interests of education, the existing suspicions and apprehensions about this technique have to be overcome through proper presentation and implementation on right lines. We should make it clear to all concerned that this technique is really equivalent to what is often described as 'corn-seed technology' according to which excellence is first bred in some institutions through a concentration of human and material resources and then extended to other institutions. In fact, if properly implemented, this technique is the shortest way in practice to improve all educational institutions; and, from allaying itself to privilege, it actually increases the chances of the access of the underprivileged sections of society to good education.

VII

HUMAN EFFORT

This brings me to the last technique of planning for a poor country, namely, emphasis on human effort. I said earlier that the developing countries now find themselves in a vicious circle; they cannot make adequate investments in education because they are poor; and since their educational system continue to be unreformed and undeveloped, they tend to become poorer still. This vicious circle can only be broken through dedication and human effort. Idealism is thus needed, now more than ever and the only substitute we can have for hard work is still harder work. Unfortunately, the significance of these programmes is not realised. But planning for a poor country cannot succeed unless it emphasises both education and sustained hard work.

I would like to make two concrete suggestions in this regard. The first is that a climate of sustained hard work should be created in all educational institutions by increasing the number of working and instructional days and by lengthening the working day. The Education Commission pointed out that "there is considerable variation, from area to area, in the total number of working days in a year—these range from 172 to 309 at the school stage and from 120 to 240 at the university stage. The number of holidays given within a school year shows even large variations—from 20 to 75 at the school stage and from 4 to 49 at the university stage. Similarly, the total duration of vacations varied from 36 to 84 days at the school stage and from 62 to 137 at the university stage. The days utilised for examinations (inclusive of preparatory leave) vary from 10 to 77 and the loss on account of celebrations such as foundation days, annual functions of societies, etc., is some times as high as 40 to 60 days in a year. These facts are a sad reflection on the efficiency of the educational system; and the general under-utilisation which they represent in a developing economy like ours is tentamount to an unpardonable waste of scarce resources. We, therefore, recommend that the number of instructional days in a year should be increased to about 234 (or 39 weeks) for schools and 216 (or 36 weeks) for colleges (and pre-primary schools*)." I would therefore strongly support the following recommendations of the Commission on this subject :

> ". . . . it should be ensured that the minimum number of instructional days should not be less than 234 a year for schools and 216 a year for colleges. This can be done by introducing two reforms:
>
> (1) The first is to cut down other holidays which are now as many as 35 or even more in a year. The general experience is that they serve no useful purpose and merely disturb the work of educational institutions. We recommend, therefore, that these should be drastically cut down to ten (which also includes three days for 'unexpected' events). In our opinion, there is no need to close an educational institution on a religious holiday. Nor is it necessary, for instance, to close it on birthdays or death anniversaries of great Indians; the time could be better utilised in working hard for national development.
>
> (2) The second is to fix an upper limit, in each given year, for the loss of working days to instruction due to all causes including examinations—21 days in schools and 27 days in colleges."**

Similarly, it is also necessary to lengthen the working days and to utilise them much better. At the school stage, the working hours per day should vary from about four hours at the pre-primary stage to about six hours at the higher

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* Report, p. 38.

***Ibid.* p. 39.

condary stage, excluding the time for co-curricular activities. At the university stage, our effort should be to involve students in challenging programmes of study and work for about 50 to 60 hours per week. This will include, not only 'contact' hours (about 15 to 20 per week), but a large proportion of time devoted to self-study. As one goes higher up the educational ladder, the 'contact' hours should become less and the time for self-study should be lengthened correspondingly.

My second concrete proposal is the greater emphasis should be placed, in the years ahead, on those programmes of educational development which depend essentially upon human effort. These will include the following:

(1) *Revision of Curricula and Courses.*—A major objective of this programme should be to orientate education to national needs. This would include programmes such as promoting national consciousness, emphasising character formation through cultivation of moral, social and spiritual values, improving science education, introducing work-experience and national or social service, stressing physical education, games and sports and developing a rich and varied plan of co-curricular activities.

At the school stage, there is an urgent need to upgrade and improve curricula, to increase their knowledge content and to provide adequately for the development of skills and the inculcation of right interests, attitudes, and values. It is also necessary to introduce courses at two levels—ordinary and advanced. At the university stage, the combination of subjects permissible for the first degree should be more elastic than at present and should not be linked rigidly with the subjects studied at school. There should be provision for general (pass and honours) and special courses. At the post-graduate stage, courses should be designed with three objectives: preparing teachers for schools; catering for the needs of students who are still interested in broad connected areas, and providing a high degree of specialisation.

(2) *Adoption of Improved Methods of Teaching and Evaluation.*—This programme should be promoted through teachers, production of literature and establishment of subject-teachers' associations. A programme of high priority would be to improve the teaching of languages. It is also necessary, as recommended by the Education Commission, to establish a Bureau of Evaluation in each State to implement an intensive programme of examination reform in close collaboration with the National Council of Educational Research and Training. This programme should include, amongst others, the reform of external examinations, reduction in their numbers, early declaration of results, introduction of a system of internal assessment in all institutions and making it an integral part of the promotion procedures from class to class, and the maintenance of appropriate progress cards for all students.

(3) *Book-Development Programmes.*— These will include the following:

(a) The production of text-books in English and modern Indian languages which contain Indian experience and material, are written by Indian authors and are specially oriented to Indian conditions and the needs of the Indian students;

(b) Rationalisation and expansion of the book production schemes which are now being implemented in collaboration with friendly countries like the U.S.A., the U.K. and the U.S.S.R.

(c) Further development of the programmes of text book production for the school stage under the National Council of Educational Research and Training;

(d) Development of text book production programmes for the school stage under the State Governments though the establishment of autonomous organisations and the development of research in curriculum and text book production; and

(e) Preparation and publication of children's books of all categories especially with a view to promoting national integration. These books should be produced simultaneously in all the modern Indian languages and should be priced exactly the same in every language. It is through them that a good deal of common reading material will be available to every Indian child. This will promote national integration and help to raise and equalise standard in all parts of the country.

It is easy to see that all these and similar other programmes need human effort rather than any large-scale investment of resources in physical or financial terms. An increasing emphasis will therefore have to be placed on them in planning educational development in poor countries.

VIII

WANTED A NEW STRATEGY

Planning for educational development in a poor country is a very difficult and challenging task. It is true that all educational development needs additional investment and that the total educational expenditure in India will have to be increased, as the Education Commission has pointed out, from Rs. 12 per head of population or 3 per cent of the national income in 1965-66 to Rs. 54 per head of population or 6 per cent of the national income in 1985-86. But the new educational system that we need cannot be created by money alone and the secret of success in this endeavour will lie in developing a proper technology of planning which will emphasise cost-consciousness, intensive utilisation of existing facilities, evoluation of a low-cost techniques, selective approach and creation of a climate of dedication and sustained hard-work. If this can be done, we will have a much better return even for the existing level of investment in education; but if it cannot be done, a good deal of the additional investment we might make in education will go to waste as it does at present. One cannot therefore over-emphasise the importance of changing our present methods of planning which are suited largely to rich nations and to adopt instead a new strategy of educational development which will be in keeping with the conditions of a poor country. As Dr. Triguna Sen has observed:

> "My main plea at this critical juncture is that we should change our strategy of educational development to suit the present situation. In the past, we have pumped money into the educational system fairly liberally—educational expenditure has increased, in the last fifteen years, at 11·7 per cent per annum (at current prices) which is even more than twice the growth in national income. But we have not emphasised human effort adequately, with the sad results that are familiar to all of us. For the next few years, we shall have to reverse this. We shall need more money no doubt; and I shall have to appeal to the Finance Minister to have a specially soft corner for education. My appeal to the philanthropic public would be stronger still and I will plead with it to give generously to education and to make up, in part at least, the shortfalls of the public sector. But I will make my most earnest plea to students and teachers to emphasize human endeavour, to make the most intensive use of all available facilities, to reduce all wastages to the minimum to bring about a major change in their attitudes to make the educational system elastic and dynamic, to create a climate of hard and sustained work and in this way demonstrate that a much greater progress is possible even with a comparatively smaller investment of funds."*

*From the Convocation Address delivered at the Aligarh Muslim University, 29th March 1967.

M 3(VI)—TECHNICAL HIGH SCHOOLS UNDER TECHNICAL EDUCATION

Suggestion : Government of Maharashtra

At present the scheme of Technical High Schools (Development and olidation) is considered at the Government of India level as a scheme er "General Education".

Chapter XV of the report of the Education Commission (1964-66) states semi-skilled and skilled workers are being trained principally in the In- rial Training Institutes. The other main form of full-time Technical cation for skilled workers is the junior technical School and the longer blished technical high school which gives general education and techni- training including workshop practice. It has been mentioned in the pter that technical high schools are popular in Maharashtra.

It has also been recommended in the Report of the Education Commis- that the Junior technical schools (the word Junior serves no purpose) gwith the existing technical high schools, may be unmistakably gned as schools for the training of skilled workers and as such made active to students and employees and not be regarded as a poor alternative general Secondary Education. The courses offered in the technical high ools (including re-designated junior technical schools as technical high ools) should be clearly terminal and adjusted through the greater use of ilable time to meet the requirement of the Apprentices Act (the regulation which would be amended to accept those qualifying from such schools) lead to trade certificates. The length of these courses need not be a stan- dised three years but may vary from course to course with a strong empha- on experimental work and applied sciences in all these schools. The ucation Commission has suggested in a footnote that technical high ools in Maharashtra may continue to experiment with a general technical rse as well as an alternative preparation for higher studies.

The question regarding re-organising the syllabus of technical education econdary level has been engaging the attention of the State Government. hen the scheme is finally adopted, it will be introduced in the secondary ools with a technical bias, junior technical schools and vocational high ools. The re-organised pattern envisages making the technical stream more ltful, permitting the students going through this course to join the science leges for a first degree course as well as polytechnics for diploma courses in ineering.

When the revised scheme is introduced, the students undergoing the cou- will complete training up to the level of one year's course of basic training der the Apprentices Act and will be eligible to take up apprenticeship. present in the case of factories employing less than 500 persons the basic ining of one year is the responsibility of Government while the factories ploying over 500 persons have to make their own arrangements for basic ining. With the basic training completed at the S.S.C. stage, the difficul- of industries will be overcome.

It will thus be seen that the proposed revised pattern of technical high schools is geared to the apprenticeship training programme and closely related to the training in an Industrial Training Institute.

The technical high school scheme is at present being considered by the Government of India as a scheme under "General Education" whereas the scheme of junior technical schools is classified under the development head "Technical Education". For the sake of uniformity, therefore, and taking into account the fact that the scheme is more akin to "Technical Education" it needs to be accommodated for under the sector in technical education.

The provision for technical high schools is made under "General Education". It is likely that on account of paucity of funds, adequate provision may not be made for technical high schools particularly as there are more pressing schemes under "General Education". If they are provided for under technical education, they will get the attention they deserve and full provision will be made for them.

ITEM 3—(VII) PROGRAMMES FOR THE DEVELOPMENT OF GIRLS EDUCATION

(a) Expansion of the Education of Girls at the Lower Primary Stage

As recommended by the Education Commission, it has been accepted as a target that good and effective education of five years' duration should be provided for all children in the age-group 6-11, by 1975-76. This has to be achieved largely during the Fourth Plan which will cover the period from 1969-70 and 1973-74.

This programme is almost equivalent to expanding facilities for the education of girls in the age-group 6-11, as the enrolment of boys in this age-group has already reached 93% as shown in the Second Educational Survey. Thus 80% of the fresh enrolment will be that of girls during the Fourth Plan period. The enrolment of additional girls at the lower primary stage thus becomes a programme of a very high priority in the Fourth Plan and at least 90% of the girls of the age group 6-11 should be enrolled in classes I-V during the plan period.

To raise the enrolment of girls to this level during the Plan period, special measures will be necessary except perhaps in the States of Kerala and Madras where it is already 11% and 86% respectively. Generally a district approach will be necessary as the position varies much from district to district. In a State like the Punjab, for instance, the percentage of girls in primary schools and lower primary schools varies from 37 in Bhatinda district to 94 in Hoshiarpur district. The approach may have to be decentralised even to village level within a district as conditions often vary significantly from village to village even within a district. The District Educational Officers should be entrusted with the preparation of development plans for the district and the schools within it, which should take special note of the enrolment of girls and of the progress of girls' education where it is lagging behind. It would do well to involve local inspecting officers, senior headmasters and representative members of the public in the preparation of such development plans.

The following special measures are suggested:

Organisation of enrolment drives at the beginning of each new academic year in backward districts and villages.

Introducing a system of incentives to teachers in specific areas where girls' education is backward in the form of allowances or prizes for participating actively in bringing about the progress of girls' education through creating public opinion in favour of it and through persuading parents to send their daughters to school and, most of all, through creating conditions in schools which will ensure regular attendance and progress.

Establishing advisory school committees for all primary schools and through them associating the local community with the working of each primary school, improving the enrolment and the general education of girls in the schools being one of their important responsibilities.

Making systematic attempts to vitalise teaching and other activities in primary schools, through setting up school complexes, holding school improvement conferences, refresher courses and discussions of primary teachers.

(b) PREPARING GIRLS FROM RURAL AREAS TO WORK AS PRIMARY TEACHERS BY PROVIDING EDUCATION AND PROFESSIONAL TRAINING, THROUGH A SYSTEM OF SCHOLARSHIPS.

The enrolment of girls in rural schools will increase very substantially during the next five to ten years. The number of women primary teachers working in rural areas will therefore have to be substantially increased during the same period, partly to stimulate such enrolment and partly as a consequence thereof. While efforts to persuade and encourage urban girls to work as primary teachers in rural areas should continue, this problem cannot be satisfactorily solved unless a big effort is made to train rural girls as primary teachers. The following programmes should be developed, on a priority basis, in the new Fourth Five Year Plan.

Establishment of more middle and secondary schools in rural areas

Separate schools for girls are needed at the middle and secondary stages in rural areas. Government should therefore take steps to establish more middle and secondary schools in rural areas by relaxing, as a transitional measure, the minimum requirements laid down regarding the enrolment in each class or in the school as a whole. In addition, the grant-in-aid codes should be amended to provide liberal grants-in-aid, even on a 100% basis, to voluntary organisations that may be prepared to establish and conduct such schools in rural areas. Hostel facilities should be provided where necessary.

Scholarships

A system of scholarships should be introduced for rural girls at the middle and the secondary stages to enable them to continue their education. The target to be reached should be to institute about twice as many scholarships as the annual requirements of teachers. No undertaking need be taken from the girls or their parents about their joining the teaching profession but there should be a broad understanding to this effect. If a girl shows good progress and decides to join the teaching profession and work in rural areas, the State should undertake to provide her training and a teacher's job.

(c) PREPARATION OF GIRLS FOR DIFFERENT VOCATIONS

The vocationalisation of the secondary stage with a view to diverting students into different walks of life will be a major programme in the new Fourth Plan. In working out details of this programme, adequate provision should be made for providing suitable vocational courses for girls. More I.T.I.s should be established for girls with courses suitable to girls.

(d) INCREASING EMPLOYMENT OPPORTUNITIES FOR WOMEN

Deliberate efforts have to be made to increase the employment opportunities for women. In sectors like teaching, medicine and social service, the recruitment of women will have to be increased to higher levels. In other sectors, new openings for the employment of women will have to be found.

Special measures should also be adopted to provide more part-time employment opportunities for women. For this purpose, part-time employment should be regularised and given the same status as full-time employment with comparable scales of pay, retirement benefits like provident fund or pension and service conditions relating to leave etc. The National Council for Women's Education should sponsor necessary studies for part-time employment opportunities with adequate financial assistance from the Ministry of Education and should take steps to make part-time employment possible through contacts with employment agencies.

(e) Special Machinery for the Education of Girls and Women

In view of the special attention that the promotion of the education of girls and women requires, special machinery should be set up in each State as well as the Centre to take measures for the development of girls' education and to watch over the progress, as suggested by the National Committee on Women's Education. There should be a high level office-in-charge of girls' education, with adequate office establishment and a specific budget allotment, at the State as well as at the Central level, whose work should be properly coordinated with the work in the different sectors of education. The National and the State Councils for Women's Education should guide the work of the special officers in an advisory capacity and it should be seen that their suggestions are implemented.

(f) Increasing Facilities for Pre-school and Adult (Social) Education

An integrated approach to education is essential if progress is to be achieved at any particular stage of education. The expansion and improvement of primary education will need the supporting programmes of pre-school education at one end and adult education at the other. While pre-school education will make the children mentally alert and prepare them for schooling, the education of the adult will make the parents realise the value of education and create in them a desire to educate their children. Such programmes will also provide full-time or part-time employment for many educated women who remain unemployed at present and enable them to utilise the education they have received.

ITEM 3--(VIII) REDUCTION OF DROP-OUTS (SHRI J. M. LOBO PRABHU)

Drop-outs imply not only personal loss of education but social loss of more than half the investment on primary education. Owing to the relation of grants to schools on the basis of enrolment previously and currently to supply of statistical support to the claim for educational progress and largely to the attraction of midday meals. the attendance at primary schools is deceptive. The indifference of the teachers to the quality of their work, which is not judged for their promotions, is another cause for the failure to impart literacy.

The solutions : (1) Where the law of compulsion exists, apply it first to drop-outs, so that they do not leave school till they are literate and the value of the money spent on them is realised. In fact, not to enforce this much is a serious failure of the law, bringing it not only into ridicule but creating a sense of injustice in the helpless parents punished for not enrolling their children; (2) A bonus to teachers and schools related to a minimum of drop-outs and progressively enhanced for further reduction. This may be a Central contribution, in whole or in part; (3) A public examination for each at the end of the primary stage to correctly assess drop-outs and to create visible standards for literacy which may have a psychological significance; (4) Amendment of Constitution to restrict franchise only to the literate as evidenced by their passing their primary stage examination. Enforcement may be after ten years so that there is no retrospective effect on those in primary stages before the law was passed.

ITEM 3—(IX) : IMPROVEMENT IN THE EMOLUMENTS OF TEACHERS (SHRI J. M. LOBO PRABHU).

The salaries of teachers have not only been unrelated to inflation but even to the increase in the salaries of other staff. Teachers have no income from corruption while income from private tuitions is very limited in rural areas. If for inescapable financial reasons salaries of teachers cannot be brought immediately on level with those of other comparable government employees, the following reliefs may be introduced:

(1) Bonus related to reduction of drop-outs and other criteria of efficiency;

(2) Examination fees for the examinations to be held at the end of the primary stage;

(3) Allowances for extra-curricular work in community development, library service, adult education etc.;

(4) Selection grade at 10 per cent of the cadre strength in all classes of service; and

(5) Share in the net income from farms attached to schools. As State Governments may not be interested, matching grants from the Centre are required.

ITEM 3—(X): CONTROL AND RATIONALISATION OF THE EXPANSION OF HIGHER EDUCATION IN THE COUNTRY

(Suggestion by Dr. Samuel Mathai).

At present there are no strict controls in such matters as age of admission to university courses, entrance qualifications, conditions of affiliation of colleges, selection of teachers, etc. The result is that there is a wholly unplanned growth in the university population,and many sub-standard colleges have come into existence. In many instances what goes on in the name of college education is an elaborate fraud.

This expansion is leading to considerable wastage of resources. In many places the student community is largely drawn from the immediate neighbourhood and many of the teachers too are local people. This means that poorly qualified students are admitted and teachers not infrequently have the barest of qualifications. Many of the students never make the grade and the time and money spent on them are wasted.

In many institutions there are corrupt practices like taking unauthorised fees from students and unlawful donations for teachers from appointment or confirmation. Education becomes a racket. The circulation of money in unproductive activity of this sort does harm to the country.

ITEM 3(XI) A PROGRAMME OF YOUTH SERVICES IN THE FOURTH FIVE YEAR PLAN

Report of a Study Group Appointed by the Ministry of Education

MEMBERS OF THE STUDY-GROUP

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2. Dr. S. K. Hulbe, Director of Rural Projects, Ahmednagar College, Ahmednagar
3. Dr. Mohan Sinha Mehta, Seva Mandir, Udaipur
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5. Shri J. P. Naik, Adviser, Ministry of Education
6. Shri K. G. Prabhu, Hony. Adviser, Civilian Rifle Training Scheme, Ministry of Home Affairs, Ahmedabad
7. Shri Radha Krishna, General Secretary, Serva Seva Sangha, Varanasi.
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10. Dr. S. N. Saraf, Director, Education Division, Planning Commission, New Delhi
11. Shri H. K. D. Tandon, Deputy Secretary, Planning Commission, New Delhi
12. Shri N. M. Tagore, Assistant Educational Adviser, Ministry of Education . . . . . *Secretary*

A PROGRAMME OF YOUTH SERVICES IN THE FOURTH FIVE YEAR PLAN

SCOPE OF THE REPORT

1. We were requested to indicate the broad outline of a programme of youth services for inclusion in the Fourth Five-Year Plan, the tentative financial ceiling suggested being Rs. 25 crore. Our proposals in this regard have been described in the paragraphs that follow.

2. It is necessary, at the very outset, to indicate the scope of our proposals. Youth services and welfare is a very comprehensive term. It includes student youth as well as non-student youth. In addition to programmes which provide good education and satisfactory employment—the two major needs of all youth—it also includes those services which will help students to study better or to seek better employment. In the present context

of India, it should also include programmes which will strengthen the bonds between the educated people in the different regions of the country and between the educated people and the masses in the same region. As it was not possible, nor necessary, to cover this vast area, we decided to deal with the following matters only :

(1) Guidance and counselling;

(2) Provision of health services ;

(3) Provision of supporting services for study such as establishment of study centres or textbook libraries ;

(4) Establishment of youth centres ;

(5) Programmes of national integration or social and national services ; and

(6) Services which the educational institutions can provide for non-student youth.

3. Full-fledged guidance centres have already been established in some universities such as the M. S. University of Baroda. Such centres should be established in more universities during the Fourth Five Year Plan, the target being to establish a centre in all universities where the resident student population on the campus is about 5,000 or more.

4. Other universities and colleges should also be assisted to provide some services of guidance and counselling through (a) suitable training provided to their teachers, (b) appointment of specialised staff, where feasible, and (c) grants for the small recurring expenditure connected with the programme. Suitable training programmes for teachers should be organised and assistance should be given to institutions for deputing teachers to such courses. Grant-in-aid should also be available for payment of salary or allowances to trained teachers who devote extra time to guidance and counselling work. Assistance should also be given to groups of colleges which may establish jointly a guidance and counselling centre for the benefit of their students.

5. Arrangements should be made to provide proper orientation to all students who enter university or colleges for the first time. Universities and colleges should be assisted for the purpose.

6. At the secondary school stage, a programme of guidance and counselling should be developed on the broad lines recommended by the Education Commission. That is to say, a certain elementary course in guidance and counselling should form an integral part of the training of every teacher. Wherever possible, trained career masters should be appointed. Groups of Secondary schools may also be encouraged to establish a centre for guidance and counselling in common. Assistance should be available for training of teachers of secondary schools for this programme as well for payment of salary and honoraria to those trained teachers who have to devote extra time to this work.

HEALTH SERVICE

7. It is necessary to develop a programme of health services, both at the university and secondary stage.

8. At the university stage a programme has already been taken up for the establishment of outdoor dispensaries or in firmaries for hospitalization of students where necessary. The medicines etc. supplied to the students under the programme should not be entirely free but should be subsidised to the extent necessary. In addition to this remedial work, it is necessary to develop a programme of health education, guidance and preventive work. Existing health centres should be developed and expanded to take up these new responsibilities and new centres should be established, the target being to cover all universities and major colleges, say with an enrolment of 400 or more.

9. Health services, both preventive and remedial should be developed under a suitable scheme of grant-in-aid, in selected secondary schools. The target should be to cover at least five secondary schools in each District.

10. Health centres doing preventive and educational work should be established for non-students also who in fact, need them even more. A beginning may be made by establishing a few centres in every State, the target being to establish at least one such centre in every District by the end of the Fourth Plan.

11. Health services should include the provision of subsidized food to needy students. A reasonable target will be to provide this service to about 5 per cent of the total enrolment.

SUPPORTING SERVICES FOR STUDY

12. It is necessary to organise special services which will help students to study better. These will include (a) providing an adequate access to textbooks for all students ; (b) providing day-study centres by utilising buildings of existing schools and constructing additional buildings, if necessary ; (c) making arrangements for students to stay in existing buildings of educational institutions by converting them into dormitories at night ; (d) arranging programmes in vocations in order to assist the students in their studies or for development of their aptitudes and abilities ; and (e) making suitable arrangements for guidance to the brighter students and developing programmes under which the better students will assist the weaker ones in their studies under a supervised programme.

PROVIDING ACCESS TO TEXTBOOKS

13. A large number of students do not have any texbooks; some have only a few of them; and it is only a minority of students who possess all textbooks. Similarly, only a small proportion of students gets all their textbooks in the beginning of the academic year and many students get them very late, not infrequently one or two months before the examinations. In order to improve standards, this situation has to be radically altered and efforts will have to be made to see that every student has all the textbooks he needs at the beginning of the academic year or, at any rate, has adequate access to them in textbook libraries which should be built up in all institutions.

14. Every educational institution at the secondary and university stage should be encouraged and assisted to develop a programme with this objective in view. Book grants may be given to needy and deserving students or what is better still, textbook libraries should be built up in all educational institutions and stocked with adequate number of copies of all textbook.

These books should be available for study in the library during working hours and also for being lent to students. A suitable scheme may be devised under which the cost of such textbook libraries can be met from (a) a certain contribution made by each student, (b) contributions from the management of the school or the local community, and (c) a grant-in-aid from the State Government. The grant-in-aid should include an adequate amount as a non-recurring grant given initially and also a recurring grant for maintenance as well as for normal expansion. The target should be to cover all the university departments of education and 50 per cent of colleges and schools with textbook libraries before the end of the Fourth Plan.

DAY-STUDY CENTRES

15. One type of a day-study centre is to put up a separate building where students can come and study during the day. These centres should have adequate textbook libraries, sanitary arrangements, and subsidized cafetarias. Such centres are badly needed in urban centres where a group of colleges or schools can share them in common.

16. Another way to organize day-study centres is to utilise the existing buildings of educational institutions for this purpose. This will be possible in all cases where the institution does not run on a double-shift basis. This will also be cheaper than the establishment of separate day study centres on the lines indicated above. The possibilities of developing this programme should therefore be fully explored.

DAY-AND-NIGHT STUDY CENTRES

17. Yet another form of Study Centres is to conduct them round the clock, so that the buildings of the educational institutions are not only used as study centres during the day but are also used as dormitories at night. When no heavy furniture is kept in the classrooms, it is easy to use them as dormitories at night, provided a stack room is available to keep the beddings of the students during the day. Where the classrooms have heavy furniture, sleeping accommodation is provided on folding berths which are put up on the walls. Adequate sanitary arrangements are, of course, essential. Under this arrangement the students go home only for meals and spend the rest of the time in the school building itself. For instance, they come to the school building after supper at about 9 p. m., study and go to bed. They get up early morning and study till about 9 a. m., then go home for meals and come back again when the school reopens at about 10.30 a. m. or so. With a small building grant, it will be possible to make the buildings of all educational institutions suitable for these programmes.

18. All the three types of study centres suggested above are of immense use to children from the poorer sections of the society who have no adequate facilities for study at home. Their advantage is increased further if arrangements can be made for some supervision and guidance which can easily be arranged by distributing the work among the members of the staff of the institution on payment of a suitable remuneration. It is therefore suggested that such study centres should be established in all areas wherever they are necessary—and especially in urban slums and that a suitable recurring grant-in-aid should be given to all the educational institutions conducting them.

VACATION PROJECTS

19. A large majority of students do not use their vacations to the best advantage and it is necessary to devise programmes to enable them to do so. The following are some of the programmes that educational institutions can organise during vacation for this purpose :

(1) Keeping their libraries, laboratories and craft-sheds open during the vacations for use by students who desire to catch up with their studies or to pursue their own individual interests in depth ;

(2) Keeping the libraries, laboratories and craft-sheds open, for similar use, by students of other educational institutions where such facilities might not be available ;

(3) Organizing day-and-night study centres at least during the vacations;

(4) Organising visits to places of interest ; and

(5) Organising special courses for students (e.g. courses for students who might have failed in the annual examination in one or more subjects and who would like to complete their studies during the vacation and appear for the examination again at the beginning of the next academic year ; courses for students who have completed secondary school and desire to strengthen their knowledge of subjects like English to help them in their studies at the university stage ; etc.)

A suitable system of grant-in-aid should be devised for institutions which organize such vacation projects.

SPECIAL ASSISTANCE TO BRIGHT OR RETARDED STUDENTS

20. It should also be a regular feature of the educational system to provide special assistance to bright students. In the rural areas, where there is generally only one institution of a type, this programme will have to be developed by the institution itself. In urban areas, however, programmes of this type may be developed by individual institutions or by a group of institutions in common. There is also scope for a special organisation, official or non-official being set up for the purpose. Such programmes should be encouraged through financial assistance and guidance.

21. Educational institutions should be encouraged and assisted to provide special guidance to retarded students on a regular basis. It will be a good idea if the assistance of the brighter students is taken in providing guidance to retarded students. If possible, they should be paid a suitable honorarium which would then practically become a scholarship on an earn-and-learn basis. This programme has great significance and the possibility of developing it in a big way should be fully explored.

YOUTH CENTRES

22. The Government of India should establish youth welfare centres in large cities such as Delhi, Bombay, Calcutta and Madras. Their scope should be comprehensive and cover a large variety of activities—recreational, cultural, literary or artistic—organised at a high level of efficiency. They should have experienced and trained professional staff. They should also provide training courses for youth leaders and workers in various fields of youth welfare and conduct research in the needs and problems of youth—student and non-student.

23. The centre should be provided with ample grounds, suitable buildings, adequate equipment, including modern amenities and appliances. They should naturally serve the youth of the city in which the centre is located. But they should also be open to young people from other places for visits, observations, training courses, etc.

24. A special study group should be set up immediately to work out details of the project for the establishment of these youth centres. Its report should be available to Government before the end of the current year so that it will be possible to initiate the programme in 1969-70 the first year of the Fourth Five Year Plan.

PROGRAMMES OF NATIONAL INTEGRATION OR SOCIAL AND NATIONAL SERVICE

25. It has been decided to organise a National Service Corps (N. S. C.) or National Sports Organisation (N. S. O.) as an alternative to N. C. C. This is a progressive step. The programme should be actively pursued and vigorously developed at the university stage.

26. It is necessary to emphasise programmes of national integration. One important programme in this category should be to give an opportunity to university students to visit other parts of the country to see important centres study special aspects of national life related to their studies or to participate in programmes of national or social service. This will need provision of funds for (a) travel expenses and (b) boarding and lodging arrangements. These should be provided by the Ministry of Education and made available to universities and colleges participating in the programme through a suitable system of grant-in-aid.

27. Three important suggestions can be made in this regard : (1) It should be a privilege for the student to be selected for participation in this programme. There should, therefore, be an appropriate method of selection under which students who have excelled themselves in different activities such as studies, games and sports, social or national service, extra-curricular programmes, etc. are selected on the basis of their performance for participating in this programme.

(2) In any given area, the responsibility of receiving the students who come from other parts of the country, of looking after their comforts, of making necessary arrangements for their programme, etc. should be vested, as far as possible, in local organisations of students themselves.

(3) The cost on boarding and lodging should also be reduced, to the extent possible, by providing for the residence of the visiting students, at least for a part of their stay, with local families.

28. The programme will have an impact only if it is organised on a big scale. It may be begun with about 10,000 students in 1969-70 and reached with a figure of 100,000 by the end of the Fourth Plan.

29. It is necessary to train leadership for programmes of the type indicated above. It will be necessary to select teachers for the purpose and to train them. In addition, the scheme of *Vikas Dal* which was drawn up by Shri Asoka Mehta for this purpose should therefore be implemented.

SERVICES FOR NON-STUDENT YOUTH

30. The numbers of non-student youth are so large and their needs so varied that all the concerned Ministries of the Government of India and the corresponding Departments of the State Governments will have to be actively involved in the programme. In so far as the Ministry of Education at the Centre and the Departments of Education in the States are concerned, they should undertake a responsibility, namely, to make the facilites in educational institutions available to the extent possible, for providing certain services to non-student youth.

31. It is true that the needs of the student youth have the first priority on the resources of educational institutions. But in many cases, they will be able to provide, without prejudice to its primary responsibility, some significant services to non-student youth also. These, for instance, may include :

(1) Organisation of continuation education at the appropriate level (*e. g.* secondary schools may organise continuation education for those who have completed the primary school ; agricultural schools may organise part-time courses for young farmers ; polytechnics may organise part-time or evening courses to workers of different categories etc.);

(2) Organisation of recreational and cultural programmes ;

(3) Development of guidance services ; etc.

32. Such services will have several advantages and will be of particular use in bringing the school and the community together. The State Education Departments should therefore encourage and assist educational institutions to undertake whatever programmes they can for non-student youth on the basis of a study of their felt needs. A suitable scheme of grant-in-aid should be included in the Fourth Five Year Plan for this purpose.

FINANCIAL ESTIMATES

33. The following are the rough financial estimates of the proposals outlined above :

	(Rupees in Lakhs)		
	Total	Centre	State
1. Campus Work Projects (This is spil-over expenditure only)	15.00	15.00	..
2. Counselling and Guidance	50.00	..	50.00
3. Health Services	100.00	..	100.00
4. Supporting Services for Study	200.00	..	200.00
5. Youth Centres	85.00	85.00	..
6. National Integration	300.00	300.00	..
7. Services for non-students	100.00	..	100.00
8. National Service Groups and Vikas Dal	1550.00	1550.00	..
9. Planning Forums	100.00	100.00	..
	2500.00	2050.00	450.00

ITEM 4 : IMPLEMENTATION OF THE NATIONAL POLICY ON EDUCATION

ITEM 4-(ii) UNIFORM PATTERN OF COURSES IN UNIVERSITIES IN INDIA (SUGGESTION, GOVERNMENT OF MYSORE)

It is highly desirable to evolve and implement in all the Universities of various States, a common pattern of General Education (Pure and Applied Sciences and Humanities) at the undergraduate level. With the introduction of a uniform pattern in the courses of studies and common syllabus, the students will be enabled to derive the advantage of prosecuting their studies in any University without subjecting themselves to any hardship if they have to change the Colleges during the course of their studies. It is neither desirable nor always possible to bind the students to any particular University until they complete their courses of studies. At this level there does not appear to be any need to have variety in curricula. Further the facilities extended in the direction of mobility of students from one university to the other university and also from one State to the other will promote emotional integration and national unity. Other advantages are :

(1) Common textbooks at low prices. As a large number of books may be sold the price can be kept low. The best authors can reach more students.

(2) A student can get the benefit of studying in two ore more Universities and come in contact with the best teachers in the country in a given subject.

(3) A student who is compelled to get admission in a far away University in the first year of the 3 year Course can come back to a college nearer home. Seats are usually vacant at the 2nd and 3rd year of the courses.

(Item 4-(iii) to (vi) : Items suggested by Shri Anil Mohan Gupta)

ITEM 4-(iii) : AUDIO-VISUAL EDUCATION : (a) AT THE SECONDARY STAGE AND (b) IN ADULT EDUCATION

We do often say that we have too few good teachers in our schools, and especially good science teachers. No qualitative improvement is possible without good teachers and we want to concentrate on qualitative improvement during the Fourth Plan. We cannot hope to get an adequate supply of efficient and honest teachers within a short period of time. We can greatly improve the quality of our existing teachers by helping them with effective teaching aids. The most important among such aids are films and film-strips. The Government of India may prepare a series of educational films and film-strips and supply selected secondary schools with them. In West Bengal there are schools which have been given projectors and magic lanterns. But suitable films and film-strips are wanting. We may utilise the services of our best teachers for the purpose and create conditions for equality of educational opportunity in our schools.

Films may be used as one of the most important media of adult education. So far as I can see this has not received adequate attention of the Government. Educational institutions are often obliged to screen American, British, Japanese, Canadian films, even if they are not quite suitable, because they are readily available in adequate numbers while Indian educational films are rare and scarcely available. If the Films Division cannot solve the problem the Education Ministry should set up its own unit for the purpose.

ITEM 4-(iv) : EXAMINATIONS

If we are to aim developing the total personality of our pupils the present system of examinations must go, for it is absolutely incapable of measuring such developments. But in order to build up a new objective-based system of examination there must be intensive and extensive experimentation. The Ministry of Education, in collaboration with State Governments, should develop some experimental schools in every State. The results from these schools should be collected and processed by the S. I. E's and the N.C. E. R. T. which should be guided by such experimental data in formulating their conclusions.

SUPPLEMENTAL NOTE TO ITEM 4-(IV) ON EXAMINATIONS

If there is any single factor that is thwarting all our efforts for educational progress in India it is the examination system prevailing in the country today. The problem is not a new one. The Central Advisory Board of Education had been very much alive to the pernicious effects of this system almost from its very inception. In its sixth meeting held at Madras in 1941 Dr. Sir Zia-ud-Din Ahmad brought forward a resolution for setting up a 'permanent sub-committee' of the Board for "Examinations". The Board asked him to submit a memorandum stating specifically the issues which in his opinion should be referred to the proposed committee. In the seventh meeting of the Board held at Hyderabad in 1942 Dr. Ahmad submitted his memorandum. In his memorandum Dr. Ahmad mentioned about the worldwide dissatisfaction with prevailing systems of examination in various countries in the nineteen thirties. Other countries are constantly trying to reorientate their systems of evaluation. But what have we done ? In this connection it is worth remembering some of the remarks of Dr. Ahmad. "There is a general belief in this country", he said, "that persons turned out by the old schools were more thorough and the knowledge of students now produced by modern schools and colleges is superficial and sometimes defective. This superficiality is due not so much to the Western method of education as to the Indian system of teaching and examination. Teaching is subordinated here entirely to examination". "The method of judging the ability of a candidate by adding the marks obtained by him in the different questions of examination paper, written within a limited time", he remarked, "is misleading and pernicious", "There exists,' he concluded, "at present universal discontentment against examinations as they are now conducted. What then is the remedy ? No abolition, but radical alteration after scientific enquiry. Examinations are necessary and inevitable, but they have unfortunately been misapplied and have become pedantically mechanical in their assessment of excellence". The Central Advisory Board of Education adopted Dr. Ahmad's resolution and created an "Examinations" sub-committee.

The Board considered the report of this sub-committee in its 8th meeting held at Lucknow in 1943 and adopted its recommendations. The most important recommendation of the Committee was "that the number of external examinations which may be necessary to retain at the end of certain stages of education should be reduced to a minimum. In all cases an examination should be regarded as a servant and not a master of the curriculum". The Committee wailed that "both the aim and the technique of external examinations as at present conducted have been subjected to serious and valid criticism in recent years but in spite of this a new system which can be accepted as generally satisfactory has not yet been evolved".

A quarter of a century has elapsed since then but we are, for all practical purposes, where we had been and we are yet to evolve a satisfactory system of evaluation. I mention all this not merely to dig out some historical facts of archaeological interest but to point out that the gangrene that is eating into the vitals of the Indian educational system had long been diagnosed but we have not been bold enough to remove it. It is still there creating ever-growing confusion and breeding newer types of corruption.

The Mudaliar Commission discussed the problem in detail and suggested some definite remedies. "We are convinced", the Commission remarked, "that our system of education is very much examination-ridden." "The examinations today", the Commission concluded, "dictate the curriculum instead of following it, prevent any experimentation, hamper the proper treatment of subjects and sound methods of teaching, foster a dull uniformity rather than originality, encourage the average pupil to concentrate too rigidly upon too narrow a field and thus help him to develop wrong values in education". These are serious charges indeed and we all seem to have agreed that these are true.

But in spite of these findings and consequent recommendations the actual situation has not much improved. Kothari Commission has admitted that "instead of creating incentives for better teaching, the external examination intended for all will saddle teachers with standardized programmes and encourage the process of rote memorisation, which is the besetting evil of teaching and learning method in our schools today". One is surprised to find that, in spite of such clear understanding of the situation, the Commission has recommended too external public examinations in course of two successive years, for years to come, at the end of the school stage.

The Commission has referred to the achievements of the Central Examination Unit. I have been told by responsible persons in the Curriculum and Evaluation Department of the NCERT that a lot of ground has been covered by them during recent years. They have refined and standardized various tests and these have, I am told, received wide acceptance. In spite of the fact that, as a school teacher, I have felt no impact whatsoever of these happenings in my State. I do believe them implicitly. The Mudaliar Commission opined that "as at present conducted examinations do not help us to evaluate correctly even the intellectual attainments of the pupils" and recommended research. I am happy that the NCERT has taken it up in all earnestness.

But even if we can perfect our tools for measuring intellectual attainments through external examinations we will be able to touch only a fringe of the problem. Let us consider the imaginary cases of four boys getting

first divisions and securing 625 marks out of a total of 1000 each. One of them may be a very intelligent but lazy and irregular person who has scored much below his intellectual standard. Another may be an intelligent but dishonest person who has taken recourse to some unfair means. The third may be an average young man who is extremely sincere and hardworking The fourth may be just another average boy, quite ordinary, but with a big slice of good luck. An external examiner can hardly discern these and similar personality traits. No employer or authorities of any higher educational institution can read these vital differences from the cold and dumb marks on the marksheet. Yet these are the most important facts they must know if they are to choose the right person for the right type of activity. In my opinion, most of our miseries and failures owe their origin to the fact that we have attached undue importance to intelligence ratings neglecting other personality traits which are of far greater importance in our lives and for our social well-being. Our National Policy on Education demands that our educational system must produce young men and women of character and ability committed to national service and development If we accept this as our objective we can ill afford to forget that "The School of today concerns itself not only with intellectual pursuits but also with the emotional and social development of the child, his physical and mental health, his social adjustment and other equally important aspects of life in a word, with an all round development of his personality. If examinations are to be of real value they must take into consideration the new facts and test in detail the all-round development of pupils". (Mudaliar Commission)

Kothari Commission has fully analysed the objectives and the Nation has formally accepted them. Now it is our duty to firmly state that our evaluation must be objective-based. We shall certainly aim at the utmost intellectual development of every child but this, we must remember, is only one facet of its total development and need not be given any undue importance. We must aim at balanced and harmonious development of the child—its physical, intellectual, emotional, social, moral and spiritual development and no aspect of its total development should suffer because of our concentration on any single aspect.

If we want to realise this objective, our evaluation must be continuous' as the Kothari Commission has rightly pointed out. Yet, unfortunately the Commission has pinned its faith in two public examinations at the end of class X and class XI for finally evaluating our school-going children. So long as these examinations are there and students are judged by their performances in these examinations, no real reform in teaching and learning process is possible. Our objectives will ever remain mere wishful thinking as they have have remained so long.

In order to break the ice we must, in my opinion, begin with the Experimental Secondary School Complexes. I have tried to explain my idea in my note on the "Education System : Structure and Curricular Pattern" and also in my memorandum submitted on the Kothari Commission. I would only plead that this idea is given the consideration it may deserve and a fair trial if possible.

I am convinced that if we want to see the objectives, so clearly enumerated by so many Committees and Commissions being realised, we must depend on our teachers. No one else can measure these developments and use their knowledge for removing the short comings and inspiring excellence.

"The only way to make the teachers' judgements reliable is to rely on them". Yet I know that, in spite of professions to the contrary, we do not trust our teachers. "No one can examine better than the teacher who knows the child, and a method of examination by the teacher, combined with school records would be devised which would furnish a certificate giving information of real importance to employer or college or profession, and yet would preserve intact the freedom of the school and would rid teacher and pupil of an artificial restraint imposed from without. As for uniformity of standards, even under the present conditions two apparently similar certificates mean very different things and illusory uniformity can be brought too dearly". This is what the Norwood Committee had remarked and we would, in my opinion, do well to remember this advice at this juncture of our progress.

I know there are many weaklings amongst our teachers, many who are not worthy of this exalted profession. If we believe that the destiny of the Nation is being shaped in its class-rooms we must weed out the unworthy persons. But we cannot, for that reason, remedy the evil by merely deploying an ineffective external examination, at the end of each stage of education, which can neither measure progress nor remove the defects but which breeds corruption and gags experimentation. If we want our educational institutions to work for excellence and excellence alone we must learn to respect internal continuous assessments and must try our best to make them really reliable and valid. This in my opinion, is of paramount importance.

If our schools are made responsible for evaluating the total development of their pupils we may introduce with profit some suitable external examinations for assessing the special abilities and achievements of our children. In my opinion the British type of external examination will be most suitable for the purpose. Students should be allowed to leave schools and step into life without compulsorily submitting themselves to any external examination. The detailed School Leaving Certificates should give educational authorities and prospective employers quite a clear picture of their developments and achievements. They may take examination in some subjects at various levels in accordance with their abilities, aptitudes and ambitions. The schools may thus be left free to work for excellence alone and not as factories mechanically preparing students for external examinations.

I refrain from saying anything about college and university examinations as I am, at present, not in close touch with them. But I am sure that the examination pattern of teachers' training colleges requires immediate and drastic changes.

The problem of examinations, I hope everybody will agree with me, is a vital one. The present examination pattern, it is universally acknowledged, is vitiating the entire educational system in our country and requires immediate and drastic alterations. Yet due to innumerable vested interests in the field, it has not been possible to change it effectively though the Nation had been made conscious of its pernicious effects for more than a quarter of a century. I do, therefore, feel that we should formulate a National Policy on examinations and this should be done as soon as possible.

I do, therefore, request the Central Advisory Board of Education to set up a sub-committee which should probe into the problem in all its aspects and place before the next meeting of the Board its recommendations.

The Central Government may then formulate a National Policy on the basis of the recommendations of the Board and, as the biggest employer in the country, should give immediate effect to them.

ITEM 4-(v) : AGRICULTURAL EDUCATION

In my opinion scientific agricultural education can best reach the farmers' sons only through rural primary and secondary schools and not through polytechnics and village level workers, as suggested by the Education Commission. Before setting up costly agricultural polytechnics we should think twice. These are becoming effective disseminators of agricultural education. But it will be catastrophic to discontinue the present system of teaching agriculture in our secondary schools before we perfect an alternative arrangement.

ITEM 4-(vi) : ANNUAL REPORT OF EDUCATIONAL PROGRESS IN INDIA.

The Ministry of Education, Government of India, should take up the responsibility of preparing such a report. It should not only include statistics but also details of every significant experimentation in the country.

ITEM 4-(vii) : EMPLOYMENT OF PERSONS BEYOND 55 YEARS IN HIGH ADMINISTRATIVE POSTS IN EDUCATIONAL AND SCIENTIFIC FIELDS

Dr. R. M. Kasliwal

There is a growing tendency among younger scientists and teachers to try and seek high administrative appointments as directors of institutes or vice-chancellors of the universities.

It is desirable to encourage such persons to engage themselves fully in their own specialised fields, and it is waste of talent to withdraw them from their respective fields of work for administrative posts where a more mature and experienced person who has reached the age of 55 years should generally be more useful. While prescribing the upper age limit of 65 for such posts, a lower age limit of about 55 years may also be prescribed so that the younger persons who have many more years to contribute actively in their field may not uselessly fritter away their energy in trying to enter these high administrative posts for which they could be eligible when they are in the age group of 55 years or above.

Under these circumstances it is hereby resolved that for all high administrative posts in educational and scientific fields such as vice-chancellors of universities or directors of institutes, persons with requisite experience and qualifications who have reached the age of 55 years or above should preferbly be considered.

ITEM 4-(viii) : PILOT PROJECT ON MENTAL HEALTH EDUCATION

Dr. R. M. Kasliwal

"Soma" and "Psyche" are the two component parts of a human being. While modern medical science and educational system are doing a lot to prevent bodily ailments and promote sound bodily health by the introduction of physical exercises, sports, games, etc., they are doing very little by way of preventing mental illness or promoting proper and fuller development of the psyche (mind).

In modern times when mind is subject to so much stress and strain, the significance of a proper mental training programme becomes all the more necessary.

Keeping this in view, a Mental Health Education programme for different sections of the population is recommended. Such a programme may be introduced at various levels—in high schools, colleges, universities, technical and professional colleges and for various sections of the society including the armed forces, thus covering up the whole adult population.

In this connection it may also be worthwhile to explore the utility of "Indian Yoga" to such a training programme. If accepted in principle, it may be undertaken as a pilot study first and if and when found useful it may later on be accepted as a part of the educational policy.

ITEM 4-(ix) : WORK EXPERIENCE IN AGRICULTURE

Basic education has failed because spinning, which is its central craft, is unrelated to the occupations of the majority of students. An evaluation of basic education, in comparison with ordinary education, should not be delayed as the poorer sections of the population, particularly in rural areas are being discriminated against. At the same time, the recommendation of the Education Commission for work experience through agriculture cannot be implemented without targets. All schools may be asked to apply for the available land. They may enter into partnership with agriculturists, if this is necessary to secure experience and finance, provided that the agriculturists follow the textbook on improved agriculture and allow the students to participate in the operations. The text book on operations may be prepared by the Centre, to be translated and modified according to the local conditions.

ITEM 4-(x) : THREE LANGUAGE FORMULA

It will be realistic to assume that non-Hindi States, with the exception of Gujarat and Maharashtra, will follow a two-language formula, till they have evidence that Hindi-speaking States are progressively implementing the three-language formula by adopting non-Hindi language other than Sanskrit and Urdu. The only prospect left now for Hindi is that it becomes a link language before it is the official language. In fact Hindi is now more a link language than an official language as there is not even one section in the Central Secretariat where Hindi has replaced English in notings. To improve the prospects of Hindi, it is necessary, (1) to remove the apprehensions which have risen as a result of Hindi becoming the official language before it is a link language in supersession of English, (2) to emphasise the affinity of all Indian languages through a common script, to show the common origin of many words in all languages. As resistances have grown against the Devanagari script because of its connection with Hindi, the Roman script, which has been found to expedite study in the Army, may be used; and 3. common Sanskrit words in all Indian languages may be emphasised, particularly by reducing local inflections.

ITEM 4-(xi) : REGIONAL LANGUAGE AS THE MEDIUM IN UNIVERSITIES

There is general resistance to it by the students as they cannot compete in examinations and employment with students using the English medium. As there is no possibility of all the universities taking to the regional medium

(which unfortunately is objectionable also on the ground that it reinforces regionalism) it will be fair that students everywhere are allowed the choice of English mediums.

ITEM 4-(xii) : BETTER TEXT-BOOKS

No uniformity in standards and inculcation of national consciousness are possible without uniform text-books in all the States. The Centre may have the originals prepared in English through competitions or through special teams. These will then be translated for each State. Printing will however be left to private enterprise to avoid the delay and mistakes which have been observed in Government productions.

(*Item* 4-(xiii)-(xv) : *Items suggested by Shri S. K. Vaishampayen, M.P.*)

ITEM 4-(xiii) : UNIFORM PATTERN OF EDUCATION

Now that the Government of India has adopted the draft of National Policy of Education it is necessary that every attention and all our energies are directed towards implementation of the same.

There is no dearth of ideas or of objectives in the field of education. What is needed is action in putting them through.

A certain degree of flexibility and variation is desirable in the development of education but this does not mean looseness or wide divergence.

Patterns of education vary from State to State —more at primary and secondary levels though at degree levels too certain marked variations exist. So it is high time that a broad framework of education for the country as a whole is evolved.

Differing patterns are harmful to the attainment of national standards, prove advantageous to certain sections of students whilst adversely affecting the others and result in imbalances and inequalities. So our first task in implementing the national policy must be to evolve a common 10+2+3 pattern of education for the whole country. A dateline must also be fixed for a complete switch-over by all the States.

ITEM 4-(xiv) : DETERMINATION OF AND GIVING EFFECT TO A COMMON PATTERN OF EDUCATION AND ACHIEVEMENT OF NATIONAL INTEGRATION MADE A CONCURRENT SUBJECT

Education being a State subject, patterns of primary, secondary and degree education vary from State to State. This has resulted in lack of direction and wastage in the field of education. Moreover, it causes great hardship to students in the prosecution of their studies and also to parents on transfer from one State to another.

Secondly, despite three reports on the three stages of education, the objectives of educational development have not been fulfilled. On the contrary separatist tendencies, sense of indiscipline and an attitude of disrespect to authority and democratic ways of life are on the increased among the younger generation.

The Union Government should therefore have the power to determine an integrated system of education and lay down the objectives of national integration.

Many States are not willing to allow the entire subject of education being made even a concurrent subject. They may, however, agree to transfer the power of coordination to the Centre. It is in this perspective that the proposal is placed for consideration.

ITEM 4-(xv) : CONSTITUTION OF STATUTORY BOARDS OF SECONDARY EDUCATION AND STATUTORY SECONDARY EDUCATION GRANTS COMMISSIONS

Secondary education is a vital link between the primary and collegiate education.

But in the growth of education in our country, secondary education has remained the weakest link.

Primary education, being the main concern of States, has received the attention needed. Collegiate education is being looked after by the University Grants Commission in the most endearing way. Secondary education has been receiving neither the attention nor the endearment from anyone.

Secondary education is therefore emaciated in form and content. There are Boards in States but except in one or two States these Boards are largely advisory. For grants and development, secondary education has to rely on different kinds of grant systems and vagaries of Education Departments.

So there is a need for statutory board of secondary education and secondary education grants commission on the lines of University Grants Commission for every State. This alone would give the necessary stimulus for the healthy development of this stage of education.

ITEM 4-(xvi) : SONS AND DAUGHTERS OR WARDS OF TEACHERS RETIRED FROM EDUCATION DEPARTMENTS TO BE GIVEN PREFERENCE FOR APPOINTMENT TO TEACHING POSTS UNDER THE EDUCATION DEPARTMENTS

The personality, competence and character of a teacher is the most vital factor which influences the quality of education and its contribution to the national development. This fact has been acclaimed by all. The question of status of a teacher in society has, therefore, assumed utmost importance in the present educational system and the educational authorities have started giving serious thought to it. In the report of the Education Commission, a number of measures have been proposed for the improvement of teachers' status but almost all of them involve high financial implications and in the present circumstances it appears to be difficult for any State to accept these recommendations particularly those which relate to the pay-scales etc. The Education Commission has also proposed certain welfare services for the teaching profession and also retirement benefits. The Commission has recommended that the normal retirement age for teachers should be 60 years and there should be provision for extension upto 65 years provided the person is physically fit and mentally alert to discharge his duties efficiently. In a State like Madhya Pradesh, where education has become mainly a responsibility of the Government and most of the teachers are

Government servants, rules applicable to other Government servants apply to the teachers also and they have also to retire at the age of 55 like other Government servants. The extension of the retirement age especially for teachers may be difficult so long as they are in the Government employ. The State Government has therefore considered certain other measures of giving relief to the teachers after their retirement. The best course can be to give preference in the employment in Education Department to the sons/daughters and wards of the teachers, who are deserving and desirous. This facility is being granted in certain departments of the Government of India like Railways etc. The State Government has no objection to giving this privilege to the teachers, sons and wards in respect of the recruitment in the teaching posts provided they fulfil the requisite qualifications. The hands of the State Government can be strengthened if this proposal is accepted by an all-India forum like the Central Advisory Board of Education and comes in the form of its recommendation.

ITEM 4-(xvii) : GUIDELINES FOR THE PRODUCTION OF UNIVERSITY LEVEL BOOKS IN INDIAN LANGUAGES, IN THE FOURTH FIVE YEAR PLAN

Introduction

1. The Education Commission (1964-66) recommended that the Indian langugaes should be adopted as media of education at the university stage. This recommendation was successively approved by the State Education Ministers' Conference (April 1967), the Committee of Members of Parliament on Education (July 1967) and the Vice-Chancellors' Conference (September 1967). The National Policy on Education (1968) also emphasises the need for adopting the Indian languages as the media of education at the university stage. To quote from the Resolution "The regional languages are already in use as media of education at the primary and secondary stages. Urgent steps should now be taken to adopt them as media of education at the university stage."

2. In order to implement the policy decision to change from English to the Indian languages as the media of education at the university stage, the Government of India have decided to assist each State Government to the extent of one crore of rupees during the five year period beginning from 1968-69. Under this scheme, assistance will be given to the State Governments on the basis of 75 per cent of approved expenditure; the remaining 25 per cent being the responsibility of the Governments. It will thus be open to a State Government to incur a total expenditure of Rs. 1.33 crores—1 crore to be contributed by the Central and 33 lakhs to be met by the State Government—for this purpose during the five year period in question.

Effective Implementation of the Programme

3. The effective implementation of the programme to change over to the Indian languages will depend principally upon the following four conditions :—

(a) A sufficient number of standard books and other reference literature must be available in the Indian languages as early as possible. The programme should cover not only translation of standard works but also original writing of books. In fact the emphasis should be on original writing.

(b) The production of standard books and other reference literature will, in turn, depend upon the finalisation of standard terminology in different languages in scientific, technical and other subjects. A review of the present position of terminology in different languages was made at a recent meeting of the State Language Officers. It was observed that many States have not so far taken concrete steps to adopt/adapt the terminology evolved by the Commission for Scientific and Technical Terminology. This should be done immediately so that writers and translators do not find it difficult to complete their assignments for want of standard terminology.

(c) To ensure effective use of books and literature to be produced under the scheme, it is necessary that the concerned universities prescribe them for approved courses at the under-graduate and post-graduate levels.

(d) Since the success of the proposed change-over to the Indian languages will depend on the support and cooperation of the teachers, it is necessary to make adequate arrangements for their training and orientation for this purpose.

Expenditure on Book Production, Teacher Orientation and Finalisation of Terminology

4. So far, the proposals received from the State Governments relates to translation or original production of books. No provision has been suggested either for the finalisation of terminology or for the training and orientation of teachers. It is suggested that of the total expenditure to be incurred under this programme, about 85% may be set apart for translation and production of books; 10 to 12 per cent for the training and orientation of teachers; and 3 to 5 per cent for the finalisation of terminology in the language concerned. In the case of Hindi-speaking States, no expenditure need be incurred on terminology, for they can readily adopt the terms evolved by the Commission for Scientific and Technical Terminology. In their cases, therefore about 85 per cent of the funds might go into the production and translation of standard books in Hindi and the remaining 15 per cent or so into the training and orientation of teachers.

5. It is hoped that States which have not so far provided for the finalisation of terminology and training and orientation of teachers will revise their proposals suitably. The other States which have yet to formulate their proposals may like to make suitable provision for these two purposes.

Machinery for implementing the Programme

6. Although the main implementing agencies of the present scheme will be the universities and other institutions of higher learning, it has been decided that assistance under the programme will be channelled through the State Governments. It will be for the State Governments to lay down suitable procedures for making funds available to the universities and other participating institutions within their jurisdiction.

7. Each State Government will have to set up a suitable machinery for implementing the scheme. Whether the required machinery should be a Government organisation or an autonomous body* is a matter primarily for each State Government to decide. The Ministry's own preference is for non-government autonomous organisations. A non-government organisation

*The term autonomous body means a society registered under the Societies Registration Act of 1960.

will, among other things, be more suitable for coordinating work with the universities which are autonomous organisations.

8. As an example of the kind of organisation to be considered, mention may be made of the autonomous organisation called "Rajasthan Gyan Vigyan Hindi Rachna Sansthan" set up by the Government of Rajasthan. The organisation has a Board of Management of 17 members of which the State Education Minister is the Chairman. There is a 5-member Executive Committee to attend to the day-to-day work of the organisation. For the technical guidance of the organisation, the State Government has proposed five specialist committees. The details of the organisation are given in the Annexure.

9. Another example of autonomous organisation is the Maharashtra Universities' Book Production Board set up by the Maharashtra Government. It consists of the following :—

1. Vice-Chancellor, Bombay University.
2. Vice-Chancellor, Nagpur University.
3. Vice-Chancellor, SNDT University.
4. Vice-Chancellor, Poona University.
5. Vice-Chancellor, Marathwada University.
6. Vice-Chancellor, Shivaji (Kolhapur) University.
7. Vice-Chancellor, Krishi Vidyapeeth (Bombay).
8. A representative of the Department of Education, Government of India.

10. The organisation should have the advice of as many advisory groups or committees including subject panels as may be found necessary.

11. The organisation to be set up by a State Government will have to be given necessary administrative staff. Since the present programme is of a temporary nature and is being sponsored by the Central Government only to fill the existing gaps in the university level literature in different languages, it is necessary that the staff to be appointed should be *competent* and *minimum*. The approach here has to be functional. A good example of this approach is provided by the proposal of the Maharashtra Government. To quote from a communication from that Government "The office of the Bureau should have the necessary administrative staff comprising one Office Superintendent in the grade of Rs. 300-20-500, one Account Clerk, one Senior Clerk, one Typist-clerk and one Library Clerk". Suitable provision will also have to be made for contingent expenditure and for travelling and other allowances of the administrative staff.

12. On a careful examination of the proposals received from the different States so far, the Ministry is of the view that expenditure on administration should in no case exceed 5 per cent of the total expenditure on the scheme.

Separate Subject Cells or Individual Job assignments

13. An important question is : who will translate or write the books ? Some State Governments have suggested the establishment of subject cells each cell to consist of say two lecturers, one reader and a linguist. The Ministry does not consider this approach to be functional or economical. In the first place, our universities and institutions are already short of competent teachers and to displace a large body of teachers from their normal teaching responsibilites will adversely affect instructional standards. Secondly, since this work is of a temporary nature, to create a large number of positions in special cells or units for the purpose, may create vested interests and other administrative problems later. The Ministry's considered view is that it would be far better to farm out translation and writing assignments individually or jointly to selected university teachers on the basis of approved rates of remuneration. These rates should be in conformity with the prevailing rates of that State or of its universities. Naturally the rates will vary from State to State. However, the Ministry does foresee the need to make the prevailing rates more attractive in those cases where the assignment is extremely difficult and may require the services of teachers or scholars with special experience. In such cases it should be possible to remunerate the authors or translators on a more liberal basis. Leave or any other special facilities required by the selected teacher could also be granted to them where necessary.

14. The foregoing discussion of the State machinery is principally from the point of translation and production of university level books. But the Ministry believes that where independent or more suitable organisations are not already in existence, the responsibilities for the finalisation of standard terminology in the language of the State and for the training and orientation of teachers to teach in the language of the State could also be entrusted to this machinery.

State Language Institutes

15. Some State Governments have suggested that they would prefer to entrust the production of university level books to their Language Institutes. Where this is considered to be the most satisfactory arrangement, the Ministry would surely have no objection to such a proposal. However, it should be recalled that the scheme of State Institutes of Languages is in the State Sector and is eligible only for 40 per cent assistance from the Centre. The present scheme, however, is in the centrally sponsored sector and is eligible for 75 per cent assistance. In case the responsibilities for implementing the present programme are entrusted to the State Language Institute, it will be necessary to maintain separate accounts for the present programme.

Printing, Publication and Sale of Books

16. Each State machinery will publish selected books by assigning the job to Government or private presses. Presses should be selected for their suitability for the job and for the competitiveness of their rates. Preference in Job assignment may be given to a cooperative society where such an organisation exists as in Mysore.

17. For each edition of a book, the number of copies should be determined after taking into consideration the likely demand for at least a period of 4-5 years. A Hindi State will have to be guided by the requirements of

the other Hindi States in addition to those of its own. This means that in some cases the minimum print order may be 10,000 or more. Under the title of each book there should be a clear inscription of the name of the project scheme under which it is brought out. The books should be reasonably priced on a no-profit-no-loss basis or with a marginal profit only.

18. As far as possible, the State Governments or the organisations to be set up for the purpose are advised not to undertake the responsibility of the sale and distribution of books directly. Such arrangements have rarely succeeded in the past. It would be far more economical and effective to associate private publishers on suitable terms with the sale and distribution of books. However, where well-developed Government or semi-government sales agencies are already in existence, and are functioning satisfactorily these could certainly be associated.

Creation of a Revolving Fund

19. One of the conditions mentioned above for the success of the entire programme is that the concerned universities will take steps to prescribe the books produced under this programme. This will guarantee sales. Even if the books are priced on a no-profit-no-loss basis, a good part of it, if not the entire expenditure, can be expected to be recovered in due course. If a little profit of say 10 per cent is allowed, the receipt should increase from year to year. Each Government should, therefore, take steps to create a revolving fund out of the receipt so that not only their current but future needs as well could be met out of the initial investment. Mention might be made of the Andhra Government which has already decided to create a revolving fund as proposed.

Coordination of the book production programmes of different States

20. In order to get the best results from this investment, it will be necessary to coordinate the programmes of the different States. This responsibility will be primarily borne by the Ministry of Education. The Ministry will collect information of the progress of the programme in different States from time to time and make it available for their guidance.

21. In so far as the Hindi States are concerned, a separate coordination committee has already been set up for the purpose. It includes representatives of universities and State Education Departments from these States. The Commission for Scientific and Technical Terminology is functioning as the secretariat of this committee. The Hindi States and their universities will do well to be in touch with the work of the coordination committee in the Commission.

Summary

22. Briefly the proposals of a State Government for assistance from the Centre under the present scheme should inter-alia give the following information :

i) Nature and details of the machinery proposed to be set up for implementing the scheme.

ii) Details of the administrative staff, and the care taken to limit the expenditure on administration to a maximum of 5 per cent of the total expenditure.

(iii) Rates of remuneration to be given to authors, translators and vetters.

(iv) Details and estimates of books and other literature to be produced or translated.

(v) Details and estimates of measures necessary to finalise a standard terminology in scientific, technical and other subjects in the language concerned. (The finalisation of a terminology should not extend beyond a period of 9 months to a year, as otherwise the entire programme of book production may get held up.)

(vi) Details and estimates of suitably phased programmes of training and orientation of teachers to teach in the language of the State.

(vii) Nature of arrangements for publishing the approved books and for their sale and distribution.

(viii) Steps proposed for creating a Revolving Fund.

(ix) Steps contemplated to ensure that the books produced under the programme will be actually prescribed by the concerned universities.

(x) Indication of any further assistance/guidance that a State Government might wish to seek from the Centre.

ANNEXURE

SOME DETAILS OF THE AUTONOMOUS ORGANISATION SET UP BY THE RAJASTHAN GOVERNMENT FOR THE PRODUCTION OF UNIVERSITY LEVEL BOOKS]

NAME OF THE ORGANISATION

The State level organisation for producing technical literature in Hindi may be named as "Rajasthan Gyan Vigyan Hindi Rachna Sansthan".

AREA OF OPERATION

The proposed unit would work in active collaboration with the other States and the Central Government which are involved in producing literature in Hindi. Within the State it will work as an autonomous organisation and enlist cooperation of the three Universities in the State, the B.I.S.T. and the Colleges imparting higher education.

BOARD OF MANAGEMENT

It is suggested that an autonomous Board be set up with all the financial and executive powers under the general guidance of the State Government. The Board will consist of the following :—

1. State Education Minister . . . *Chairman*
2. Vice-Chancellor, University of Rajasthan, Jaipur.
3. Vice-Chancellor, University of Udaipur, Udaipur.
4. Vice-Chancellor, University of Jodhpur, Jodhpur.
5. Financial Commissioner.
6. Educational Secretary.
7. Bhasha Sachiva Director, Bhasha Vibhag.
8. Director of Education.
9. Additional Director of Education.
10. Director, B.I.S.T.
11. Director of Technical Education.
12. Deans of Agriculture, Medical & Veterinary.
13. Five experts belonging to different areas.
14. A publisher to be nominated by the State Government. Two eminent persons to be nominated by the Government interested in the work.
15. Representative of the Ministry of Education.
16. The Chairman, Board of Secondary Education, Rajasthan.
17. Secretary, Sansthan.

The Board would meet at least once a year to lay down policies, to approve the budget and to assess the progress of work from time to time.

EXECUTIVE COMMITTEE

An Executive Committee consisting of the following may be appointed to look after the actual management of the Sansthan.

1. One of the Vice-Chancellors . . . *Chairman.*
2. Finance Secretary to the State Government.
3. Education Secretary to the State Government.
4. Five experts belonging to different areas or groups of subjects.
5. Secretary of the Sansthan.

It may be desirable to appoint one of the five expert members as Working Chairman who would preside over the meetings of the Executive Committee in the absence of the Chairman (One of the Vice-Chancellors) and also be available for guidance to the Secretary of the Sansthan as and when needed.

AREA WISE SPECIALIST COMMITTEE

Five committees may be set up to deal with different areas or groups of subjects *viz.* General Works, Humanities, Social Sciences, Natural Sciences and Applied Sciences. The conveners of these Committees would be members of the Executive Committee as also of the Board of Management.

ITEM 4 (xviii) : RESOLUTIONS PROPOSED BY EDUCATION MINISTER, RAJASTHAN

RESOLUTION NO. 1 : It is resolved by this Conference that a high power committee be appointed to look into the price structure of the Text Books and other recommended books prescribed by the various Universities in this country and suggest suitable measures to maintain the prices of such books at a reasonable level.

RESOLUTION NO. 2 : With a view to eliminate one of the long standing grievances of students, it is proposed that the system of "Re-checking" may be introduced at the University and Board levels.

ITEM 5 : IMPLEMENTATION OF THE RECOMMENDATIONS OF THE NATIONAL INTEGRATION COUNCIL ON EDUCATIONAL ASPECTS, MASS MEDIA AND COMMUNAL HARMONY

The National Integration Council, at its meeting held at Srinagar in June 1968, made the following recommendations on educational aspects, mass media and communal harmony :—

Education

The Committee is of the view that education from the primary to the post-graduate stage should be reoriented

(a) to serve the purpose of creating a sense of Indianness, unity and solidarity,

(b) to inculcate faith in the basic postulates of Indian democracy, and

(c) to help the nation to create a modern society out of the present traditional one.

2. Towards this end, the Committee would like to make some suggestions for the consideration of the National Integration Council :—

(i) State Governments should be requested to appoint Expert Committees to organise the preparation of textbooks for schools.

The Union Government should set up a National Board to co-ordinate the efforts of the said State Committees in consultation with State Governments.

(ii) Positive steps should be taken to correct regional imbalances in the provision of educational facilities in the country.

(iii) Efforts should be made to provide good educational facilities in rural and other backward areas. Efforts should also be made to improve the standard of education in general schools with a view to narrowing the gaps between them and other schools providing education of quality. Pending further consideration of the problem, a beginning with the "Common School System" as recommended by the Education Commission should be made in 1969 in all the States.

(iv) A student should not be required to produce a certificate of domicile in a State for the purpose of admission to educational institutions in the State. This should be brought into operation in all the States as early as possible. It would be within the competence of educational institutions in a State to give preference in admissions to students passing the school board, university or college examinations of that State.

(v) Scholarships should be instituted by the University Grand Commission to enable meritorious students to go from one State to another for higher education.

(vi) Efforts should be made by the universities to organise inter-university meets for various purposes with a view to furthering national integration. Visits by groups of students during vacations to different parts of the country should be encouraged and facilitated.

(vii) University campuses should not be used for any communal or sectarian purposes.

Mass Media

The Committee recommends that the Council may appoint a committee of experts to deal with matters relating to mass media.

Communal Harmony

The teachers in primary and secondary schools and colleges play a vital role in moulding the minds of young men and women at the formative years of their lives. To discharge this heavy responsibility, the members of the teaching profession should refrain from any activity which is anti-secular or which tends to create communal disharmony. State Governments should examine immediately the need to modify service regulations prescribed for teachers in Government or Government-aided schools and colleges and make provisions which should facilitate the removal from service of teachers who may be found guilty of such activity. Similar action may be taken by the universities in respect of university and college teachers.

EXPLANATORY NOTE TO ITEM 5

1. *Textbooks :* The problem of utilizing textbooks for strengthening national integration has to be regarded as an integral part of a comprehensive programme of improving textbooks. The Ministry of Education has prepared a broad outline of such a programme and also proposes the establishment of a National Board of School Textbooks. The details are given in Appendix I. The Central Advisory Board of Education is requested to advise :

(i) on the establishment of a National Board of School Textbooks ; and

(ii) and the proposals made here generally for the improvement of textbooks.

2. *Regional Imbalances :* This problem was examined in detail by the Ecucation Commission. Its recommendations are given in Appendix II. The Central Advisory Board of Education is requested to advise regarding the manner in which regional imbalances in educational development should be reduced.

It may be pointed out here that the National Development Council has decided, amongst other things, to distribute 10 per cent of the Central assistance to those economically backward States where the national income per head of population is below the national average. This will be a major step in reducing the regional imbalances of all categories.

3. *Common School System :* The National Integration Council has suggested the adoption of the common school system. This recommendation has also been incorporated in the Government Resolution on the National Policy on Education. The following positive steps have been commended to achieve this goal :—

(i) The standard of education in the general schools should be improved. This will involve special attention to rural and other backward areas and

(ii) As for special schools which maintain good standards but charge high fees are concerned, steps should be taken to eliminate the segregation that now takes place by providing that a certain proportion of students in these schools, selected on the basis of merit, should be admitted as free scholars.

It is suggested that each State should examine and adopt measures, suited to its own local conditions, to give effect to these proposals.

4. *Domicile Certificate :* The recommendation that students should not be required to produce a domicile certificate is extremely important and *it is necessary to bring it into effect in all parts of the country simultaneously say by June* 1969.

In actual practice, it affects the admissions to engineering and medical colleges only. The present position regarding this is given in Appendix III.

5. *Visits by Groups of Students to Different Parts of the Country :* This is an important recommendation. The Ministry of Education has proposed a scheme to implement it in the Fourth Plan (Appendix IV). The advice of the Cental Advisory Board of Education is sought on the details of the proposal.

APPENDIX I

ESTABLISHMENT OF A NATIONAL BOARD OF SCHOOL TEXT-BOOKS

The problem of school textbooks came up for discussion at the meeting of the National Integration Council held at Srinagar in June 1968. The Council attached great significance to the proper use of textbooks for purposes of national integration. It was of the view that education from the primary to the post-graduate stage should be re-oriented (a) to serve the purpose of creating a sense of Indianness, unity and solidarity ; (b) to inculcate faith in the basic postulates of Indian democracy ; and (c) to help the nation to create a modern society out of the present traditional one, and that the textbooks used in the schools should be specially designed to serve these purposes. It also recommended that the State Governments should create an appropriate machinery at the State level for the improvement of school text-books in general and for using them effectively for purposes of national integration in particular and that, in consultation with them a National Board of School Textbooks, which will co-ordinate the efforts of the State Governments should be set up by the Government of India.

2. In this connection, the earlier history of the problem deserves a brief recapitulation. The problem of improving the quality of school textbooks first came under the active consideration of the Government of India and the State Governments after the Report of the Secondary Education Commission (1952) and efforts made in this direction have broadly been in two directions :—

(1) The State Governments have set up some organisations at the State level for improving the quality of textbooks, either through State production or by improving the machinery for approving text books produced in the private sector ; and

(2) The Government of India has tried to develop, at the national level, a programme for helping the State Governments to improve textbooks, first under the Central Buareau of School Textbooks and later on under the National Council of Educational Research and Training.

3. The Education Commission reviewed these efforts, and after examining this problem in all its aspects, made several recommendations regarding the manner in which the machinery for scrutiny, production and approval of school textbooks at the State level could be improved, how the national programme for production of textbooks could be strengthened and how the State and national level programmes could be developed to support and supplement each other.

4. After taking into consideration the experience so far gained in the national and State level programmes for the improvement of school textbooks the proposal made by the Education Commission and especially the recommendations of the National Integration Council, the Ministry of Education has formulated the following proposals for developing an intensive programme for the improvement of school textbooks and for their effective utilization or the purposes of national integration.

5. *Objectives of the Programme of Improving School Textbooks :* The broad objectives of the programme of improving school textbooks which will have to be developed over the next few years should be the following :—

(1) To ensure that textbooks promote national integration by creating a sense of Indianness, unity and solidarity, by inculcating faith in the basic postulates of Indian democracy, and by promoting the processes of modernization;

(2) To ensure that continuous efforts are made to improve textbook standards in subject-matter content, in presentation of material in accordance with the best pedagogic principles, and in production ; and to this end to evolve appropriate criteria for the production of textbooks, especially for those in history, languages and social studies ; and

(3) To ensure that textbooks are priced as low as possible consistent with the maintenance of essential standards and that arrangements for their production, distribution and also for sale are continually improved so that every student has reasonable access to all his textbooks.

6. *Three Aspects of the Programme :* For the development of this programme, action will have to be taken on the following lines :—

(1) Improvement of the machinery for the production and prescription of school textbooks at the State level ;

(2) Strengthening of the machinery for the production of school textbooks at the national level ; and to strengthen the relationship between the machinery at the national level and those at the State level ; and

(3) The establishment of a National Board of School Textbooks to advise the Government of India and the State Governments on all matters relating to the production and prescription of school textbooks.

7. *Improvement of the Machinery for Production and Prescription of School Textbooks at the State Level :* The State is the primary unit for production and approval of school textbooks. The existing arrangements in the States for the discharge of both these responsibilities are far from satisfactory. Efforts will, therefore, be made on the broad lines recommended by the Education Commission, to improve the existing machinery for the production and approval of textbooks. In particular, efforts will be made to establish autonomous corporations at the State level for producing textbooks in the public sector and for properly scrutinising the privately produced books to determine their suitability for use in school.

8. *Strengthing of the National Programme and its co-relation with the State Level Programmes :* The programme of producing textbooks at the national level which is being developed in the NCERT will be expended on the followings lines :

(1) Emphasis will also be placed on the production of textbooks materials such as can be more easily adopted adopted by the State Governments for use in their textbooks.

(2) Academic assistance will be offered to the State Governments desiring to improve curricula and the procedures for production and approval of textbooks.

(3) On requests made by the State Governments textbooks will be scrutinised from academic and national points of view and suitable advice will be made available to the State Government concerned.

(4) A central library of all school textbooks used in the contry will be built up; and there will be a more intensive programme of evaluating selected textbooks and making these reviews available to the State Governments concerned for information and necessary action.

(5) There will also be a programme under which a random sample of textbooks used in different parts of the country will be continuously made from the point of view of their suitability far bringing about national integration and the suggestions to make them more effective from this point of view will be brought to the notice of the State Governments and the Government of India.

(6) Close working relationships will be established between professional persons engaged in textbooks production at the national and State levels both in the public and private sectors ; and to this end there will be an advisory committee in the NCERT which will include the representatives of the Departments of the NCERT, organisations for textbooks production functioning in the public sector at the State level, and organisations interested in the printing and publication of textbooks in the private sector.

9. *Establishment of a National Board of School Textbooks :* As a result of this academic and professional exercise suggested at the national and State levels with regard to production and improvement of textbooks, a large number of matters calling for policy decisions at the highest level will be thrown up from time to time. To decide these as well as to co-ordinate and guide the activities of the National and State organisations for production and improvement of textbooks, the Government of India proposes to establish a National Board of School Textbooks as recommended by the National Integration Council.

(1) The composition of this Board will be as follows :—

(a) Union Minister of Education . . . . *Chairman*

(b) All Education Ministers in States and Union Territories having legislatures and the Chief Executive Councillor of Delhi.

(c) Sixteen educationists and experts in the field of textbook production representing various interests and expertise.

(d) An officer of the Ministry of Education . . *Member Secretary*

(2) The functions of the Board will be as follows:

(a) To provide a forum for a continuous dialogue between the Centre, the States and other agencies interested in the production of textbooks, on all matters relating to qualitative improvement, production, distribution and sale of textbooks.

(b) To adopt criteria for textbooks for different subjects and at different levels and especially for textbooks in history, languages and social studies.

(c) To advise the Central and State Governments on all matters relating to qualitative improvement, production, distribution, pricing and sales of textbooks; and in particular, to recommend measures which would promote national integration through textbooks.

10. The National Board of Textbooks shall meet at least once every year, preferably at the time of the meetings of the Central Advisory Board of Education or the State Education Ministers, Conference.

11. The NCERT will provide the necessary academic services to the Board , both in bringing up problems for discussions as well as in helping the national and State level organisations engaged in the scrutiny, approval and production of textbooks to implement the decisions taken.

12. The matter is placed before the Central Advisory Board of Education for consideration and advice.

APPENDIX II

REGIONAL IMBALANCES

(Extract from the Report of the Education Commission Pp. 125-135)

6.50. *Imbalances of Educational Development in the States :* The development of educational facilities in the different parts of the country has been very uneven and one of the important objectives of educational policy should be to strive to reduce the existing imbalances to the minimum. With a view to highlighting the problem, we made a special study of some of the regional imbalances as they exist between the different States and districts for the year 1960-61, the latest year for which the data are available. Table 6.6 shows some of the variations in the level of educational development in the States.

It will be seen that the State income per head is lowest in Bihar (Rs. 220·7) and the highest in Maharashtra (Rs. 468.5). The percentage of State income devoted to education is lowest in Orissa (1·5) and highest in Kerala (3·6) Illiteracy, both among men and women is lowest in Kerala (450 and 611 respectively per 1,000 of population), and highest in Jammu and Kashmir (830 and 957 respectively). At the lower primary stage, the enrolment of boys and girls is highest in Kerala (115·4 p.c. and 100 p.c. respectively of the corresponding age-group) and lowest in Rajasthan (64.0 and 16.3 p.c. respectively). At the higher primary stage, Kerala again stands first (67·7 and 49·1 p.c. respectively for boys and girls), while Orissa comes last (16·1 p.c. for boys and 2·0 p.c. for girls). At the secondary stage, Assam is first for the enrolment of boys (25·5 p.c.) and Kerala first for the enrolment of girls (12.6 p.c.). But in both respects, Orissa stands last (7.5 p.c. for boys and 0.7 for girls). In higher education West Bengal stands first with an enrolment of 40 per 10,000 of population and Orissa comes last, with an enrolment of 8 only.

6.51. *Imbalances in Educational Development in the Districts :* The differences at the district level are much greater than those at the State level. Some of the most striking conclusions that emerged from our study in this regard are given below :

(1) *Lower Primary Stage (Classes I-V)* : At the lower primary stage, the target to be reached is an enrolment of 142 per thousand (at 110 per cent of the total population in the age group 6-10). As against this, there is a wide spectrum of achievement. At the State level, in case of total enrolment it ranges from 55 in Rajasthan to 140 in Kerala while in the case of girls it ranges from 23 in Rajasthan to 130 in Kerala. The mean enrolment of all children for all States was 74 with a standard deviation of 24·6. The mean for girls was 46·7 with a standard deviation of 23.8 . The variations between districts are even larger —from 21 in Barmer (Rajasthan) to 158 in Quilon (Kerala) for total enrolment and from 5 in Barmer to 151 in Quilon for girls.

(2) *Higher Primary Stage (Classes VI-VIII)* : At the higher primary stage, the picture is similar, although the task that remains to be done is far greater. At the state level, the highest total enrolment was 41 per thousand in Kerala and lowest—5 per thousand—in Orissa. In respect of girls, the highest enrolment was 35 per thousand, again in Kerala, while it was lowest—per thousand—in ORISSA 2 per thousand in Bihar and 3 per thousand in Madhya Pradesh, Rajasthan and Uttar Pradesh. The mean and standard deviations for all States were 13·7 and 8·3 in the case of all children and 6.7 and 7·3 in the case of girls.

3) *Secondary Education Stage (Classes IX-XI)* : Kerala again stands first with an enrolment of 11 per thousand of population for total enrolment and 8 per thousand of population for girls, while Orissa stands last with an enrolment of 2 per thousand for all children and a negligible enrolment for girls. The mean enrolment for all States was 6·29 for total (with a standard deviation of 3·5) and that for girls was 2·21 (with a standard deviation of 2.5). At the district level the differences are even greater—from 1 in Kalahandi (Orissa) to 18 in Ambala (Punjab).

4) *Educational Expenditure (Direct) per Head of Population* : With regard to total direct expenditure per capita, Kerala spends highest (Rs. 11·2) and Orissa lowest (2·8). There are 17 districts which spend less than Rs. 2.00 and 25 districts which spend more than Rs. 10 per head of population.

6.52. *Recommendations* : The programmes for the reduction of regional imbalances in educational development will have to be pursued side by side with the wider programmes for removing imbalances in the socio-economic development. The problem is complex and difficult ; and its solution will have to be spread over a number of years. Our principal object in this Report is to draw attention to this problem and to highlight its significance. In our opinion, the solution of the problem can be considerably facilitated if an emphasis is laid on removal of imbalances in educational development. From this point of view, we suggest that action should be taken on the following lines :

(1) A total elimination of these differences in educations development is neither possible nor desirable. In the larger interest of the country each region should be free to strive its best and to develop at its own pace. This will necessarily lead to some inequalities of development. But what is needed is a balancing factor, a deliberate and sustained effort to assist the less advanced areas to come up to at least certain minimum levels so that the gap between them and the advanced areas would be reduced to the minimum. This is the policy of "equalization" under which each area is assisted, subject to the condition that it makes a given effort to come up to certain minimum levels prescribed. Our grants-in-aid in education will have to be broadly based on this principle of equalisation.

(2) The district should be adopted as the basic unit for educational planning and development. Our detailed proposals in this regard will be discussed elsewhere.

(3) At the State level, there should be a deliberate policy of equalization of education development in the different districts and the necessary administrative and financial measures to this end should be taken.

(4) At the national level, it should be regarded as the responsibility of the Government of India to secure equalization of educational development in the different States. The necessary programmes for this, including special assistance to the less advanced States, should be developed.

TABLE 6.6. EDUCATIONAL ABILITY, EFFORT AND ACHIEVEMENT IN STATES (1960-61)

State	Income per capita	Expenditure on education per capita	Percentage of expenditure on education to State income	Literate persons per 1,000 of population		Enrolment ratios						Enrolment in higher education per 10,000 of population
						Classes I—V		Classes VI—VIII		Classes IX—XI		
				Males	Females	Boys	Girls	Boys	Girls	Boys	Girls	
1	2	3	4	5	6	7	8	9	10	11	12	13
	Rs.	Rs.	%			%	%	%	%	%	%	
Andhra Pradesh	287.0	7.1	2.5	693	880	84.3	52.2	26.1	7.6	14.4	2.7	16
Assam	333.3	7.6	2.3	627	840	84.7	50.4	36.4	14.6	25.5	7.0	23
Bihar	220.7	4.9	2.2	702	931	76.0	24.1	29.3	3.7	21.5	1.6	20
Gujarat	393.4	9.2	2.3	589	809	30.1	52.9	36.6	15.2	19.0	6.2	24
Jammu and Kashmir	289.0	5.7	2.0	830	957	71.0	20.7	37.9	9.5	14.5	4.7	25
Kerala	314.9	11.5	3.6	450	611	115.4	100.0	67.7	49.1	20.2	12.6	26
Madhya Pradesh	285.4	6.2	2.2	730	933	75.0	22.4	25.6	5.4	11.2	2.0	15
Madras	334.1	9.4	2.8	555	818	104.8	65.9	44.4	19.1	19.5	6.3	21
Maharashtra	468.5	12.4	2.6	580	832	95.1	58.4	39.2	15.3	20.3	6.7	28
Mysore	304.7	7.5	2.5	639	858	91.9	55.3	32.3	12.5	17.4	4.8	22
Orissa	276.2	4.3	1.5	653	914	89.3	39.0	16.1	2.0	7.5	0.7	8
Punjab	451.3	9.3	2.1	670	759	65.0	34.7	44.3	12.6	19.8	4.7	31
Rajasthan	267.4	6.3	2.4	763	942	64.0	16.3	24.1	4.1	10.3	1.1	16
Uttar Pradesh	297.4	5.4	1.8	727	930	68.8	19.5	27.1	5.1	13.2	1.8	31
West Bengal	464.6	9.8	2.1	599	830	83.7	45.9	31.3	11.5	15.1	4.3	40
ALL-INDIA	334.5	7.8	2.4	655	870	82.5	41.4	33.2	11.3	16.6	4.1	25

Source :

(1) Ministry of Education, Form A, except as stated below.

(2) Study carried out by the National Council of Applied Research for column 2.

(3) Census of India, for columns 5 and 6.

APPENDIX III

I. ADMISSION OF STUDENTS FROM OUTSIDE THE STATE TO ENGINEERING COLLEGES AND POLYTECHNICS IN EACH STATE

The All India Council for Technical Education at a meeting held in April, 1960, observed that in some of the State institutions restrictions by way of nativity, place of residence, etc. have been laid down for students seeking admission from outside the State. The Council was of the view that institutions should be open to students from all over the country and it should be the endeavour of the institutions to admit some students from outside the State. Accordingly the State Governments were asked to reserve at least 25 per cent seats in technical institutions to students belonging to other States, subject to the condition that the latter fulfil the minimum requirements for admission.

The reaction of the various State Governments to this recommendation of the Council was not very favourable. The Council at its meeting held in July, 1961, therefore, clarified that the main intention of its earlier recommendation was not so much to prescribe a definite percentage of seats in each institution for students from outside that State as to remove the existing barriers for admission of these students. The Council therefore urged the State Governments to reconsider their decision.

Reviewing the position later in December, 1963, the Council recommended the following three measures to the State Governments :

(a) Admission to technical institutions should not be restricted on the basis of domicile or nativity and similar factors ;

(b) Admission to technical institutions should be made on the basis of merit ; and

(c) As many ex-State students as possible should be admitted on merit, reaching up to 25 per cent in course of time. For this purpose, ex-State students should be those who passed the qualifying examination from a university or State Board outside the State in which the college is situated.

Meanwhile, the question of removal of inter-State restrictions on admission of students to educational and professional institutions in the country has also been examined by a study team appointed by the Union Home Minister on the recommendations of the Committee of the Zonal Councils for National Integration. The Report of the study team approved by the Committee of Zonal Councils for National integration, generally agreed with the recommendations of the All India Council for Technical Education in this behalf.

The Council again reviewed the position in February, 1965, when it noted that the response from the State Governments to the suggestions of the Council was not satisfactory. The Chairman of the Council then appealed to all the State Governments to implement the recommendations in full. The Council also recommended that the State Governments should institute scholarships for attracting bright students to go and join institutions outside their regions.

After more than five years of protected correspondence and the renewed recommendations and appeals from the All India Council for Technical Education to the various State Governments, the position that obtains today is not very encouraging. Although most of the State Governments agreed, in principle, with the recommendations of the Council, most of them were not very enthusiastic about its implementation. Domicile or nativity conditions are not insisted upon in West Bengal, Punjab and Rajasthan. A large number of States would, however, admit students from other States only on a reciprocal basis. Kerala, Madras, Mysore and Gujarat are in this category. In certain States like Maharashtra, Bihar, Orissa, Assam and Uttar Pradesh they admit a few students from outside their States, but their percentage is far below 25 recommended by the Council. Andhra Pradesh agreed with the recommendation of the Council to reserve a few seats for students from outside the State, but in Madhya Pradesh a condition to the effect that the student should have qualified from that State or should have at least studied for two years in Madhya Pradesh before passing the qualifying examination is insisted upon. In Haryana and Jammu and Kashmir there is only one Regional Engineering College each where the problem does not exist.

A summary of replies received from the various State Governments is given below :

Andhra Pradesh

No domicile or nativity restrictions are insisted upon for admission of ex-State students for which seats are also reserved in the engineering colleges. The State Government is in general agreement with the recommendations of the All India Council for Technical-education regarding admission of ex-State students reaching upto 25 per cent of the seats to technical institutions in Andhra Pradesh and proposes to implement them while framing rules of admission to engineering colleges for the year 1965-66.

Gujarat

The State Government agrees in principle to the reservation of a few seats not exceeding five seats in each College provided reciprocal arrangements in other States are secured.

Kerala

The State Government is prepared to accept the recommendations of the All India Council provided other States also agree to it. For the present the State Government has however reserved five seats each for the other three States of the Southern Region in its engineering colleges on a reciprocal basis.

Maharashtra

The State Government has already reserved 63 seats in degree courses and 44 seats in diploma courses in engineering and technology for ex-State students in technical institutions in Maharashtra State. In addition, requests received from other States for reservation of seats at technical institutions in the State are considered on merit. As such, the State Government feels that adequate facilities for admission of ex-State students have been provided for and that no further reservation is necessary.

Mysore

The State Government has already reserved 11 seats in its engineering colleges, on reciprocal basis, for students belonging to the other three States in the Southern Region in accordance with the resolution of the Southern Regional Committee. Besides, the State Government has also reserved some seats in engineering colleges for students having equivalent qualifications from other universities as also for students of Goa and children of Defence Personnel and ex-Service men. Students from other States are also admitted to private engineering colleges in the State where selection is made by the management of the College. The State Government therefore feels that adequate facilities have been provided for admission of ex-State students to engineering colleges in the State.

Punjab

There are no domicile restrictions for purposes of admission in the open category to Government technical institutions in State.

Orissa

The Colleges at Rourkela and Burla have already reserved 50 per cent and 7 per cent seats respectively for students belonging to other States. At diploma level, four seats in Mining, Engineering only have been reserved for ex-State students. As very limited facilities for technical education exist in the State, the State Government does not consider it necessary to make any change in the existing practice and procedure for admission.

Madhya Pradesh

Admissions to technical institutions in Madhya Padesh are not restricted on the basis of domicile or nativity but on the basis that the students who have studied in Madhya Pradesh are given preference over students who have not studied in educational institutions of the State. The minimum period of study in Madhya Pradesh as stipulated is two years prior to passing the qualifying examination or three years at any stage. The State Government has experienced over the past few years that only such outside candidates as do not fulfil the minimum conditions of eligibility in their States are desirous of seeking admission to colleges in the State. The State Government, therefore, desires that no candidate from other States should be allowed to apply unless he fulfils more or less the same qualifications as are accepted from candidates of the State.

Wesst Bengal

No candidate of Indian nationality is denied admissions into the engineering colleges and polytechnics of the State of West Bengal on grounds of his place of birth or residence.

Bihaar

In the matter of admission to technical and professional Institutions, the Statee Government has been pleased to decide that 15 per cent of the seats will be thrown open to students of other States in engineering colleges only with effect from the academic session 1966-67. There shall be no outside quota for studeents from outside the State in engineering schools and polytechnics.

Madras

The State Board of Technical Education, Madras, has decided that with effect from 1966-67, 10 per cent of the seats for Bachelors degree in all the engineering colleges coming under the scheme of Common Selection should be reserved for ex-State students on a reciprocal basis.

Uttar Pradesh

In so far as technical institutions under the Directorate of Technical Education are concerned, there are no domicile restrictions for admission, which are made on the basis of merit. No reservations are, however, made for ex-State students.

As regards the admissions to engineering colleges in U. P. the matter is still under consideration of the State Government.

II. Admissions to Medical Colleges on an Inter-State basis

The National Integration Council in its meeting held on the 2nd and 3rd June, 1962, passed the following Resolution:

> "The Council considered a suggestion by Shri K. M. Munshi that the question of encroachments, legislative or administrative on the common citizenship rights as regards residence, service, education, trade, business and property throughout the country be examined. The discussion centred in the main on the question of admission to universities and educational institutions in different States. The Council noted that universities can and should exert a powerful unifying influence in the country. It therefore, strongly recommended that admissions to the universities should not be denied on considerations of place of birth, residence, caste or creed (except in so far as any reservations have been provided under the Constitution)".

Consequent on the recommendations of the National Integration Council the Government of Punjab decided in March, 1963 that in future all bonafide nationals of Indian Union should be admitted to all State Medical Colleges on the basis of merit against seats other than the seats reserved for Scheduled Castes/Tribes and backward classes, backward areas, etc.

The Ministry of Home Affairs intimated in July, 1963 that it had already addressed the State Governments requesting them to examine the recommendations of the National Integration Council and to send a report on the action taken or proposed to be taken and that replies from most of the State Governments had been received. The Ministry of Home Affairs further informed that the Committee of the Zonal Councils of the National Integration had set up a 'Study Group' to examine the question of domicile restrictions for admission to educational, technical and professional institutions (including medical colleges) on an all India basis.

The tentative conclusion and recommendation of the Study team was that domicile or other restrictions on admissions of students from outside the State/Region District to all educational and training courses should be abolished, in all States and Union Territories subject to the provision that in regard to the admission to degree courses in Medicine in the initial stage, say for

a period of five years or so the number of seats to be made available for outside candidates should be limited to 15 per cent only. Here also it will be open to any State Government university if it so likes, to increase the percentage of seats.

The Fourth Southern Regional Health Ministers Conference in its meeting held in 1964 passed the following Resolution:

> "Resolved that to promote national integration 10% of seats in the medical colleges be reserved as Central quota for candidates from other States, the selection of candidates to these being done by the Government of India on all India basis. Each State should find the feasibility of institution of few merit scholarships for medical students".

A similar resolution was also passed by the Central Council of Health in 1964. Accordingly the Director General, Health Services prepared a scheme for admission of students against 10 per cent seats reserved in medical colleges in India for students from outside the State. The scheme was circulated to all the State Governments. The State Governments expressed different views on the scheme prepared by this Ministry. The matter was also discussed in two meetings held in this Ministry with the representatives of Ministry of Finance, Home Affairs, Education and Planning Commission and certain State Governments. The views expressed by the State Governments were divided on the basic proposition. The scheme has not therefore yet been finalised.

At present domiciliary restrictions have been imposed by almost all the States on the admission of students to their medical colleges. This not only impairs free mobility of students but also sometimes causes great hardship to talented students in finding admission to the medical courses.

APPENDIX IV

SUBJECT : VISITS BY STUDENTS DURING VACATIONS TO THE DIFFERENT PARTS OF THE COUNTRY TO PROMOTE NATIONAL INTEGRATION.

The National Integration Council which met at Srinagar in June 1968, has recommended that "visits by groups of students during vacations to different parts of the country should be encouraged and facilitated". To give effect to this recommendation, it is proposed to include a suitable scheme in the Fourth Five Year Plan in the Central sponsored sector the grants to State Governments and Universities being made available, outside their plans, on a 100 per cent basis for the purpose.

A broad outline of the scheme is indicated below :—

(1) The scheme will be introduced at the university stage and will be expanded largely at this stage, the target being to cover about 5 per cent of the total enrolment by the end of the Fourth Five-Year Plan. It will aso make a beginning as a pilot project on a small scale, at the secondary stage as well.

(2) The implementation of the scheme at the university stage will be the responsibility of the U.G.C. and the universities. The scheme at the school stage will be implemented by the State Education Departments in collaboration with the Ministry of Education.

(3) Each university will select, every year, a number of students for participation in this scheme. The selection will be made on the basis of criteria laid down. The idea should be that participation in the scheme is an honour and a privilege and that it goes to students who have shown excellence in some way or the other *i.e.* in studies, in sports and games, in co-curricular activities, in social service, programmes etc. These students could then be sent out to other parts of the country for two purposes :

(i) for studying specific problems (e.g. students of sociology may go out to certain tribal areas for personal study, students of engineering may pay a visit to certain important works, etc.) and (ii) for participation in programmes of academic studies, social services, etc., which will be organised on a national or a regional basis, so that students from different parts can live together and participate in joint activities. Sight seeing would no doubt be a part of the programme, but will not receive an emphasis.

(4) Every student participating in this programme will be paid a grant-in-aid to cover his travelling expenses and boarding and other charges connected with the programme.

(5) In each university, therefore, there will be students going out to other parts of the country as well as students coming from other parts to work therein. Each university will, therefore, be required to organise adequate challenging programmes for incoming students. This should be the special responsibility of the university and the necessary facilities in terms of staff and expenses should be provided.

(6) It would be very desirable to involve students themselves in making arrangements for receiving students coming from outside and making arrangements for their programmes.

(7) It would also be desirable, wherever possible, for the incoming students to spend a part of their time with local families etc. This will promote better understanding and will also reduce costs.

(8) The programmes for secondary school students should be organised on a similar basis, *mutatis mutandis*, and selected schools or groups of schools in each State should act as hosts. This should ultimately help in building up a national level organization of schools, co-operating and collaborating in professional projects of school improvement.

IPN—S54—3 M of Education./69—11-10-69—550.