CONFERENCE OF EDUCATION SECRETARIES OF ALL STATES AND UNION TERRITORIES AT NEW DELHI 9TH AUGUST, 1977

AGENDA

GOVERNMENT OF INDIA
MINISTRY OF EDUCATION AND SOCIAL WELFARE
NEW DELHI

GOVERNMENT OF INDIA
MINISTRY OF EDUCATION AND SOCIAL WELFARE

CONFERENCE OF EDUCATION SECRETARIES OF ALL STATES AND UNION TERRITORIES VIGYAN BHAVAN, COMMITTEE ROOM 'B'

NEW DELHI

AUGUST 9, 1977

AGENDA PAPERS

MINISTRY OF EDUCATION AND SOCIAL WELFARE
(DEPARTMENT OF EDUCATION)

CONFERENCE OF EDUCATION SECRETARIES
OF ALL STATES AND UNION TERRITORIES
VIGYAN BHAVAN, COMMITTEE ROOM 'B'
NEW DELHI
AUGUST 9, 1977.

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CONFERENCE OF EDUCATION SECRETARIES OF ALL STATES AND UNION TERRITORIES VIGYAN BHAVAN, COMMITTEE ROOM 'B'

NEW DELHI

AUGUST 9, 1977.

PROGRAMME

Tuesday, August 9, 1977.

1000 hours to 1330 hours — Discussion on:

I Universalisation of Elementary Education - Strategy for Implementation.

COFFEE BREAK

II Adult Education - The Policy and Strategy.

III New Pattern of Education.

LUNCH BREAK

1500 hours to 1800 hours

IV Approach to Sixth Five Year Plan.

TEA BREAK

V Review of the National Policy Resolution on Education.

VI Educational Technology Project - A Review.

VII Progress and Problems in respect of implementation of the Antiquities & Art Treasures Act, 1972.

VIII Uniform Service Conditions for Employees in Universities and Colleges.

CONFERENCE OF EDUCATION SECRETARIES
OF ALL STATES AND UNION TERRITORIES
VIGYAN BHAVAN, COMMITTEE ROOM 'B'
NEW DELHI
AUGUST 9, 1977.

A G E N D A

I. Universalisation of Elementary Education - Strategy for Implementation.

II. Adult Education - The Policy and Strategy.

III. New Pattern of Education.

IV. Approach to Sixth Five Year Plan.

V. Review of the National Policy Resolution on Education.

VI. Educational Technology Project - A Review.

VII. Progress and Problems in respect of implementation of the Antiquities & Art Treasures Act, 1972.

VIII. Uniform Service Conditions for Employees in Universities and Colleges.

MINISTRY OF EDUCATION & SOCIAL WELFARE
(DEPARTMENT OF EDUCATION)

CONFERENCE OF EDUCATION SECRETARIES
OF STATES/UNION TERRITORIES
AUGUST 9 , 1977, COMMITTEE ROOM 'B'
VIGYAN BHAVAN, NEW DELHI 110001

Item No. I : UNIVERSALISATION OF ELEMENTARY EDUCATION - STRATEGY FOR IMPLEMENTATION

Article 45 of the Constitution directs that the States shall strive to provide by 1960 free and compulsory education for all children till they reach the age of 14 years. This date was first revised to 1970, then to 1976, but as yet we are a considerably long way from the desired goal.

2. However, substantial progress has been achieved. A statement showing the enrolment at the elementary stage (including primary, classes I to V, for 6-11 age-group and middle, classes VI to VIII, for 11-14 age-group) is placed at Annexure I. According to the present programme, it is expected that by the end of Fifth Plan (1978-79), the total enrolment will rise to 771 lakh of 6-11 age-group representing 95.7% of the age-group population and 211 lakh of 11-14 age-group representing 46.1% of the age-group population.

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3. Universalisation of elementary education, according to a time-bound programme, depends on four major steps, namely,

(i) Universal provision of schooling facilities within easy walking distance from the homes of the children;

(ii) universal enrolment, i.e. to bring every child of the age of 6 into schools in class I;

(iii) Universal retention, i.e., to ensure that every child enrolled at the age of 6 is retained in school till he completes class VIII; and

(iv) Qualitative improvement, i.e. to provide good elementary education so that it enables every child to be a useful and responsible citizen.

4. Progress towards universalisation of elementary education has not been uniform in all the States. In so far as the 6-11 age-group is concerned, only five States, namely Kerala, Nagaland, Tamil Nadu, Punjab and Uttar Pradesh and all the Union Territories, except Arunachal Pradesh, have schooling facilities sufficient to cover 100% children or more. In these States again there are regional

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imbalances; certain districts or parts of districts are still comparatively backward.

5. Universal provision of schooling facilities is a sine qua non for universalisation of elementary education. At present there is a primary school (for classes I to V) within walking distance from the homes of nearly 97% of the children, according to the Third Educational Survey. More than half the children have a middle school (for classes VI to VIII) within walking distance of their homes. But still there are habitations with population of 300 and above which have not been provided with schooling facilities. The Third Educational Survey has identified places where new schools should be opened.

6. A statement showing the State-wise enrolment in classes I to V and VI to VIII for 1976-77 is given at Annexure II. It will be seen that the States which have enrolled more than 80% of the 6-11 age-group population are: Gujarat (88.9), Himachal Pradesh Pradesh (90.7), Karnataka (80.3), Kerala (103.8), Maharashtra (98.2), Nagaland (104.6), Punjab (104.8), Tamil Nadu (121.3), Tripura (83.1), U.P. (102.7), West Bengal (84.9), while the percentage of enrolment for the remaining States ranges between 56.2% in the case of Rajasthan and 79.9% in the

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case of Orissa. All the Union Territories have registered enrolment of more than 100% barring Arunachal Pradesh whose achievement is 69.6%.

7. For 11-14 age-group population, only Kerala, among the States, has achieved more than 80% enrolment, while Delhi, among the Union Territories, has achieved 85.7%.

8. The reason for less achievement in enrolment in various States mainly relates to non-enrolment of girls and children from weaker sections of the community like scheduled castes/tribes, etc. Up-to-date statistics regarding the enrolment of weaker sections of the community are not available. However, a statement showing enrolment of scheduled castes and scheduled tribes in schools during 1974-75 is placed at Annexure III. It will be seen that almost every State/Union Territory has to make intensive efforts to bring in such children to schools. Annexures I and II give the enrolment figures of girls. 68.7% of the girls of 6-11 age-group have so far been enrolled whereas in respect of girls of 11-14 age-group only 25.5% of the age-group population have been enrolled.

9. Most of the children from the weaker sections of the community are first generation learners

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having no tradition of education in their families. Such children are required to help their parents in their family occupations or domestic work with the result that they are unable to attend a full-time school. Instances are numerous where children after enrolling themselves drop out soon thereafter. Similarly, in the case of girls, socio-economic factors stand in their way of attending schools. Separate schools for girls are not universally available; there is also a great shortage of women teachers. In spite of Government schemes for provision of special facilities for women teachers in some States to work in rural areas, enough women teachers have not been forthcoming.

10. About 40% of the existing primary schools are single teacher schools and a good number has 2 to 3 teachers each, resulting in a situation where the children after completing the first few classes are required to join full average schools in the immediate or distant neighbourhood. This particularly discourages girls from completing the entire schoolscourse.

11. In the present educational set-up there are a number of inadequacies which stand in the way of achieving universalisation. The single-point entry

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in Grade I, commonly at the age of 5 or 6 years with sequential promotion from class to class at the end of each academic year, an obligation to put in full attendance, full-time professional teachers, detentions in primary classes, non-involvement of the community in the educational goals set for enrolment, etc. are some of the common inadequacies. The education system must provide for multiple entry at the age of say, 9,11 or 14 and extensive recourse to part-time education for the grown-up children who have never attended any school, or dropped out after attending school for a brief period. It has been experimentally proved that a grown-up child can cover the course of study of a number of years within a short span of 2 to 3 years. Moreover, locally available personnel, either for academic instruction or for work experience programmes- at much less cost - can be most usefully and profitably employed for covering all children under the school system, either formal or non-formal. The present system of bookish instruction which proved suitable for children from middle class families is totally inadequate for the children from families in the lower strata of society. Further, active association of the local community needs to be harnessed for the programme

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of universalisation of elementary education as for removal of adult illiteracy. In addition to extensive use of non-formal education including part-time education, the existing system may provide pre-schools or creches along with the primary schools so that the girls whose services are required at home for looking after younger brothers and sisters can attend the school, on the lines of Maharashtra's Anganwadi or Tamil Nadu's Balwadi programmes. Moreover, incentive programmes like provision of free stationery and textbooks, uniforms, midday meals, etc. may have to be strengthened so as to attract all the children from the weaker sections of the community. The present incentive programmes touch only the fringe of the problem.

12. The persisting problem of drop-outs, wastage and stagnation in elementary education can be tackled only by drawing up an effective programme of implementation. The magnitude of the problem can be understood when we realise that for every 100 children enrolled only 40 complete class V, and 28 complete class VIII and only 14 complete secondary education. It hardly needs any emphasis to state that if universal retention is not ensured till the age of 14 (class VIII), the problem of adult literacy will elude the country for all time to come.

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13. At the moment our strongest point is the provision of facilities - there is now a primary school, classes I to V, within walking distance from homes for 97% of our children. More than 50% of the children also have a middle school, classes VI to VIII, within easy distance from their homes. Except some hamlets and unreachable tracts in the tribal belts, the formal school has already made its appearance throughout the country in all the villages.

14. From the realistic point of view for purposes of planning we would do well to concentrate on the formal system and bring about the needed changes rapidly so that they are under implementation from the current academic year.

15. Simultaneously, no doubt, efforts should be made to evolve models for non-formal/part-time education. However, we must remember that, as yet, non-formal education is very much of an idea and a considerable amount of time will be spent in evolving acceptable and practical models to suit the varying conditions to fit into the village situation. Concentration on the formal system introducing certain necessary changes including the double shift system will straightaway double the facilities available, lessening the school-going time of the children,

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thereby forcing us to bring about curricular changes to provide for a minimum basic instruction. The optimum package of the minimum learning needs are bound to differ from region to region, district to district and even block to block, depending upon the levels of development and levels of aspitation. On the whole, the minimum package may perhaps consist of literacy, numeracy and elementary knowledge of the environment, of health, of civics, of standard national values. In the case of older children in the age-group 11-14 functional literacy and pre-employment preparation of an elementary nature may have to be introduced.

16. It is most essential to ensure that the programme of education imparted must be such as to prevent a slide-back into illiteracy and therefore, the functional literacy aspects should tend towards making them to seek information through the printed word.

17. Special efforts are needed to enrol girls, children of scheduled castes and scheduled tribes, etc. These children really represent the core of the problem and sustained efforts are needed to bring these children to school and to retain them there.

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Strategy for Implementation:

18. We should make a determined bid to realise the goal of universalisation of elementary education by the end of the Sixth Plan, if not earlier.

19. The current year may be treated as a preparatory year for drawing up an action programme which may be as follows:-

a) Acceptance of universalisation of elementary education (classes I to VIII - age-group 6-14) as a programme of the highest priority to be included in the minimum needs for purposes of financial allocation by the Planning Commission and the State Departments of Planning and Finance. This would also imply a mobilisation of the total resources at the village/Block/District level.

b) Preparation of block level plans for implementation which, in itself, would include village-wise indentification of action programmes. The block plans should be the basis for the formulation of the district plans and later the State plans. This State plan will have to be approved by the State Cabinet for implementation.

c) The State plans/national plans should be

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placed before the Central Advisory Board of Education and later the Central Cabinet. Preparation of implementation plans on such a massive scale would generate a seriousness of the immediacy of the task. Some of the steps in the preparation of the plans would be as follows:-

i) Stock-taking of the present situation village-wise.

ii) A realistic assessment of the needs, village-wise, taking into account their present enrolment ratio, their population growth, the special advantages or handicaps of each year, indentification of the least developed areas in the block wherein enrolment is very low and which may have to be dealt with on a more long-term basis and perhaps on entirely new methods, etc.

20. Elementary education, if it is to be an instrument for rural development, will have to undergo radical changes. Some of the changes that may have to be considered are:-

(i) - Introduction of multiple point entry;

(ii) - A complete giving up of detention

system in all classes from class I to class VIII;

(iii) - Introduction of certification examination to be conducted at the taluka/tehsil level at the end of class V and class VIII, without insisting on compulsory school attendance;

(iv) - Provision of part-time instruction;

(v) - Mobilisation of all community resources for teaching and maximum utilisation of available resources in the school; and

(vi) - Introducing non-formal education.

21. The Conference may discuss the strategy for implementation of a time-bound plan of action, so that by the end of the VI Plan, if not earlier, we may achieve universalisation.

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Annexure -I

STATEMENT X: ENROLMENT AT THE ELEMENTARY STAGE 1950- 78.

(Figures in lakhs)

YEAR	Age Group 6-11/ Classes I-V		Age Group 11-14/ Classes VI-VIII		Age Group 6-14/ Classes I-VIII	
	Total	Girls	Total	Girls	Total	Girls
1.	2.	3.	4.	5.	6.	7.
1950-51	191.55 (42.6)	50.85 (24.6)	31.20 (12.7)	5.34 (4.5)	222.75 (32.4)	59.15 (17.4)
1955-56	251.67 (52.9)	76.39) (32.4)	42.93 (16.5)	8.67 (6.6)	294.60 (42.5)	85.06 (22.5)
1960-61	349.94 (62.4)	114.01 (41.4)	67.04 (22.5)	16.30 (11.3)	416.98 (48.7)	130.31 (30.9)
1965-66	504.71 (76.7)	182.93 (56.5)	105.32 (30.9)	28.46 (17.0)	610.06 (61.1)	211.39) (43.0)
1968-69	543.69 (78.1)	202.11 (59.6)	125.37 (33.5)	35.48 (19.4)	669.06 (62.5)	237.60 (45.5)
1973-74	637.20 (83.7)	240.37 (65.1)	150.46 (35.7)	45.32 (22.2)	787.66 (66.6)	285.69 (50.0)
1976-77	684.8 (86.6)	262.6 (68.7)	172.1 (38.8)	54.6 (25,5)	856.9 (69.4)	317.2 (53.2)
1978-79 (Target)	771.00 (95.7)	308.00 (79.1)	211.00 (46.1)	71.00 (32.2)	982.00 (77.7)	379.00 (62.1)

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ANNEXURE II

STATE-WISE ENROLMENT IN CLASSES I-V

(in 000's)

STATE/UNION TERRITORY	1976-77 (achievements)		
	Boys	Girls	Total
1.	2.	3.	4.
Andhra Pradesh	2519 (83.1)	1737 (60.7)	4256 (72.3)
Assam	990.0 (74.2)	710.0 (56.8)	1700 (65.8)
Bihar	3743* (90.7)	1564 * (40.3)	5307 (66.3)
Gujarat	2288 (102.7)	1509 (73.8)	3797 (88.9)
Haryana	792 (93.4)	396 (52,2)	1188 (74.0)
Himachal Pradesh	269 (108.9)	180 (72.6)	449 (90.7)
Jammu & Kashmir	281 (81.5)	143 (44.3)	424 (63.5)
Karnataka	1932 (87.8)	1490 (72.3)	3422 (80.3)
Kerala	1683 (104.0)	1548 (102.8)	3231 (103.8)
Madhya Pradesh	2987 (93.7)	1406 (47.2)	4393 (71.3)
Maharashtra	4165 (110.2)	2984 (85.2)	7149 (98.2)
Manipur	148.2 * (N.A.)	108.8* (N.A.)	257 (N.A.)
Meghalaya	58.6 (72.4)	51.9 (64.9)	110.5 (68.6)
Nagaland	48.6 (115.7)	31.9 (81.1)	80.5 (104.6)
Orissa	1605 (98.7)	924 (60.1)	2529 (79.9)
Punjab	1346 (118.7)	904 (89.2)	2250 (104.8)
Rajasthan	1900 (90.8)	650 (34.0)	2550 (66.2)
Sikkim@	19.3 -	10.2 -	29.5 -
Tamil Nadu	3202 (141.3)	2551 (103.0)	5753 (121.3)
[illegible]ura	121.3 (91.2)	89.8* (74.2)	211.1 (83.1)
[illegible]radesh	7939 (123.5)	4623 (79.7)	12562 (102.7)

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1.	2.	3.	4.
West Bengal	3589 (102.2)	2163 (66.4)	5752 (83.9)
TOTAL STATES	41626.0 (103.2)	25774.6 (68.3)	67400.6 (86.3)
A&N Islands	11.9 (143.4)	9.0 (128.6)	20.9) (124.8)
Arunachal Pradesh	35.2 (96.4)	11.8 (38.1)	47.0 (69.6)
Chandigarh	22.3 (96.1	106.8	100.5
Dadra & Nagar Haveli	8.00 (137.9)	4.4 (75.9)	12.4 (106.9)
Delhi	377.0 (102.2)	322.0 (99.4)	699.0 (101.8)
Goa, Daman & Diu	77.5 (123.9)	62.3 (113.5)	139.8 (118.6)
Lakshadweep	4.3 (165.4)	2.2 (95.7)	6.5 (132.7)
Mizoram*	22.2 -	19.8 -	42.0 -
Pondicherry	39.2 (129.4)	30.9 (107.3)	70.1 (118.6)
TOTAL UNION TERRITORIES	597.6 (112.2)	481.3 (102.0)	1078.9 (107.4)
GRAND TOTAL	42223.6 (103.3)	26255.9 (68.7)	68479.5 (86.6)

All these figures are provisional.

@ Merged in India from 1975-76.

*Estimated.

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STATE-WISE ENROLMENT IN CLASSES VI-VIII

(in 000's)

STATE/UNION TERRITORY	1976-77(Achievement)		
	Boys	Girls	Total
1.	2.	3.	4.
Andhra Pradesh	487 (28.4)	245 (15.1)	732 (21.9)
Assam	329.8 (46.6)	210.8 (31.7)	540.6 (39.5)
Bihar	1121@ (47.9)	289 @ (13.3)	1410 (31.2)
Gujarat	620 (51.4)	335 (29.7)	955 (40.9)
Haryana	299 (64.7)	95 (22.8)	394 (44.9)
Himachal Pradesh	104 (77.6)	39 (28.9)	143 (53.2)
Jammu & Kashmir	109 (55.9)	42 (23.7)	151 (40.6)
Karnataka	674 (55.6)	381 (33.7)	1055 (44.8)
Kerala	804 (91.5)	708 (84.2)	1512 (87.9)
Madhya Pradesh	638 (35.6)	222 (13.2)	860 (24.8)
Maharashtra	1060 (49.6)	598 (30.0)	1658 (40.2)
Manipur	36.0 @ (76.6)	19.0@ (43.2)	55.0 (60.4)
Meghalaya	16.3 (37.0)	13.2 (30.7)	29.5 (33.9)
Nagaland	16.4 (74.6)	9.4 (47.0)	25.8 (61.4)
Orissa	306 (34.0)	125 (14.5)	431 (24.5)
Punjab	366 (59.4)	194 (35.0)	560 (47.9)
Rajasthan	482 (42.0)	122 (11.6)	604 (27.4)
Sikkim*	2.1 -	1.0 -	3.1 -
Tamil Nadu	973 (64.1)	575 (39.4)	1548 (52.0)
Tripura	29.8@ (45.8)	22.2@ (35.8)	52.0 (40.9)
Uttar Pradesh	2126 (58.6)	538 (16,5)	2664 (38.6)
West Bengal	893 (46.1)	498 (27.5)	1391 (37.1)
Total States	11492.4 (50.6)	5281.6 (25.0)	16774.0 (38.2)

1.	2.	3.	4.
A & N Islands	3.7 (84.1)	2.5 (69.2)	6.2 (77.1)
Arunachal Pradesh	3.2 (16.3)	1.0 (5.0)	4.2 (11.3)
Chandigarh	9.5@ (75.1)	7.4 @ (76.6)	16.9 (75.8)
Dadra & Nagar Haveli	1.1 (38.9)	0.6 (20.0)	1.7 (29.3)
Delhi	168 (93.5)	135 (76.7)	323 (85.7)
Goa, Daman & Diu	26.9 (76.7)	18.5 (57.6)	45.4 (67.6)
Lakshadweep	1.2 (86.4)	0.6 (47.9)	1.8 (68.1)
Mizoram	7.5 -	5.8 -	13.3 -
Pondicherry	16.1 (97.0)	9.5 (60.7)	25.6 (79.4)
Total Union Territories	257.2 (87.6)	180.9 (69.9)	438.1 (79.3)
GRAND TOTAL	11749.6 (51.1)	5462.5 (25.5)	17212.1 (38.8)

All these figures are provisional

@ Estimated

* Merged with India from 1975-76.

ANNEXURE III

ENROLMENT OF SCHEDULED CASTES AND SCHEDULED TRIBES IN SCHOOLS FOR CENTRAL EDUCATION

STATES/ UNION TERRITORIES	Classes I-V				Classes VI-VIII			
	Scheduled Castes	Scheduled Tribes	Percentage of enrolment in classes I-V to the age-group 6-11		Scheduled Castes	Scheduled Tribes	Percentage of enrolment in classes VI-VIII to the age-group 11-14 years	
			S.C.	S.T.			S.C.	S.T.
1.	2.	3.	4.	5.	6.	7.	8.	9.
Andhra Pradesh	4,46,654	1,01,690	61.6	48.9	50,223	5,145	18.5	6.6
Assam	1,15,911	2,52,994	83.0	100.0	29,044	50,813	41.6	41.3
Bihar	3,75,779	4,02,447	34.1	58.7	69,344	72,397	11.2	18.7
Gujarat	2,84,363	3,51,280	97.0	59.0	87,276	65,755	55.0	21.0
Haryana	1,38,673	-	46.4	-	34,877	-	21.5	-
Himachal Pradesh	79,213	12,260	71.0	60.0	16,652	3,053	27.0	26.0
Jammu & Kashmir	330	-	60.0	-	90	-	30.0	-
Karnataka	3,66,653	24,136	56.1	83.9	52,496	5,437	17.4	30.2
Kerala	3,14,757	17,270	N.A.	N.A.	1,03,220	4,993	N.A.	N.A
Madhya Pradesh	4,67,526	6,47,480.	N.A.	N.A.	67,998	53,055	N.A.	N.A.
Mahara-shtra	6,08,995	2,93,997	N.A.	N.A.	1,26,063	40,270	N.A.	N.A.
Manipur	4,100	86,200	15.0	15.7	640	10,980	49.0	38.0
Meghalaya	2,126	1,20,090	60.0	57.4	691	33,130	65.2	38.1
Nagaland	-	54,694	-	N.A.	-	11,466	-	N.A.
Orissa	2,44,450	3,53,213	52.3	49.4	29,598	26,263	12.0	7.0
Punjab	4,29,080	-	22.9,	-	76,199	-	66.9	-
Rajasthan *	2,22,549	1,29,926	N.A.	N.A.	35,209	19,473	N.A.	N.A.
Sikkim	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Tamil Nadu	10,43,616	15,799	91.6	35.1	2,09,191	2,963	42.4	14.5
Tripura	32,855	43,735	118.1	67.4	5,310	5,433	36.9	16.1

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1.	2.	3.	4.	5.	6.	7.	8.	9.
Uttar Pradesh	16,27,565	-	N.A.	-	- 2,61,360	-	N.A.	-
West Bengal	7,00,522	1,59,154	52.8	41.8	95,089	21,456	13.8	-10.8
A & N Islands	-	1,298	-	37.4	-	437	-	31.5
Arunachal Pradesh	-	34,058	-	N.A.	-	2,166	-	N.A.
Chandigarh	3,408	-	82.3	-	512	-	23.0	-
Dadra & Nagar Haveli	270	6,320	2.8	49.7	45	390	0.9	8.8
Delhi	99,000	-	97.9	-	50,000	-	86.1	-
Goa, Daman & Diu	2,382	669	N.A.	N.A.	495	108	N.A.	N.A.
Lakshadweep	-	4,597	-	95.0	- 3	2,144	-	96.0
Mizoram	-	65,915	-	92.4	-	19,650	-	41.5
Pondicherry	8,514	-	N.A.	-	2,010	-	N.A.	-
INDIA	75,59,071	31,79,222	N.A.	N.A.	14,00,635	456,977	N.A.	N.A.

* Figures relate to 1973-74

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MINISTRY OF EDUCATION & SOCIAL WELFARE
(DEPARTMENT OF EDUCATION)
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CONFERENCE OF EDUCATION SECRETARIES
OF STATES/UNION TERRITORIES
AUGUST 9, 1977, COMMITTEE ROOM 'B'
VIGYAN BHAVAN, NEW DELHI - 110001

Item No.II: ADULT EDUCATION - THE POLICY AND STRATEGY

In addition to universalisation of elementary education, the Government give highest priority to mass adult education programmes. The Education Minister has made categorical declaration to this effect in the Parliament as well as outside it. He has discussed this subject with several persons, and had convened two meetings with educationists and adult education field workers to discuss the policy and strategy of adult education. On the basis of the discussions held, a preliminary Policy Statement on Adult Education has been prepared, a copy of which is attached at Annexure I. It is hoped that the Conference of Education Ministers will consider this Statement and will adopt it with necessary modification. A Statement showing the State-wise position of adult literacy is at Annexure II.

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2. In brief, the policy statement clarifies that while adult education should emphasize imparting of literacy skills, the programme should be related to the working and living conditions of the learners, the challenges of the environment and the developmental needs of the country. It spells out that during the decade beginning with 2.10.1978 a mass movement would be launched to cover by such programmes of adult education approximately 10 crore persons in the age-group 15-35. The period from now till 2.10.1978 is to be treated as one of intensive preparation which would include the following measures:--

(1) All preliminary steps for launching the movement shall have to be taken. For this purpose it is of foremost importance that commitment is secured of all political parties and their labour, women and youth wings. Besides, involvement has to be secured of the various Governmental agencies, voluntary organisations, trade and industry, all categories of educational institutions etc. Special attention shall have to be paid to involve youth in the movement.

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(2) A substantial enlargement of the existing programme has to be attempted so that when the mass programme is launched in October 1978 we already have an effective capacity to cover approximately 10 lakhs of persons per year.

(3) Learning and teaching materials based on clearly conceived syllabus and suited to the needs of the learners and the challenges of the environment shall have to be prepared in the languages/dialects of the various regions.

(4) A massive programme of training of personnel of various categories shall have to be launched, particularly training of potential instructors. It might be of immense help if educated youth in the rural areas are identified and provided a systematic programme of training. To extend the programme to women, young women in rural areas who might make good nonformal education teachers shall have to be identified and provided necessary upgradation of their educational level and necessary training in the skills of organising a programme of adult education. These women could also serve as incharges of anganwadi or as nonformal primary education teachers.

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(5) To minimise wastage and incorrect reporting, it is necessary to establish efficient monitoring arrangements. This would require building up of a monitoring system and inculcation of necessary technical expertise in it.

(6) Most States at present do not have administrative structures needed for such a massive programme. A decision shall have to be taken by each State to set up such a structure, which may have to have Divisional and District level functionaries. It is also recommended that State Boards of Adult Education be set up to coordinate and catalyse this programme.

3. A substantial part of the responsibility for the adult education movement shall have to be assumed by voluntary agencies. In this connection, the following suggestions are made:-

(a) At the State level the responsibility for learning/teaching materials, training and development of monitoring system should be entrusted to a suitable voluntary agency. These functions have been incorporated in State Resource Centres, which have been set up under the auspices of a voluntary agency, in a few States, such as Uttar Pradesh,

Rajasthan, Maharashtra and Tamil Nadu. Similar State Resource Centres could be established in all the States.

(b) Flexible and adequate funding arrangements should be established to support voluntary participation. The Central Government give a grant of 75% to voluntary agencies working in the field of adult education. It is recommended that State Governments launch their own programmes of financial assistance to voluntary agencies and, in addition, agree to contribute 15% to institutions who are given assistance by the Central Government.

(c) The Central Government are wholly or partly financing three important schemes of adult education, namely (i) Farmers' Functional Literacy; (ii) Nonformal Education for 15-25 age-group; and (iii) Shramik Vidyapeeth. In addition, several State Governments have their own well-defined programmes of adult education. It is suggested that where voluntary agencies have the capability to administer the Central or State schemes, their administration should be entrusted to them rather than being assumed by the District level educational authorities.

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(d) Since the Central Government give grant to voluntary agencies on the recommendation of State Governments, overlap of adult education activities in the same area should be avoided. In other words, if a voluntary agency is doing concentrated work in a defined area, the Governmental programme should exclude it for purposes of their programme. Where necessary, consultations should be held with the voluntary agencies to decide about the areas where the two would concentrate.

4. Another significant aspect of the whole matter is provision of necessary funds. The Ministry of Education has taken this up with the Planning Commission and the latter has accepted that in addition to elementary education, the highest priority in education sector should be accorded to the mass adult education programme. It might be clarified that while the Central Government would continue to play a role in policy formulation and in securing due weightage to this programme in the overall national plans, the primary responsibility for implementation shall have to rest with the State Governments or local bodies. The State Governments are, therefore, requested to take necessary

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measures for preparation and for involvement of voluntary organisations so that we are in a position to launch this ambitious programme with effect from the birth anniversary of the Father of the Nation next year.

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ANNEXURE - I

ADULT EDUCATION - A POLICY STATEMENT

Exclusion of a vast majority of the people from the process of education is a most disturbing aspect of educational and social planning. This has been uppermost in the consideration of the present Government ever since it assumed office in March, 1977. While determined efforts must be made to universalise elementary education upto the age of 14 years, educational facilities must be extended to adult population to remedy their educational deprivation and to enable them to develop their potentiality.

2. The Government have resolved to wage a clearly-conceived, well-planned and relentless struggle against illiteracy to enable the masses to play an active role in social and cultural change. The present thinking on adult education is based on the assumptions (a) that illiteracy is a serious impediment to an individual's growth and to country's socio-economic progress; (b) that education is not coterminus with schooling but takes place in most work and life situations; (c) that learning, working and living are inseparable and each acquires a meaning only when correlated with the others;

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(d) that the means by which people are involved in the process of development are at least as important as the ends; and (e) that the illiterate and the poor can rise to their own liberation through literacy, dialogue and action.

3. Adult education should emphasise imparting of literacy skills in the spoken language to persons belonging to the economically and socially deprived sections of society. However, literacy programmes unrelated to the working and living conditions of the learners, to the challenges of the environment and the developmental needs of the country cannot secure an active participation of the learners; nor can it be an instrument of development and progress. Adult education, therefore, while emphasising acquisition of literacy skills should also be

- relevant to the environment and learners' needs;
- flexible regarding duration, time, location, instructional arrangements etc.;
- diversified in regard to curriculum, teaching and learning materials and methods; and
- systematic in all aspects of organisation.

4. Highest priority in adult education needs to be given to the illiterate persons. In the post-independence period, the achievements in the field of literacy have been far from satisfactory. In 1947, the rate of literacy was 14 per cent which rose to 33.85 per cent (excluding the age-group 0-4) in 1971. Yet, owing to population increase and half-heartedness of the past effort, the number of illiterate persons has risen from 247 million in 1951 to 309 million in 1971. According to the Census of 1971 the total number of illiterate persons above 14 years of age is 211.7 million, of which 98.2 million are in the age-group 15-35, which is likely to be about 100 million at present. A massive programme should be launched to cover this vast segment of population in 15-35 age-group within the next ten years. This implies organisation of special programmes for women and for persons belonging to Scheduled Castes and Scheduled Tribes. The regions which have a concentration of illiteracy will also require special attention.

5. From the organisational point of view it is of utmost importance that elaborate preparations are made before launching a massive programme. Identification and motivation of the instructors,

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preparation of curriculum and teaching/learning materials and training have been the main areas of deficiency in adult education programmes in the past. A satisfactory level of preparedness in these areas must be reached before a massive programmes is to be launched. Besides, adult education must cease to be a concern only of the educational authority. A pre-requisite of an adult education movement is that all agencies, Governmental, voluntary, private and public sector industry etc. should lend strength to it. Voluntary organisations have a special role to play and necessary steps shall have to be taken to secure their full involvement. Instructional work shall have to be done by the teachers, students and unemployed men and women. It would be of great advantage if unemployed or under-employed youth having the potentiality to organise adult education programmes are provided necessary training and then entrusted with the responsibility for organising such programmes.

6. Adequate financial support will be essential for launching a massive programme. The approximate per learner cost would be Rs.50 for a programme comprising literacy as well as environmental and social education, extending to approximately

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300-350 hours, or about 9 months. Adequate resources shall have to be provided by the Government, local bodies, voluntary organisations, trade and industry etc.

7. In addition to organising a massive programme for adult illiterates, it is necessary to provide special programmes for special groups based on their special needs. For example, programmes are needed for

- urban workers to improve their skills, to prepare them for securing their rightful claims and for participation in management;
- Government functionaries such as office clerks, field extension workers and police and armed forces personnel to upgrade their competence;
- employees of commercial establishments such as banks and insurance companies to improve their performance;
- housewives to inculcate a better understanding of family life problems and women's status in society.

Programmes for these and several other categories of persons could be organised through class-room participation, correspondence courses or mass

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media, or by a combination of all these.

8. It is of the greatest importance that implementation of adult education programmes is decentralised. It would also be necessary to establish agencies of coordination and catalisation. A National Board of Adult Education would be established for this purpose by the Central Government and similar Boards could be established at the State levels and even district and block levels.

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ANNEXURE-II

LITERACY 1961 & 1971

(Population excluding 0-14 Age-group)

(Figures in Lakhs)

INDIA/ STATES/ UNION TERRITORIES	1961			1971		
	Total Population	No. of literates	Percentage of literates	Total Population	No. of literates	Percentage of literates
1.	2.	3.	4.	5.	6.	7.
INDIA	2588.54	718.52	27.76	3178.25	1083.14	34.08
STATES/UNION TERRITORIES						
1. ANDHRA PRADESH	217.56	51.88	23.84	258.94	73.17	28.26
2. ASSAM	65.51	21.04	32.12	77.59	27.55	35.51
3. BIHAR	268.02	56.03	20.91	323.60	76.09	23.51
4. GUJARAT	117.87	41.44	35.15	152.03	63.85	42.00
5. HARYANA	-	-	-	53.97	16.05	29.74
6. HIMACHAL PRADESH *	8.37	1.43	17.13	20.34	6.56	32.27
7. JAMMU & KASHMIR*	21.15	2.71	12.83	26.36	5.58	21.15
8. KERALA	96.98	55.10	56.82	127.52	88.18	69.15
9. MADHYA PRADESH	191.64	37.51	19.57	234.51	62.41	26.61
10. MADRAS/TAMIL NADU	210.20	72.28	34.38	256.37	110.08	42.94
11. MAHARASHTRA	234.76	80.45	34.27	295.72	132.90	44.94
12. MANIPUR *	4.44	1.30	29.19	6.17	2.36	38.30
13. MEGHALAYA*	-	-	-	5.71	2.15	37.66
14. MYSORE	136.47	39.78	29.15	168.64	60.58	35.92
15. NAGALAND*	2.26	0.45	19.96	3.21	1.05	32.90
16. ORISSA	106.93	26.52	24.80	126.50	39.27	31.04
17. PUNJAB	114.64	31.19	27.21	79.57	28.02	35.22

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1.	2.	3.	4.	5.	6.	7.
18. RAJASTHAN	115.63	19.82	17.14	143.85	31.63	21.98
19. SIKKIM*	0.98	0.16	15.88	1.29	0.31	24.42
20. TRIPURA*	6.52	1.82	27.94	8.69	3.27	37.62
21. UTTAR PRADESH	438.96	89.35	20.35	513.76	125.83	24.49
22. WEST BENGAL	206.36	76.00	36.83	253.04	102.50	40.51
UNION TERRITORIES						
1. A. & N. Islands	0.41	0.16	40.17	0.71	0.36	50.46
2. ARUNACHAL PRADESH	-	-	-	2.89	0.49	14.09
3. CHANDIGARH	-	-	-	1.68	1.18	70.56
4. DELHI	15.82	9.50	60.05	24.95	16,12	64.62
5. DADRA & NAGAR HAVELI	0.33	0.03	10.25	0.40	0.07	16.36
6. GOA, DAMAN & DIU	3.93	1.44	36.52	5.31	2.67	50.31
7. L.M.& A ISLANDS	0.14	0.04	28.00	0.19	0.10	53.14
8. MIZORAM	-	-	-	1.89	1.40	74.53
9. PONDICHERRY	2.34	0.94	40.32	2.95	1.44	50.32
N.E.F.A.	0.32	0.15	48.91	-	-	-

* For these States and all Union Territories data are processed on full count basis.

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III(1)

MINISTRY OF EDUCATION & SOCIAL WELFARE
(DEPARTMENT OF EDUCATION)

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CONFERENCE OF EDUCATION SECRETARIES
OF STATES/UNION TERRITORIES
AUGUST 9, 1977, COMMITTEE ROOM 'B'
VIGYAN BHAVAN, NEW DELHI-110001

Item No.III New Pattern of Education

The matter of restructuring the pattern of education in the country has been under consideration for quite some time. Ever since the Education Commission submitted its report and the National Policy Resolution was adopted by the Government of India, the Central Advisory Board of Education has reiterated the need for adoption of the New Pattern by all States and Union Territories in practically all its meetings in recent years and has expressed the view that it should be implemented on a priority basis and that the programme should be completed in all parts of the country by the end of the Fifth Five-Year Plan.

The present position regarding implementation of the New Pattern in various States and Union Territories is given at Annexure I.

The Union Education Minister made a policy statement while answering the debate on Education

Demand, in which he reiterated the Government of India's view on the 10+2 structure of school education and stated that this was not under review. He, however, clarified that the States will be left free to choose their own timing for the switch over, keeping in view the local conditions and availability of resources. As regards the content of the 10-year curriculum, a Committee is looking into the curriculum and load. The terms of reference and the composition of the Committee are available in Annexure II. Another Committee to review the content of the +2 is also to be appointed shortly.

To enable a smooth switch over to the 10+2 system, the Ministry of Education, in consultation with the Planning Commission and the National Council of Educational Research and Training, has drawn up guidelines. The guidelines are available at Annexure III.

As regards the +3, the Minister stated that a State which so desires should be allowed to retain a two-year course for the first degree which may be called the pass degree. There may be an honours course of one-year after this degree or a three-year integrated honours course

after the intermediate or higher secondary stage.

Vocationalisation of Education

It has generally been accepted that reorganisation of higher secondary education, especially its vocationalisation, are essential, if education has to play a positive part in national development and social change. But the transition is bound to be difficult, particularly when the concept has to be translated into practice. This is so, because the new demands of vocationalisation of education will require not only an internal restructuring and modification of content in education, but even more, require strong links to be developed between education and the various development Departments, such as Industry and Commerce, Agriculture, Health and Community Development, etc.

The choice of vocations will obviously vary not only from State to State but also from region to region and may be from district to district, depending upon the existence or possible generation of opportunities for employment or self-employment. The Central Board of Secondary Education, which has pioneered introduction of

new 10+2 pattern of school education in its member school all over the country, has, in collaboration with National Council of Educational Research and Training, identified a number of vocations vide list at Annexure IV for introduction at +2 stage in vocational stream.

The Ministry has formulated a centrally sponsored scheme for vocationalisation of education at +2 stage under the new pattern of 10+2+3. It is expected to make important contribution in the implementation of plan strategy of relating education to employment and for reducing pressure on higher education. The main objective of the scheme is to encourage the State Governments to initiate the vocationalisation of higher secondary classes in the Fifth Plan period and to expand and consolidate it on a regular basis as a state scheme in the Sixth Plan. The Centre's role in the scheme is mainly to ensure country wide acceptance of this new concept and to assist the State Governments in establishing the relevance and importance of vocationalisation to our socio-economic needs. The programme of voca-

tionalisation in a district, will be organised after making socio-economic survey of district, so that appropriate vocational courses are drawn up and located in suitable institutions. The Central Government's assistance will be available for the following items:-

(i) Conduct of District Vocational Surveys in 150 districts to identify vocational courses on the basis of job opportunities available in the area;

(ii) Appointment of District Vocational Education Officers to look after the Surveys and implementation of programmes of vocationalisation in the selected districts; and

(iii) Purchase of equipments and appointments of teachers for 640 vocational courses in 40 selected districts.

Rupees two crores have been sanctioned for implementation of this scheme during the Fifth Plan. In February, 1977, the Ministry of Education had addressed the State Education Secretaries of Andhra Pradesh, Assam, Gujrat, Jammu and Kashmir, Karnataka, Kerala, Maharashtra, Sikkim,

Tripura and West Bengal. The response from these States has not been encouraging. The States of Assam, Karnataka, Sikkim and Tripura requested for grants-in-aid for the conduct of District Vocational Surveys and Rs. 1,30,000 only were released for this purpose as under:

Name of the State	No. of Districts to be surveyed	Grants-in-aid released
Assam	4	Rs.40,000
Karnataka	6	Rs.60,000
Sikkim	2	Rs.20,000
Tripura	1	Rs.10,000

The attention of the Education Secretaries is invited to a scheme of vocationalisation of higher secondary education in four district of Karnataka drawn by the Government of Karnataka as a Pilot Scheme. The details of the scheme are available at Annexure V.

Issues to be considered

The Conference may review the entire position regarding the new pattern of education with a view to -

(i) Assess the progress made in the implementation of the 10+2 and identify a time-bound plan for a smooth switch over to the new pattern of education;

(ii) Consider the guidelines formulated for the smooth switch over and broadly indicate their reaction to the guidelines in Annexure III.

ANNEXURE I

IMPLEMENTATION OF 10+2+3 PATTERN IN INDIA

Sl. No.	Name of the State/Union Territory	Position regarding implementation of the new pattern	Year of implementation of new pattern in Class IX	Year in which first batch appeared/ is appearing in Class X	Year of introduction of +2 stage	Vocational courses introduced from
1.	2.	3.	4.	5.	6.	7.
1.	Andhra Pradesh	Implemented	1967-68	1969	1969-70	1975-76
2.	Assam	Implemented	1974-75	1976	1976-77	Voc. Surveys are being conducted
3.	Bihar	Decided to implement	1979-80	1981	1981-82	1981-82
4.	Gujarat	Implemented	1974-75	1976	1976-77	June 1977
5.	Haryana	Decided to implement	1978-79	1980	1980-81	July 1980
6.	Himachal Pradesh	Decided to implement	1978-79	1980	1980-81	1980-81
7.	Jammu and Kashmir	Implemented	1974-75	1976	1976-77	1976-77
8.	Karnataka	Implemented	1969-70	1971	1971-72	1971-72
9.	Kerala	Implemented	1962-63	1964	1964-65	University of Kerala offers Voc. courses
10.	Madhya Pradesh	Decided to implement	1977-78	1979	1979-80	1979-80
11.	Maharashtra	Implemented	1973-74	1975	1975-76	1978-79

2.	3.	4.	5.	6.	7.
Manipur	Decided to implement	1978-79	1980	1980-81	1980-81
Meghalaya	Decided to implement	No final date for introduction yet determined.			
Nagaland	Decided to implement	1979-80	1981	1981-82	1981-82
Orissa	Decided to implement	1978-79	1980	1980-81	1980-81
Punjab	Decided to implement	1978-79	1980	1980-81	1980-81
Rajasthan	Decided to implement	1978-79	1980	1980-81	1980-81
Sikkim	Implemented	1975-76	1977	1977-78	1977-78
Tamil Nadu	Implemented	1976-77	1978	1978-79	1978-79
Tripura	Implemented	1974-75	1976	1976-77	Vocational course not yet introduced
Uttar Pradesh	Decided to implement	1978-79	1980	1980-81	July 1980
West Bengal	Implemented	January 1974	1976	1976-77	July 1976
Andaman and Nicobar Islands	Implemented	1975-76	1977	1977-78	1977-78
Arunachal Pradesh	Implemented	1975-76	1977	1977-78	1977-78

1.	2.	3.	4.	5.	6.	7.
25.	Chandigarh	Implemented	1976-77	1978	1978-79	1978-79
26.	Dadra & Nagar Haveli	Implemented	1974-75	1976	1976-77	-
27.	Delhi	Implemented	1975-76	1977	1977-78	1977-78
28.	Goa, Daman and Diu	Implemented	1973-74	1975	1975-76	1977-78
29.	Lakshadweep	Implemented	1974-75 (Following Kerala Pattern)	1976	1976-77	
30.	Mizoram	Accepted in principle	Introduction of 10+2 is under consideration.			
31.	Pondicherry	Implemented	+ Following the pattern of neighbouring States of Tamil Nadu, Kerala and Andhra Pradesh			

+ Mahe (Kerala Board) 1964
Yanem (Andhra Board) 1969
Pondicherry } (Tamil Nadu Board) 1978
Karaikal }

Besides, all the schools affiliated to CBSE including the Kendriya Vidyalayas all over the country switched over to 10+2 pattern of school education in 1975-76 and these schools will have class XI of the plus 2 stage from the current academic session 1977-78.

ANNEXURE II

Committee to review the textbooks and curriculum for the 10-year school prepared by the National Council of Educational Research and Training

The Education Minister, in his capacity as President of the National Council of Educational Research and Training, has appointed a Review Committee under the Chairmanship of Dr. Ishwarbhai Patel, Vice-Chancellor, Gujarat University, Ahmedabad, with the following terms of reference:-

1) To review the stage-wise and subject-wise objectives identified in the N.C.E.R.T. document 'The Curriculum for the Ten Year School'.

2) To scrutinize the N.C.E.R.T. syllabus and textbooks, in the light of the review as per item (i) above.

3) To scrutinise the scheme of studies, as given in the said document, and examine whether any suitable modifications in either the scheme of studies or the time table or both should not be made and to propose suitable staffing pattern.

4) To review the present scheme of studies and the time allocated for various subjects with a view to ensure that -

i) the institution/teacher has adequate time for experimentation, creative work, remedical instruction, etc., and

ii) to accommodate the needs of the bright child for advanced level courses; the specific interest and aptitude, or the lack of it, in children, in only certain subject areas, keeping in view the national goals of development and objectives of education.

The various subjects would be considered by Working Groups which will have a fair number of practising teachers. These Groups will work according to the parameters set by the Review Committee.

The Review Committee consists of the following members:-

1. Dr. Ishwarbhai Patel, ... Chairman
   Vice-Chancellor,
   Gujarat University,
   Ahmedabad.

2. Prof. B. Sharan,
   Head of the Department of
   Education in Science and
   Mathematics, National Council
   of Educational Research and
   Training, New Delhi

3. Shri M.S. Arora,
   Professor of Mathematics,
   NCERT, New Delhi

4. Prof. B. Parakh,
   Head of the Department of
   Education in Social Sciences and
   Humanities, NCERT, New Delhi

5. Shri Anil Vidyalankar,
   Department of Education
   in Social Sciences & Humanities
   (Languages), NCERT, New Delhi

6. Dr. G.L. Bakshi,
   Chairman,
   Central Board of Secondary Education,
   New Delhi

7. Dr. R.P. Singhal,
   Secretary,
   Central Board of Secondary Education,
   New Delhi

8. Prof. S.M. Chatterjee,
   Chairman,
   Board of Secondary Education,
   West Bengal, Calcutta

9. Shri Singh Bhandari,
   Chairman,
   Rajasthan Board of Secondary Education,
   Ajmer

10. Shri U.T. Bhelande,
    Chairman,
    Maharashtra Board of Secondary Education,
    Pune

11. Dr. S.N. Mehrotra,
    Director of Education,
    Uttar Pradesh, Lucknow

12. Dr. A.K. Narayanan Nambiar,
    Director of Research & Studies,
    Trivandrum, Govt. of Kerala

13. Dr. (Miss) A. Nanda,
    Joint Director of Education,
    Delhi Administration, Delhi

14. Dr R C. Sharma,
Additional Deputy Commissioner (Academic),
Kendriya Vidyalaya Sangathan,
New Delhi

15. Shri S.N. Bhanot,
P.G Teacher,
Government Boys Higher Secondary School,
Netaji Nagar,
New Delhi

16. Shri Rana Partap,
Delhi Adhyapak Shikshak Sangh,
New Delhi

17. Shri R.K. Mohta,
Secretary,
All India Science Teachers Association,
New Delhi

18. Shri R R. Bayala,
Principal,
Government Higher Secondary School,
President's Estate,
New Delhi

19. Dr (Mrs.) Chitra Naik,
Director,
India Institute of Education,
Pune

20. Prof A.R. Dawood,
24, Hotel De-Lamar,
Marine Drive,
Bombay

21. Shri A.E.T. Barrow,
Secretary,
Council for the Indian School
Certificate Examination,
New Delhi

22. Prof Ram Lal Parikh,
Member of Parliament (Rajya Sabha),
New Delhi

23. Smt Shanti Kabir,
Chairman,
Parent-Teacher Association,
New Delhi

24. Smt Lotika Ratnam,
News Services Division,
All India Radio,
New Delhi

25. Shri Manu Bhai Pancholi,
Lok Bharati, Sanosara,
(District Bhavnagar),
Gujarat

26. Prof A.N. Bose,
Dean,
NCERT,
New Delhi ... Member Convener

The Committee has been asked to submit its Report within three months, i.e. by the end of September 1977.

Annexure III

GUIDELINES FOR THE SMOOTH SWITCHOVER

1. **STAFFING:** Bulk of the expenditure under education consists of the salaries/and emoluments of teaching personnel. In order to keep down the cost of the proposed changeover it is essential that a more optimal utilisation of the teachers is aimed at. The NCERT has worked out staffing norms for schools of varying strength. The additional requirements of teachers for the new pattern would need to be worked out in the light of these norms. These norms take into account the new syllabi which have been proposed. They will be made available to the States as soon as the Review Committee's report is received.

Three types of situations may arise:

i. States following the 10+2+2 pattern

ii. States following the 11+3 pattern

111. States following the 10+1+3 pattern

In the new pattern all subjects are compulsory upto class X. Assuming that upto eight years of schooling all subjects are compulsory the staffing pattern may pose the following types of the problems in various states.

1) <u>In states following 10+2+2 pattern</u> there may be schools having no science facility in

classes IX and X. For such schools additional science staff will have to be provided. The science staff would preferably consist of one science graduate teacher for physical sciences (physics, chemistry and mathematics) and another trained graduate for life sciences (Botany, Zoology and Chemistry). In many cases where the mathematics teacher is from the physical science combination, in such cases, for class IX, a life science teacher be employed. Whenever there is science in classes IX and X, no additional science teacher should be required.

In many states General Science is compulsory upto class X In class IX, in the new pattern no staff may be necessary but in some cases life science teacher may be required because general science teacher may be from the physical science group.

II) In states following the 11+3 pattern, the state may not convert all the schools for teaching science to the +2 stages. In such cases, there may be surplus science teachers who may be deployed for teaching compulsory science in the ten year of schooling.

Detailed assessment of shortage and surplus of teaching personnel should be carried out for each institution to arrive at the net additional requirement of teaching staff.

With the abolition of the PUC from the universities, a considerable number of teachers provided for in the colleges are becoming surplus. They need to be deployed for classes XI and XII of the new pattern.

The expenditure on the salaries of most of the surplus teachers is already being provided for either as part of the expenditure met by the State Governments on institutions under their control or as grant-in-aid to privately managed schools. The expenditure on their salary, which in most cases was being incurred from the non-plan budget should be diverted to the 10+2+3 programme.

To the extent of vacancies created by teachers who either retire, die or leave the profession, should be filled up by teachers qualified in science (and mathematics) or such other subject as necessary so that the expenditure on the appointment of teachers qualified in these subjects is kept to the minimum.

Science Equipment: The teaching of science as a compulsory subject need not involve large expenditure on the purchase of science equipment. The NCERT has worked out detailed norms in this regard.(Appendix I) Depending upon the resources available with the States, these norms should be followed while purchasing scientific equipment for schools.

In states where General Science is being taught even the laboratories with reasonable science equipment exists, in such schools, an ad-hoc grant of Rs. 1500/- may be given as capital expenditure to strengthen the equipment component but recurring expenditure should be managed by levying a science and work experience fee of Rs. 1/- p.m. per student.

The NCERT does not recommend a separate laboratory for the teaching of science. A class room can easily be converted into a science room.

Wherever there is no general science NCERT norms for providing science equipment may be followed.

A detailed assessment of the additional requirement of each institution needs to be made before undertaking the strengthening of schools.

Where a number of institutions are in close proximity the possibility of concentrating the teaching of science by suitable staggering of hours of instruction in one institution where facilities already exist need to be explored. This can, however, be resorted to, provided enrolments in the various institutions are small and do not lead to any excessive load on the facilities of the selected institutions.

+2 Stage: As far as possible between 1/3rd and 1/4th of the secondary schools be allowed to open the new XI and XII classes. A careful assessment of the potentiality of all institutions will have to be undertaken to determine the institutions where the +2 stage will be opened.

The NCERT has already worked out and circulated a frame work for the higher secondary stage and its vocationalisation. As the publication makes it clear, it is only a frame work for helping the stages to formulate suitable programmes for the +2 stage in the context of conditions obtaining in their respective areas.

The Ministry of Education have formulated a scheme under which assistance will be given to states for implementing the programmes of vocationalisation in selected districts. A copy of

the scheme is enclosed (Appendix II). The scheme indicates, among other things, the items for which central assistance will be available to the States.

The purpose of the Ministry's scheme is not to substitute the programmes of vocationalisation that are already being implemented in the states. It is hoped that the combined experience of the pilot projects which will partially be financed by the Ministry and the programmes already being or proposed to be implemented by the State from out of their resources will help in developing a larger programme of vocationalisation and restructuring of secondary education for the sixty and the subsequent plans.

The most important objective of vocational education is to prepare a student for a proper vocation in life by enabling him to complete an educational course mainly terminal in character. But this is not to say that vocational education attaches any less importance to the fundamental course of all education, namely, to develop and cultivate a self relient and responsible citizen. We have to be very careful to ensure that in purporting to be terminal, vocational education does not lose its essential character as education which aims at the training of the mind and

the body with a fast changing technology and an ever accelerating pace of socio-economic change. Vocational training of today may not remain relevant to the needs either of the individual or of the society even 5 to 10 years hence. It is essential, therefore, that vocational education must aim at inculcating in the student the capacity to apply one's knowledge to the solution of concrete problems which he will face in life. At the same time the range of occupations to be offered should remain flexible so that courses which are no longer relevant or needed can be replaced by new ones having greater utility for the individual and the country.

It is expected that vocational education and training will not be provided only in class-rooms, it will include work in workshops and fields of course adequate functional skills and training will be imparted before a student goes to the field of workshop. In developing instructional programmes services of practioners of actual vocations will be utilised. Students offering vocational courses can also be brought under the Apprentices Act in the light of recent amendment effected in 1973. The time spent in practical work and in-on-

the job-training would ordinarily be not less than 30% of the total instructional time. Fullest use will have to be made of the facilities for on-the-job-training as it will not do to limit vocational education merely to stimulate training in a laboratory or a school work-shop. This means that a certain portion of the training would have to be given by those who are workers themselves. To arrange this, some provision may have to be made for remunerating worker-teachers on an allowance or honorarium basis.

The National Council of Educational Research and Training is already working on the preparation of model syllabuses for various courses. They have also set up joint working committees in collaboration with Indian Council of Agricultural Research and experts of the Health Ministry to work out details of courses in agriculture, animal husbandry, poultry keeping, dairying, food preservation, nutrition, fruit culture, midwifery, lab-technicians, health visitors, nursing, para-medical personnel etc. Syllabuses for a large number of courses have been finalised and will be circulated separately. It is realised that vocational courses will have to be organised in

consultation with employing agencies - Government Departments such as Agriculture, Health, Industries, Development etc. and Government and private owned industries needing trained personnel. The programme of vocational education in a district will be organised after making socio-economic Survey of the district. It is common knowledge that matriculates by and large stay and work in their home districts. The existing wage structure for skilled workers and middle level technicians also does not stimulate large scale migration. Hence those offering vocational courses will have to be prepared mostly for jobs within the district and its neighbouring areas. The number of students joining a particular vocational course will have to be determined in the light of the demand from employing establishments. Needless to add district surveys and systematic monitoring of emerging jobs and occupations in the district will have to be arranged on a continuing basis to meet the needs for this employment market.

It is also important that vocational courses are organised as economically as possible clearly there is a need to link this programme with the facilities in existing polytechnics, ITIs, agricultural colleges, veterinary institutions, junior

technical schools, apprentice workshops and all other institutions offering form of vocational training. As far as possible, institutions will be selected where there are already some facilities for providing vocational education so that it may be possible to organise vocational courses, with minimum additional facilities. The patterns of staff will also be such that it would be possible to redesign or modify existing courses and introduce new courses.

As mentioned earlier, vocational courses are expected to be organised in response to actual needs. Hence in each state there may be a state level committee consisting of representatives from different departments, industry and other sectors, to advise on the choice and organisation of vocational courses and to guide their implementation.

Financial Resources: Fees being at present levied in the PUC should continue to be levied at the same rates at class XII of the new pattern.

As indicated earlier the expenditure incurred on PUC should be regarded as expenditure to be incurred on the new class XII. Where such expenditure were being incurred from out of the Non-Plan budget, they should continue to be reflected in that

budget, and not regarded as development expenditure for inclusion in the plan.

The State Governments may consider charging from students development fees for secondary education work experience and other programmes as is being done in some States. The rates of such fee need not be high. Even nominal rates can bring considerable revenues considering the number of students reading at the school stage. The proceeds so collected should be credited to a special fund to be operated by the school and not become part of the general revenue of the state.

Preparatory Action: To the extent resources have permitted, suitable provisions have been provided in 1977-78 annual plans of the states, where the new pattern is yet to be introduced for undertaking preparatory action for ensuring the smooth switch over.

The preparatory action will include among other things -

- preparation of syllabi;
- preparation of textbooks, guide-books and other reading material;
- orientation of resource personnel;
- training of teachers;

- carry out of intensive district surveys in regard to programmes of vocationalisation, and identification of districts for implementation of programmes of vocationalisation
- provision of equipment for vocational courses.

NCERT has already developed syllabi for classes I to XII. Text books for all classes are also available. Equipment list has already been developed and circulated to the states. The experience of the NCERT may be kept in view while preparing the syllabi and textbooks; some changes are likely to be effected on receipt of the Review Committee's report. These will be also made available to all states.

This preparatory action must be suitably phased and completed well in advance of the date where the new pattern is proposed to be introduced.

Impact of enrolment on higher education.

The State Governments may undertake in depth studies of the impact that the introduction of the 10+2 pattern is likely to have on enrolments at the university level and also its implications in the context of courses at the first degree stage and financial resources of the universities.

The states should prepare the plan of training of teachers. In the existing pattern many states are organising Summer Institutes, in such Summer Institutes 70% of the expenditure goes on TA and DA of the participants. NCERT has started contact-cum-correspondence courses at the regional colleges. The states may utilise their services.

At the same time the states may think of starting continuing education centres on the lines suggested by NCERT, the plan of which has already been circulated to the states.

Work Experience: No separate work experience teacher for classes IX and X is being recommended. For science based work experience services of science teachers may be utilised by orienting them suitably, in other areas, the services of commerce, agriculture and home science teacher may be utilised. The possibility of utilising the community resources may also be considered. A copy of the Guidelines for work experience or work based education in the ten year school prepared by NCERT is enclosed (Appendix III). These are likely to undergo changes. As soon as the Review Committee's report is available, the report will be made available to the States.

SUGGESTED LIST OF EQUIPMENT FOR THE TEACHING OF SCIENCE IN CLASSES IX AND X FOR THE NEW 10+2 PATTERN OF EDUCATION

The development of scientific temper is one of the duties of every citizen of India. Keeping this in view, the teaching of science has been made compulsory in the National Curriculum for schools.

The objective of science teaching is to develop an attitude of open-mindedness, spirit of inquiry and training in scientific method. The course is to be taught as a part of general education, what is considered essential for every citizen of India so that they become helpful and not impediments in the process of any change considered good for the individual, social and national advancement. The science is not for the specialist but for the common man.

In the three-tier system of education, the weightage given to the teaching of science is 8-10 per cent in the primary, i.e., classes I-V, 14.5 per cent in the middle, i.e., classes VI-VIII and 14.5 per cent in the lower secondary (high school), i.e., classes IX-X. To be precise, out of a total of 48 periods, 7 have been allocated to the teaching of science in the middle as well as the lower secondary stage. For classes IX and X, semesterwise unit sequence has been suggested though books have been written on a disciplinary approach fully avoiding duplication of any treatment.

In the preparation of textual materials in science, greater emphasis is being laid on the learning of principles, and fundamental concepts through the practice of processes and problem-solving. The aim is to take care of knowledge-explosion and to reflect the scientists at work. The phenomenal growth in the knowledge of science, which is doubling after every decade cannot be coped with by any curriculum based on knowledge or all the known principles.

The science courses in the past had no or little relevance to the Indian scene. According to a naturopathy maxim, nearer to your environment, healthier you are. Special efforts have been made to highlight the Indian contributions, discuss some of the burning Indian problems that have been tackled through science and to use teaching of science as a tool of social transformation. The examples are: launching of the Indian Satellite, Aryabhatta, tackling of food problem through fertilisers, insecticides, pesticides, and social problems arising out of health and hygiene, pollution and conservation of natural resources, etc. The pupils receiving the present science education course are expected to be more aware about their obligations towards the problems of the society.

The classical topics are easier to develop but at the same time we cannot afford to postpone knowing something about satellites, TV's, radios, loudspeakers, telephones, which have become a matter of everyday experience on the ground that they are more difficult. The postponement of modern topics is likely to make the course stereotyped, dull, unchallenging and uninteresting. It is the result of this balancing that one finds chapters such as 'Physics in Everyday Life'.

There is another important aspect of development of any scientific course. Science originally differs from any other subject in being experimental in nature. No science teaching can be said to be complete without the adequate incorporation of proper experimentation, which should include both demonstration and self-experimentation.

There is a multipronged attack on the problem. In the initial stages of implementation of the programme, no science experimentation with any expensive apparatus is visualised. The country perhaps will not be able to afford any sophistication during the next two decades; it may be even more.

The first suggestion is, therefore, to use environment as the laboratory. The pupil's environment provides a great deal of opportunity for practice in the basic processes of science such as observation, classification, analysis, etc.

The second suggestion is to use the existing available resources in the school. In other words, depending upon the availability of equipment, the details of the experiments would differ from school to school. It would be left to the resourcefulness of the teacher to make best use of what is available. Since the teacher may not have sufficient experience and necessary initiative in this direction, it is planned to have orientation programmes for the purpose.

The third suggestion is to develop inexpensive science equipment making use of teacher's innovative skills.

The National Council of Educational Research and Training has developed syllabuses and textbooks for teaching science as a compulsory subject for classes IX and X; for this it is suggested that exiting classrooms can be used for teaching science.

The Department of Education in Science and Mathematics (NCERT), has also drawn two lists: List A spelling out financial implications in teaching science without student experiments and with teacher demonstrations and List B spelling out financial details with student experiments and teacher demonstrations. The envisaged financial break-up is as under:

LIST A

Without Student Experiments and with Teacher Demonstrations

		Non-recurring	Recurring
		Rs.	Rs.
1.	Biology	550	300
2.	Chemistry	30	80
3.	Physics	350	50
	Total	940	450=1390

The List A assumed that at least middle school NCERT Kits in Biology, Chemistry and Physics would be available. The cost of these is about Rs. 2100. The total involvement in the absence of kits may be to the tune of Rs. 3500 per school, in case there is no science equipment at all in the schools.

LIST B

With Student Experiments and Teacher Demonstrations

		Non-recurring		Recurring	
		Rs.		Rs.	
1.	Biology	3,500		500	
2.	Chemistry	4,350	3230**	1,650*	2170*
3.	Physics	910		240	
	Total	8,760		2390	=11,15

In this list also kit requirement is a must, otherwise the amount would be about Rs. 13,500 per school, of section strength 50 students per class.

Thus, science teaching without student experiments and laboratory space requires a maximum investment of Rs. 3,500 per school and a minimum of Rs. 1400 for those schools which are having NCERT middle school kits. About 20 per cent (i.e. 19,000) middle schools are the recipients of the NCRET kits so far. This should further reduce the State liability. It would, therefore, be not too much of an expectation from the States to provide this modest amount for the teaching of science.

In case the States can provide funds for students experiments, then List B can be used.

*This figure may come down by Rs. 600, if the students instead of working in pairs work in cycle groups of 3.

**Assuming group of 3 and chemicals at Rs. 1000 for 2-year cycle.

LIST A

Without Student Experiments and with Teachers' Demonstrations

Demonstrations in Physics (Classes IX and X)

S. No.	Suggested Demonstration Experiment	Theoretical Backgrovnd	Components Available from Middle School Kits	Additional Equipment	Equipment from Environment
1	2	3	4	5	6
1.	Model of solar system	Elementary description of solar system	..	..	metre scale paper
2.	Uniform motion	Speed, velocity and acceleration	trolley pan weights pulley	..	paper
3.	Beam balance	Principle of moments	metre scale stand	..	..
4.	Centre of gravity of a body	Centre of gravity	..	..	regular and irregular bodies plumbline nail
5.	Archimedes' principle	Principle of floatation	spring balance overflow vessel	..	..
6.	Kinetic and potential energy	Work and energy	spring laboratory stand steel cylinder inclined plane	..	..
7.	Elastic behaviour of solid bodies (elasticity)	..	steel spring rubber band weights metre scale stand	..	..
8.	Action and reaction	Newton's 3rd law of motion	trolleys spring clamp stand	..	..
9.	Characteristics of a concave mirror	Spherical mirror	metre scale concave mirror light source screen	torch bulb dry cells	pins
10.	Convex lens	Lenses	metre scale light source convex lens screen	..	..
11.	Refraction of light	Refraction	rectangular glass block	..	paper pins
12.	Dispersion of light	Dispersion	glass prism	..	paper pins
13.	Relationship between the current, resistance and voltage	Ohm's law	resistance wire ammeter voltmeter rheostat key dry cell	connecting wire	..

1	2	3	4	5	6
14.	Mapping of magnetic fields . .	Magnetism	bar magnet magnetic needle	. .	paper scale
15.	Series and parallel arrangement of resistances and cells	Series and parallel circuits	set of resistance connecting wires volt meter ammeter dry cells key	dry cells	. .
16.	Magnetic field of a circular conductor carrying current	Ampere's law	wire loop magnetic needle stand dry cell	. .	. .
17.	Electromagnet	Electromagnetic phenomena	coil for electro-magnet dry cells	horse-shoe magnet connecting wire	. .
18.	Belt generator	Electricity	. .	mechanical kit	. .

Cost Estimate : Recurring : Rs. 50]

Non-Recurring : Rs. 350 + Rs. 100@

@ Additional non-recurring expenditure if the middle school kit is not available.

CHEMISTRY

(Classes IX– X)

List of Equipment and Chemicals for Demonstration

Sl. No.	*Demonstration*	*Equipment Required*		*Chemicals*
		From Middle School Kit	*Additional*	
1	2	3	4	5
	Unit 4			
1.	Observation of some properties of covalent and ionic compounds	beaker (100 ml)– 1 connecting wire—2m	dry cells—2 torch bulb (1·5V)– 1 holder for bulb—1 carbon electrodes—2 (may be obtained from spent cells)	sodium chloride—25 g carbon tetrachloride—25 ml silver nitrate solution– 1 ml
	Unit 5			
2.	(i) Reactions of some typical metals of III period of the periodic table with water	boiling tubes—3 knife	sand paper forceps	sodium metal (pea-size piece) red litmus paper Mg-metal (5 cm) ribbon Al-metal—small strip
	(ii) Formation of oxides of some elements of III period and their reactions with water	deflagrating spoon pair of tongs beaker—100 ml boiling tubes—4		sodium metal (pea-size piece) litmus paper (red and blue) Mg-metal (5 cm) ribbon aluminium tri-oxide Al-metal—small strip HCL, NaOH solution Mg-metal (small piece) Ca-metal (small piece)
	(iii) Study of some samples of alkaline earth metals, *e.g.*, Mg and Ca	test tubes– 2 glass plates– 2	forceps	
	(iv) Gradation of physical properties of haloge.s	test tubes—4, beaker (100 ml)—1, beaker (250ml)—1, laboratory stand, flat-bottom flask (100 ml)—1, kerosene burner, delivery tubes, improvised Kipp's apparatus, gas jar—2, deflagrating spoon—1, rubber cork (for every flask), cork borer	flat bottom flask (100 ml) —1	sodium chloride—25 g manganese dioxide—15 g zinc metal—50 g H_2SO_4 (conc.)—25 ml bromine liquid—5 ml iodine (solid)— 5 g sodium metal (pea size) carbon tetrachloride—10 ml potassium bromide—25 g potassium iodide—25 g blue litmus paper
	Unit 6			
3.	Oxidation of ferrous ions into ferric ions	test tubes—2, boiling tube, source of heat, test tube holder		ferrous sulphate—2 g nitric acid (conc.)– 1 ml ammonium hydroxide– 10 ml
	Unit 7			
4.	Preparation and properties of hydrogen chloride gas	round bottom flask (500 ml), laboratory stand, wire gauze, tripod stand, kerosene burner/spirit lamp, delivery tube, gas jar, rubber cork (for r.b. flask) cork borer, test tubes—2		sodium chloride— 25 g H_2SO_4 (conc.)—5 ml blue and red litmus papers ammonium hydroxide—1 ml sodium bicarbonate—10 g zinc metal—1 g magnesium ribbon– small piece aluminium strip—small piece
	Unit 8			
5.	(i) Effect of heat on sulphur	boiling tubes—2, porcelain dish, glass rod, kerosene burner/spirit lamp, wire gauge, tripod stand	magnifying glass* (available in biology kit)	sulphur powder– 5 g carbon tetrachloride—10 ml

1	2	3	4	5
	(ii) Preparation and properties of sulphur dioxide	laboratory stand, boiling tube, delivery tubes, test tubes—4, kerosene burner/spirit lamp		copper turnings—5 g sulphuric acid (conc.)—15 ml iodine solution—5 ml (prepared by dissolving abou 500 mg of solid iodine in 5 ml of 10% potassium iodide solution)
	(iii) Preparation and properties of hydrogen sulphide gas	improvised Kipp's apparatus, test tubes—4, beaker (100 ml), filter paper, bent glass tubes		iron sulphide—50 g sulphuric acid (dil.)—100 ml litmus paper (blue) lead acetate solution—1 ml copper sulphate solution—1 ml zinc sulphate (obtained as product in solution durin preparation of hydrogen) mercuric chloride solution—1 m iodine solution—2 ml
	Unit 9			
6.	Preparation and properties of ammonia	boiling tube, test tubes—4, laboratory stand, delivery tubes, kerosene burner/spirit lamp		calcium hydroxide—10 g ammonium chloride—10 g litmus paper (red) hydrochloric acid (dil.)—1 ml sulphuric acid (dil.)—1 ml nitric acid (dil.)—1 ml copper sulphate solution—1 ml ferrous sulphate solution—1 m aluminium chloride solution 5 ml
	Unit 10			
7.	Chemical properties of aluminium	boiling tubes—2, test tubes —4, test tube holder, kerosene burner/spirit lamp, glass plate, knife, wooden splinters		aluminium strip (small piece)— sodium chloride solution—10 m mercuric chloride solution—10 m hydrochloric acid (dil.)—10 ml sodium hydroxide solution—10 m
	Unit 16			
8.	Testing of carbohydrates, fats and oils, and proteins	test tubes—4, test tube holder, filter paper, kerosene burner/spirit lamp		sodium potassium tartarate—5 copper sulphate solution—20 m sodium hydroxide—2 g ammonium hydroxide—5 ml
	Unit 17			
9.	Preparation of soap . .	porcelain dish, tripod stand, wire gauze, kerosene burner/spirit lamp, glass rod		mahuali/inseed/cotton seed oil 100 ml sodium hydroxide solution (25% – 75 ml

For schools not possessing middle school chemistry kit

Cost of equipment . . .	Rs.	190
Cost of additional equipment .	Rs.	30
Compensation for breakage .	Rs.	15
Total . .	Rs.	235

For schools possessing middle school chemistry kit

Cost of additional equipment .	Rs.	30
Compensation for breakage .	Rs.	15
Total . . .	Rs.	45

Equipment Required for Demonstration in Chemistry for Classes IX and X

(Available from Middle School Chemistry Kit)

	Name	*Quantity*
1.	Flat bottom flask (100 ml)	2
2.	Rubber stoppers of four different sizes—(2, 4, 5, 6)	12 (3 each)
3.	Glass tubing (assorted bore)	500 g
4.	Thermometer (—10°—+110°C).	1
5.	Laboratory stand (with clamp, boss head and ring extension)	1 set
6.	Glass rod	250 g
7.	Beaker (250 ml)	2
8.	Beaker (100 ml)	2
9.	Wire gauze (Asbestos centre)	1
10.	Kerosene burner (blow type).	1
11.	Tripod stand	1
12.	Connecting Wire	2 metres
13.	Forceps.	1
14.	Deflagrating spoon	1
15.	Pair of tongs	1
16.	Wash bottle (plastic/polythene).	1
17.	Test tubes (hard glass)	12
18.	Test tube holder	1
19.	Funnel (glass)	1
20.	Gas jar (with lid)	1
21.	Porcelain dish	1
22.	Filter paper (Kalpi made)	1 sheet
23.	Reaction tube	1
24.	Knife	1
25.	Watch glass (75 mm dia.)	1
26.	Measuring cylinder (100 ml)	1
27.	Balance (improvised)	1
28.	Weight box (up to 100 g)	1
29.	Boiling tube	6
30.	Round bottom flask (500 ml)	1
31.	Rubber tube	2 metres
32.	Trough, circular (plastic/polythene)	1
33.	Mortar and pestle (glass).	1
34.	Spatula	1
35.	Test tube stand (plastic/polythene)	1
36.	Delivery tubes	6
37.	Volumetric flask (100 ml)	1
38.	File, triangular	1
39.	Flat bottom flask (500 ml)	1
40.	Cork borer (set of 3)	1 set
41.	Scissors	1
42.	Kipps apparatus (improvised)	1

Cost of equipment—Rs. 190 (approximately)

Chemicals Required for Demonstraiotn in Chemistry for Ciasses IX and X

	Name	*Quantity*
1.	Sodium chloride	100 g
2.	Carbon tetra-chloride	50 ml
3.	Silver nitrate	1 g
4.	Sodium metal	1 g
5.	Kerosene	1 litre
6.	Litmus paper (red & blue)	1 booklet each
7.	Magnesium ribbon	25 g
8.	Aluminium oxide	25 g
9.	Aluminium metal	10 g
10.	Hydrochloric acid (conc.)	100 ml
11.	Sulphuric acid (conc.)	250 ml
12.	Nitric acid (conc)	100 ml
13.	Sodium hydroxide (flakes)	250 g
14.	Calcium metal	25 g
15.	Manganese dioxide	25 g
16.	Potassium bromide	25 g
17.	Iodine crystal	25 g
18.	Zinc metal (granulated)	100 g
19,	Sulphur powder	25 g
20.	Copper turnings	25 g
21.	Aluminium strip (8 cm x 2 cm)	1
22.	Mercuric chloride	25 g
23.	Aluminium chloride	25 g
24.	Ammonia solution	250 ml
25.	Calcium hydroxide	100 g
26.	Ammonium chloride	100 g
27.	Copper sulphate	50 g
28,	Ferrous sulphate	50 g
29.	Lead acetate	10 g
30.	Rochelle's salt (sodium potassium tartarate)	25 g
31.	Mahua/cottonseed/linseed oil	100 g
32.	Potassium iodide	25 g
33.	Sodium bicarbonate	15 g
34.	Iron sulphide	250 g
35.	Calcium oxide	50 g

Cost of chemicals : Rs. 65 (approximately)

Additional Equipment

	Name	*Quantity*	
1.	Carbon electrode	2	
2.	Bulb (1·5 V)	1	
3.	Holder (for above bulb)	1	
4.	Sand paper	1	sheet
5.	Magnifying lens	1	
6.	Thistle funnel (polythene head)	1	
7.	Dry cell	1	
8.	Spirit lamp (glass)	1	
9.	Beaker (500 ml)	1	

Cost of additional equipment Rs. 30 (approximately)*

BIOLOGY

(Classes IX and X)

List of Equipment for Teacher Demonstration Experiments@

Sl. No.	*Experiments@*	*Equipment Required from Middle School kit*	*Additional Equipment*	*Items Available from Environment*	*Number or Quantity to be Required*
1	2	3	4	5	6
1.	To demonstrate onion peel, cheek cells, skin casting of frog or tomato cells, to show various parts of cell		microscope microscope slides coverslips		1 2 gross 1 oz
		scissors (large) ,, (small) forceps (large) ,, (small) needles			1 pc 1 pc 1 pc 1 pc 2 pc
			watch glass filter paper glycerine		1 doz 1 pkt ½ lb
2.	To demonstrate blood film of frog/mammal or any other vertebrates, to show different blood cells		haematoxylin (ready use)		200 ml
3.	To demonstrate the population density of a plant/earthworm population in a field	metre scale trowel digger			1 pc 1 pc 1 pc
4.	The test to demonstrate the presence of protein	beaker test tubes	 flour		2 pcs (500 ml capacity) 6 pcs 250 gms
5.	The test to demonstrate the presence of sugar	beaker	 Fahling solution A & B		2 pcs (500 ml capacity) 200 ml each
6.	The test to demonstrate the presence of fat		sugar fatty seeds		250 ml 250 gmt
7.	The test to demonstrate the presence of starch in green leaf	iodine alcohol kerosene lamp tumbler (metallic)	paper	 potted plant black paper	20 shees 200 ml. one a few sheets 500 ml. one pc one pc
8.	The test to demonstrate the necessity of light for photo-synthesis			potted plant black paper	one few sheets
9.	Experiment to demonstrate the necessity of CO_2 for photosynthesis		potassium hydroxide bell jar		200 gm 1 pc
10.	Experiment to demonstrate CO_2 is evolved during respiration	test tubes bottle funnel tube		potted plant	one 6 pcs 1 pc 1 pc 4 m

@All the listed experiments are to be demonstrated by the teacher in classroom situation.

1	2	3	4	5	6
11.	Experiment to demonstrate the process of osmosis	capillary tube			4 m
			potato		250 gm
			carrot		250 gm
			sugar		250 gm
12.	Demonstration of budding in yeast	petri dish			2
			yeast tablets		100 gm
			sugar		250 gm
13.	Demonstration of mitotic cells in the root tips of onion to show chromosomes and divisional stages		acetocarmine (ready use)		100 ml
			onion		250 gms
14.	Experiment to demonstrate the movement in plant	heliotropic chamber			one
				potted plant	one
			seeds	cotton	small quantity
		petri dish			250 gm
					2
15.	Experiment to demonstrate the evaporation of water	potometer			one
		stand			one
16.	Experiment to demonstrate the translocation of food and water	knife		plant	one
					one
			cotton		1 lb
			thread		20 mt
			seeds of pea		250 gm
17.	Examination of phenotypic characters		gram		250 gm
			maize		250 gm
				leaf	a few
				flower	a few
18.	Survey of human genetic factors		PTC paper/solution		1 pkt/100 ml
			chart for colour blindness		one
19.	Physical analysis of soil	beaker			2 pcs (500 ml capacity)
20.	Demonstration of chemical analysis of soil	beaker		soil	
		glassrod			
		test tube			
21.	Collection of diseased plants			soil	
				pH paper	1 pkt
22.	Visit to agricultural and/or poultry farm	field study			
23.	Collection and study of agricultural pests				
24.	Demonstration of fundamental and vascular tissues after macerating any dicot/monocot stem		conc. HNO_3		0·5 litre
			safranin		10 gm
25.	Demonstration of stomata and guard cells in the lower epidermis of leaf	equipment already mentioned			
26.	Demonstration of digestion of starch to show the action of saliva on starch	tumbler		Thermometer	one
		test tubes			
		lamp			
		stirrer			
27.	Demonstration of unicellular organisms under microscope			pondwater	
				frog	
				cockroach	

Non-recurring cost . . . . . Rs. 550

Recurring cost . . . . . Rs. 300

LIST B

With Student Experiment and Teacher Demonstrations

PHYSICS : Classes IX and X : Equipment Required

Serial No.	*Experiment/Demonstration*	*Theoretical Background*	*From Middle School Kit*	*Additional Equipment*	*Equipment from Environment*	*Requirement for 2 Groups, Each of 25 pupils*
1	2	3	4	5	6	7
1.	Model of solar system	Elementary description of solar system	..	metre scales paper	.. ..	8 60 sheets
2.	Verification of the formula V=u + at	Uniformly accelerated motion	trolley pan weights pulley	.. .. paper improvised ..	.. .. ink	2 2 2 2 120 24 ..
3.	Measurement by balances	Principle of moments	metre scale stand	.. .. weights pans	.. ..	2 2 2 4
4.	Resonance column	Propagation of sound, wavelength, frequency, etc.	tuning fork stand	.. .. plastic pipe (3 cm diam.) ..	.. .. .. vessel	2 2 4 m 1
5.	Centre of gravity of a body	Centre of gravity	..	..	regular and irregular bodies plumbline.	..
6.	Archimedes' Principle	Floatation	spring balance overflow vessel ..	.. .. ..	.. .. cork, stone, etc	2 2
7.	Dependence of kinetic energy on mass and speed	Conservation of mechanical energy	stand steel cylinders wooden block screen	.. ..	.. ..	2 2 2 4
8.	Hooke's law	Stress and strain	weights metre scale ..	.. .. rubber bands	.. .. ..	2 2 variety
9.	Action and reaction	Newton's III Law	trolleys spring clamp stand	.. ..	.. ..	4 2 2 2
10.	Internal energy and work	Conversion of work into heat	thermoscope manometer metal disc	.. .. ..	.. .. ..	2 2 2
11.	Concave Mirror u, v, p and f	Image formation in spherical mirrors	metre scale	.. concave mirror wooden screen wooden screen & slit light source	.. ..	2 4 2 2 2

1	2	3	4	5	6	7
12.	Convex lens . . .	Image formation by lens	metre scale	..	..	2
			..	light source	..	2
			..	wooden screens	..	4
			..	pins	..	2
13.	Glass block . . .	Refraction	glass block	..	..	2
			..	paper	..	60
			..	pins	..	2
14.	Prism	Dispersion	glass prism	..	..	2
			..	paper	..	60
			..	pins	..	2
15.	V-I characteristics .	Ohm's law	resistance wire	..	..	10 m
			ammeter	..	..	2
			voltmeter	..	..	2
			rheostat	..	..	2
			key	..	..	2
			..	connecting wire	..	8m
			..	dry cells	..	8
16.	Mapping of magnetic field	Magnetism	bar magnet	..	..	2
			magnetic needle	..	..	2
			..	paper	..	60
17.	Series and parallel arrangement	Series and parallel circuits	..	dry cells	..	24
			..	connecting wires	..	8
			..	resistance wire	..	2m
			..	voltmeter	..	2
			..	diameter	..	2
			..	keys	..	2
18.	Magnetic field of a circular conductor	Ampere's law	..	circular conductor	..	2
			magnetic needle	..	..	2
			stand	..	..	2
			..	paper	..	60
			..	dry cells	..	8
19.	Electromagnet	Electromagnetic effect	..	dry cells	..	8
			..	wire	..	6m
			..	..	nails	several
20.	Measurement of angle of dip	Terrestrial magnetism	magnetic needle	..	..	2
			stand	..	..	2
			..	..	graduated circular disc	2
@21.	Electrostatic generator	Electrostatics	..	belt generator	..	1

@ Demonstration only.

Total Cost : Non-recurring : Rs. 910
Recurring : Rs. 240

List of Equipment for Class Experiments

S.No.	Experiments	Theoretical Background	Equipment Required			Chemicals	Number Required for 25 Groups of 2
			From Middle School Kit	Additional Equipment	Available from Environment		
1	2	3	4	5	6	7	8
1.	Verification of Boyle's Law	Pressure volume relationship	weights rubber cork	syringe ½ kg. weights	—		25 100
	Do.	Do.		Boyle's law apparatus			25
2.	Preparation and study of the properties of following gases.						
	(*i*) chlorine preparation:	Method of preparation and physical and chemical properties	boiling tubes test tubes bent glass tube rubber cork			sodium chloride sulphuric acid manganese dioxide	25 25 25
		Properties: (*a*) solubility	test tubes		water		25
		(*b*) reactivity with metals	deflagrating spoons gas jars			sodium, antimony, magnesium ribbon, steel wool	100 25
		(*c*) reactivity with hydrogen	improvised Kipp's apparatus beakers, bent glass tube (with jet) test tube filter paper			zinc, sulphuric acid turpentine	25 25 25 25
		(*d*) bleaching action	litmus paper test tubes		flower petal		25
		(*e*) reaction with alkalis	test tubes			sodium hydroxide slaked line	25
		(*f*) liberating power	test tubes			sodium bromide sodium iodide	25
	(*ii*) hydrogen chloride preparation	preparation	round bottom flask bent glass tubes	 thistle funnel bunsen burner		sodium chloride conc. sulphuric acid	25 25 25 25
			iron stand (with clamp) rubber cork wire gauze tripod stand test tubes				25 25 25 25 25

1	2	3	4	5	6	7	8
	(a) properties solubility	properties	round bottom flask iron stand with clamp and ring beakers jet tube rubber cork		water	litmus solution	25 25 25 25 25
	(b) effect on metals		beakers funnel test tubes			zinc, magnesium, aluminium, copper, iron, hydrochloric acid, marble, sodium bicarbonate	25 25 25
(*iii*) ammonia preparation		preparation	boiling tube iron stand with clamp and ring test tubes burner			calcium hydroxide (slaked lime) ammonium chloride	25 25 25 25
		(a) properties solubility	round bottom flask, iron stand with clamp and ring beaker jet tube rubber cork		water	litmus solution	25 25 25 25 25
		(b) reaction of ammonia with acid and salts				ammonium hydroxide hydrochloric acid sulphuric acid nitric acid copper sulphate ferric chloride aluminium sulphate	
(*iv*) preparation and properties of nitrogen preparation		preparation of nitrogen	iron stand with clamp boiling tubes rubber cork burner rubber tube bent glass tube test tubes		water	sodium nitrite ammonium chloride	25 25 25 25 25 25 50
		(a) properties combustibility neither combustible nor supporter of combustion	burning splinter boiling tube				25
(*v*) hydrogen sulphide preparation		preparation	iron stand with clamp bent glass tubes test tubes			iron sulphide dil. sulphuric acid	25 25 25
		(*a*) properties litmus action	test tube beaker				25 25
		(*b*) solubility					
		(*c*) action on lead acetate	filter paper			lead acetate	
		(*d*) action on metallic salts				copper sulphate cadmium chloride zinc sulphate manganese sulphate	

1	2	3	4	5	6	7	8
	(vi) sulphur dioxide preparation		iron stand with clamp				25
				bunsen burner		copper turning conc. sulphuric acid	25
			boiling tube				25
			bent glass tubes				25
		properties	rubber cork		water		25
		(a) solubility					
		(b) bleaching action	beaker,				25
		(c) oxidizing nature	test tubes		moist coloured flower petals	hydrogen sulphide	25
3.	Identification of acidic radicals				water	sodium chloride silver nitrate amm. hydroxide nitric acid	
	(i) chloride		test tubes				75
	(ii) bromide		test tubes		water	sodium bromide silver nitrate amm. hydroxide nitric acid	75
	(iii) iodide		test tubes		water	sodium iodide silver nitrate amm. hydroxide nitric acid	75
	(iv) nitrate		test tubes		water	sodium or potassium nitrate ferrous sulphate conc. sulphuric acid	50
	(v) phosphate		test tubes micro pipettes	burner	water	sodium or potassium phosphate, nitric acid, amm. molybdate	50 25 25
	(vi) sulphide		test tubes filter paper	burner	water	sodium sulphide dil. sulphuric acid lead acetate	25
		(a) Precipitation as sulphides	test tubes		water	dilute hydrochloric acid	100
		(b) basic radicals lead, arsenic, tin and copper	improvised Kipp's apparatus			ferrous sulphide, dilute sulphuric acid, lead oxide, arsenic oxide, antimony trichloride, copper sulphate	25
		(c) detection of ferrous and ferric ion	test tubes		water	ferrous sulphate, ferric chloride, ammonium hydroxide potassium ferrocyanide	50
4.	Determination of solubility of potassium nitrate and barium chloride at room temperature	Solubility of simple substances	beaker glass rod balance with weights		water	potassium nitrate barium chloride	50 50 25
5.	Effect of different concentrations of HA on its action on marble, zinc and comparison of the relative rates of reactions	Effect of concentration on the rate of reaction	test tubes		water	zinc, marble, hydrochloric acid	150
6.	Simple test of oils and fats	How do we get fats and oils from natural sources ?	filter paper	burner	food material		25
	Test of protein, carbohydrate on fat milk		test tubes pipettes	burner	milk	amm. hydroxide copper sulphate sodium potassium tartarate, sodium hydroxide	75 25 25

1	2	3	4	5	6	7	8
7.	Determination of calorific value of some volatile combustible substances	Calorific value of a fuel	thermometer	calorimeter	water		25
				perforated tin can			25
			candle				25
			match box				25
				gas jar disc		methylated spirit	25
							25
8.	Testing for the following in some organic compounds	Characteristic chemical property of unsaturated	test tube		water	bromine water	50
						cinnamic acid	
	(i) saturation and unsaturation	hydrocarbon	test tubes		water	acetal dehydrate, sodium potassium tartarate, potassium hydroxide, copper sulphate	25
	(ii) functional groups : —CHO		test tube		water	oxalic or citric acid, sodium bicarbonate	25
	—COOH						
	—CH_2OH		test tube			ethyl or methyl alcohol, sodium	25
	—NH_2		test tube	burner		methylamine, conc. hydrochloric acid, chloroform, alcohol, potassium hydroxide	50 25 125
9.	Detection of elements Cl, Br, I, N and S	Testing for elements in organic compounds	china dish			chloroform, ethyl bromide, iodoform,	250
				ignition tubes	water		25
			funnel			methylamine, thiourea, sodium,	
			filterpaper				25
			pair of tongs			sodium hydroxide,	
			test tube			silver nitrate,	125
			wire gauze			nitric acid,	25
			tripod stand	burner		ammonium hydroxide	25
						ferrous sulphate, sodium nitroprusside, lead acetate	
10.	Preparation of soap	Preparation of soap	beaker				25
			china dish		water	cottonseed oil	25
			glass rod				
			tripod stand			caustic soda	25
			wire gauze			ethyl alcohol	25
				burner			25
							25

Equipment Needed by One Group of 2 Students

Ideal Conditions for One Group

	Quantity	*Capacity*
1. Burette with pinch clamp	1	25 ml (graduation in 0·1 ml)
2. Funnel	1	50-60 mm diameter
3. Test tube holder	1	
4. Clamps		
(a) screen	1	
(b) pinch	1	
5. Test tube brushes	1	
6. Droppers with pipette (or pipette)	2	25 ml (graduation 0·2 m
7. Flat bottomed flask (500 ml)	2	500 ml
8. Flat bottomed flask (100 ml)	2	100 ml
9. Bunsen burner (or item 10)	1	

	Quantity	*Capacity*
10. Spirit lamp	1	
11. Deflagrating spoon	2	
12. Measuring cylinder	1	50 ml (graduation 1 mm)
13. Pipette	1	10 ml (graduation 0·1 mm)
14. Test tube (10 cm × 7·5 cm)	15	
15. Boiling tubes (hard glass 15 cm × 4·25 cm)	15	
16. Kipp's apparatus (improvised)	1	
17. Rubber stoppers	20	Assorted
18. Beakers (100 ml and 250 ml glass)	2	50 & 100 ml
19. Wire gauze	1	
20. Tripod stand	1	
21. China dish (80 mm dia)	1	
22. Test tube stand	1	
23. Iron stand	1	
24. Clamps	2	
25. Ring	2	
26. Watch glass (75 mm dia)	2	
27. Rubber tubes	10 metres 10 metres	4·6 mm diameter 8·10 mm diameter
28. Glass tubes	100 gms	4·6 mm diameter
29. Glass rod	2	
30. Ignition tube	50 gms	
31. Conical flask	1	150 ml
32. A pair of tongs	1	
33. Round bottomed flask	1	100 ml
34. Trough	1	
35. Water bath	1	
36. Tin can	1	
37. Spatula	2	
38. Clay triangle	1	
39. Cork borer (set)	1	
40. Balance	1	
41. Weight box	1	
42. Mortar & pestle	1	
43. Syringe		10 ml
44. Thermometer	1	

Total for one group : Rs. 500

Cheaper Alternative for One Group

1. Syringe (10 ml)
2. ½ kg. weights (4 pieces)
3. Rubber cork (assorted) (15 pieces)
4. Boiling tube (6)
5. Test tube (15)
6. Bent glass tube
7. Deflagrating spoon
8. Pair of tongs
9. Improvised Kipp's apparatus
10. Beakers (2)
11. Round bottom flask
12. Laboratory stand
13. Wire gauze (3)
14. Tripod stand
15. Funnel (3)
16. Burner
17. Rubber tube
18. Burning splints
19. Pipette
20. Calorimeter
21. Thermometer
22. Candle
23. China dish
24. Ignition tubes
25. Glass rod

Cost : about Rs. 200 for one group

For 16 groups of 3 the cost will be approximately : non-recurring : Rs. 3,500

recurring . Rs. 1,500

CHEMISTRY CLASSES IX AND X

List of Equipment for Details of Demonstration

Sl. No.	Theory (syllabus content)	Demonstration	Equipment Required			Chemicals	Number Required
			From middle school Kits	Additional Equipment	Available from Environment		
1	2	3	4	5	6	7	8
	UNIT II						
	Behaviour of gases						
1.	Temperature and volume relationship of gas	Dependence of volume on temperature of gases	(a) flat bottom flask (100 ml Borosil)				3
			(b) rubber stopper				3 (assorted)
			(c) glass tubing (length 35 cms and inner diameter 4-5 mm)				3 pieces
				(d) crystallising dish (80 mm x 40 mm)			1
						sulphuric acid and zinc (for preperation of hydrogen)	
						hydrochloric acid and marble (for preparation of carbon dioxide)	
					coloured water (by adding a crystal of potassium permanganate)		
		(a) Experiment to verify temperature volume relationship		(a) 50 ml glass syringe			1
			(b) rubber stopper				1
			(c) thermometer				1
			(d) laboratory stand with clamps, boss heads and ring extension				1
			(e) glass rod				1
				(f) beaker (500 ml glass)			1
			(g) wire gauze (10 cm x 10 cm with asbestos in the centre)				1

1	2	3	4	5	6	7	8
			(h) spirit lamp or bunsen burners				1
					ice water table salt		
	UNIT III						
2.	*Structure of Atom* what are the negative charges like ?	Experiments with cathode tubes		(a) cathode ray tube			1
				(b) cathode ray tube with paddle wheel			1
				(c) cathode ray tube with metal cross			1
	UNIT IV						
3.	*Chemical Bond* Covalent bond and electrovalent (ionic) bond	Observation of properties of covalent and ionic compounds (electrical conductivity and precipitation reactions)	(a) beaker (250 ml glass) (b) connecting wire				2 2 meters
				(c) carbon electrodes			4
				(d) bulbs 1·5 volt			2
				(e) tapping key			2
			(f) battery cells (1·5 volts)				4
				(g) lamp holder			2
						(a) sodium chloride (b) carbon tertrachloride (c) silver nitrate solution	
	UNIT V						
4.	*Periodic classification of Elements*						
	(a) Changes in the properties of chemical elements with increasing atomic number	(i) Reaction of typical elements of period III with water					
			(a) beaker 250 ml or boiling tube (100 ml)				3
			(b) knife				1
				(c) forceps			1
			(d) sand paper (60 no.)				1 sheet
						sodium metal (a) (pea- size piece) litmus paper (red)	
					water		
						magnesium metal (ribbon) aluminium metal	

1	2	3	4	5	6	7	8
	(a) Changes in the properties of chemical elements with increasing atomic number	(ii) Formation of oxides of elements of period III and their reactions with water	(a) deflagrating spoon				1
			(b) pair of tongs				1
			(c) beaker (100 ml glass)				1
			(d) boiling test tube				4
						Sodium metal (a pea-size piece)	
						litmus paper (red and blue)	
						magnesium metal (ribbon) aluminium trioxide	
						aluminium metal hydrochloric acid sodium hydroxide solution	
	—do—	(iii) study of samples of alkaline earth metals, *e.g.* magnesium and calcium —physical state, lustre, hardness, reaction with water					
			(a) test-tube (glass 10 cm × 1·7 cm.)				2
			(b) glass plate (7·5 cm × 2·5 cm)				2
				(c) forceps			1
						(a) magnesium ribbon (a piece)	
						(b) calcium metal (a piece)	
	(b) Gradation of the properties of alkali metals and halogens	Gradation of physical properties of halogens	(a) test tube (glass 10cm × 17 cm)		(c) water		4
			(b) beaker (100 ml)				-
			(d) laboratory stand and holders				2
				(e) dropping funnel			2
			(f) flat bottom flask (100 ml ‡Borosil)				2
				(g) Drechsel bottle or Woulfe bottle			2
			(h) bunsen burner				2
			(i) beaker (100 ml glass)				2
			(j) delivery tubes				4

1	2	3	4	5	6	7	8
	(b) Gradation of the properties of alkali metals and halogens	Reactions of halogens with hydrogen	(a) Kipp's apparatus (improvised) (DSE)				1
			(b) delivery tube				1
			(c) gas jar (glass 450 ml capacity) with discs for gas jars				3
			(d) apparatus for preparation of chlorine and bromine (See earlier)				1
			(e) deflagrating spoon (25 cm long)				2
	UNIT VIII						
	Oxygen and Sulphur						
	(a) Allotropy	(i) Effect of heat on sulphur—allotropic modifications of sulphur	(a) test tube (glass 10 cm × 1·7 cm or boiling test tube 15 cm × 2·5 cm)				2
			(b) cork				2
			(c) funnel (glass, 60° stem, dia. 8 to 10 mm.)				1
			(d) filter paper				2
			(e) china dish (10 cm dia)				1
				(f) magnifying lens May—4X			1
							1
			(g) a glass rod				1
			(h) bunsen burner				
			(i) Wire gauze with absbestos centre				
						flowers of sulphur carbon disulphide	
	(b) Oxides of sulphur—sulphur dioxide, its properties	(ii) Preparation of sulphur dioxide and its properties	(1) laboratory stand with holders		water		2
			(2) boiling tube (15 cm × 2. 5 cm)				
			(3) delivery tube				2
			(4) test tubes (10 cm × 1. 7 cm)				4
			(5) bunsen burner				2
			(6) Kipp's apparatus				1
						sulphuric acid copper (turnings)	
					water		
						hydrogen sulphide (H_2 and S apparatus, the same as for the preparation of sulphur dioxide) iodine	
					a few fresh red rose petals		

1	2	3	4	5	6	7	8
	(c) The properties of sulphuric acid	(iii) Charring action of sulphuric acid on organic compounds	test tube (10 cm × 1·7 cm)		cane sugar water	concentrated sulphuric acid	1
6.	*UNIT IX*						
	Nitrogen and Phosphorus Chemical properties of ammonia	(i) Burning of Ammonia in oxygen	(a) reaction tube (hard glass 12 cm × 2·5 cm)				2
			(b) delivery tubes				2
			(c) laboratory stand with holders				3
			(d) boiling tube				2
			(e) bunsen burner				2
			(f) cork				3
				(g) gasometer			2
	Do.	(ii) Catalytic oxidation of ammonia	(a) boiling tube			ammonium chloride calcium hydroxide potassium permanganate	1
			(b) laboratory stand with holders				1
			(c) platinum wire			ammonia (ammonium chloride, calcium hydroxide)	1
			(d) bunsen burner				1
7.	*UNIT X*						
	Metallurgical processes and metals	(a) Chemical properties of aluminium					
	Chemical properties of aluminium	(i) Protective properties of oxide film on aluminium	(a) boiling tubes				4
			(b) laboratory stand with holders or test tube holder				2
			(c) bunsen burner				2
			(d) test tube stand				1
					water	aluminium strip sodium chloride	
						mercuric chloride solution	
	Do.	(ii) Reaction with oxygen	(a) boiling tube				2
			(b) glass plate				1
			(c) knife				1
						a strip of aluminium sheet	
					water	mercuric chloride	
	Do.	(iii) Reaction with water	boiling tube				2
						a strip of aluminium sheet	
					water	mercuric chloride	

1	2	3	4	5	6	7	8
	Chemical properties of aluminium	(iv) Reaction with solutions of acids and gases					
			(a) test tubes				2
			(b) splinter				2
			(c) bunsen burner				1
			(d) test tube holder				2
						a strip of aluminium sheet	
						hydrochloric acid sodium hydroxide	
	(b) Amphoteric nature of aluminium oxide	(b) Chemical properties of compounds of Aluminium	(a) test tubes				2
			(b) test tube stand				1
		(i) Reactions of Aluminium oxide with acids and gases				aluminium oxide hydrochloric acid sodium hydroxide	
		(ii) Preparation of aluminium hydroxide and detection of Al***ion	(a) test tubes				3
			(b) test tube stand				1
			(c) laboratory stand with holders				1
			(d) funnel				1
			(e) filter paper				1
			(f) glass rod				1
						aluminium chloride ammonium hydroxide, Sulphuric tion (red)	
		(iii) Action of acids and gases of Al***ion	test tube				
						aluminium chloride, ammonium hydroxide, sulphuric acid	
8.	*UNIT X* *Electrolytes and Non-Electrolytes*						
	Preparation of standard solution	Preperation of solution of given concentration	(a) watch-glass				2
			(b) measuring cylinders				2
			(c) balance with weight				2
			(d) beaker (100 ml.)				2
			(e) glass rod				2
			(f) wash bottle		water	sodium chloride	1
						potassium chloride	
9.	UNIT XII The rates of reactions and chemical equilibrium	Action of water and acids on different metals	test tubes			zinc, magnesium, copper, hydrochloric acid	3
					water		

	Equipment for Demonstration (Class IX and X)	*Number Required*	
1.	Flat bottom flask (100 ml)	3	
2.	Rubber stoppers	15	
3.	Glass tubing (2 to 3 mm dia.)	100	gms
4.	Crystallising dish (80 mm × 40 mm)	2	
5.	50 ml glass syringe	1	
6.	Thermometer (—10°C — + 100°C)	1	
7.	Laboratory stand	3	
8.	Glass rod	200	gms
9.	Beaker (500 ml)	2	
10.	Beaker (250 ml)	2	
11.	Beaker (100 ml)	4	
12.	Wire gauge	2	
13.	Spirit lamps	1	
14.	Bunsen burner	2	
15.	Cathode ray tube (item not essential)	1	
16.	Cathode ray tube with paddle wheel (item not essential)	1	
17.	Cathode ray tube with metal cross (item not essential)	1	
18.	Connecting wire	2	metres
19.	Carbon Electrodes	4	
20.	Bulbs	2	
21.	Lamp holder	2	
22.	Tapping key	2	
23.	Battery cells (1·5V)	4	
24.	Sand paper	1	sheet
25.	Forceps	2	
26.	Deflagrating spoon	2	
27.	Pair of tongs	1	
28.	Wash bottle	1	
29.	Boiling tube	8	
30.	Test tube	24	
31.	Glass Plate	2	
32.	Dropping funnel	2	
33.	Drechsel bottle	2	
34.	Kipp's apparatus (item should be deleted or improvised)	2	
35.	Gas jar (450 ml)	1	
36.	Funnel (50 mm dia.)	2	
37.	China Dish	2	
38.	Filter paper	1	sheet
39.	A magnifying glass	1	
40.	Reaction tube	1	
41.	Gasometer (item not essential)	2	
42.	Platinum wire	1	
43.	Knife	1	
44.	Test tube holder	2	
45.	Splinter	2	
46.	Watch glass (75 mm dia.)	1	
47.	Measuring cylinder (100 ml)	2	
48.	Balance with weights	1	

Approximate cost (excluding non-essential items) : non-recurring : Rs. 850
recurring : Rs. 150

CLASSES IX AND X

List of Chemicals

(1) Sulphuric acid (G.R.) (95—97% Sp.gr. 1·84)	5000 ml
(2) Hydrochloric acid (G.R.) (min 36·4% W/W. sp.gr. 1·19)	5000 ml
(3) Marble chips	500 gm
(4) Potassium permanganate G.R.	500 gm
(5) Sodium chloride	500 gm
(6) Carbon tetrachloride pure	500 ml
(7) Silver nitrate.	25 gm
(8) Sodium (metal)	200 gm
(9) Litmus paper (blue and red) booklets with 10 papers book BDH	30 booklets
(10) Solution of litmus	125 ml
(11) Magnesium metal (ribbon)	100 gm
(12) Aluminium metal (foil)	100 gm
(13) Aluminium trioxide	500 gm
(14) Sodium hydroxide flakes.	500 gm
(15) Calcium metal	
16) Potassium bromide (G.R.)	500 gm
(17) Potassium iodide	100 gm
(18) Manganese dioxide	500 gm
(19) Nitric acid (C.P.)	2·5 litres
(20) Carbon tetrachloride	500 ml
(21) Sodium bromide	500 gm
(22) Sodium iodide	200 gm
(23) Sulphur (roll sulphur)	500 gm
(24) Carbon disulphide	500 ml
(25) Copper (turnings)	250 gm
(26) Iodine crystals	100 gm
(27) Ammonium chloride	500 gm
(28) Calcium oxide (lumps)	500 gm
(29) Mercuric chloride	250 gm
(30) Aluminium oxide	500 gm
(31) Ammonium hydroxide (sol.)	500 ml
(32) Aluminium chloride (hydrated)	500 gm
(33) Potassium chloride G.R.	500 gm
(34) Zinc granulated (L.P.)	500 gm
(35) Turpentine oil	250 ml
(36) Iron filling and iron wire	250 gm & 5 mm dia.— 5 metres
(37) Sodium bicarbonate (sodium hydrogen carbonate)	500 gm
(38) Copper sulphate (commercial)	500 gm
(39) Ferric chloride	500 gm
(40) Aluminium sulphate G.R.	500 gm
(41) Sodium nitrate	500 gm
(42) Iron sulphide (sticks)	500 gm
(43) Lead acetate	500 gm
(44) Cadmium chloride monohydrate	100 gm
(45) Zinc sulphate G.R.	500 gm
(46) Manganese sulphate	500 gm
(47) Sodium phosphate	500 gm
(48) Ammonium molybdate	100 gm
(49) Lead oxide	500 gm
(50) Arsenic oxide	
(51) Ferrous sulphate	500 gm
(52) Ferric chloride	500 gm
(53) Potassium nitrate B.P.	500 gm
(54) Barium chloride G.R.	500 gm
(55) Liquid ammonia (0·91)	500 ml
(56) Copper wire (5 mm dia.)	5 metres

(57) Arsenious oxide	100 gm	(65) Sulphadiazine	100 gm
(58) Antimony trichloride	100 gm	(66) Benzoic acid	500 gm
(59) Stearic acid	250 gm	(67) Methyl salicylate I.P./B.P.	500 ml
(60) Oleic acid	250 ml	(68) Chloroform G.R.	500 ml
(61) Methyl alcohol	500 ml	(69) Oxalic acid N/10 CVS	500 gm
(62) Salicylic acid I.P./B.P.	500 gm	(70) Stannous chloride [Tin (II) chloride]	100 gm
(63) Ethyl alcohol	500 ml	(71) Stannic chloride	100 gm
(64) Tribromaniline	100 ml	(72) Aniline.	500 ml

Total cost: about Rs. 2,000

N.B.—This is a recurring cost but the quantities suggested are the minimum available commercially. It is possible that they may be sufficient in some cases for 2 or 3 years.

BIOLOGY

CLASSES IX AND X

List of Equipment for Class Experiment

Sl. No.	Experiment	Equipment Required			Number for 6 Group of 8 students
		From Middle School Kit	Additional Equipment	Avaible from Environment	
1	2	3	4	5	6
1.	To examine onion peel, cheek cells, skin casing of frog or tomato cells to examine various parts of cell	..	microscope, slides,	..	6
		..	..	..	3 gross
		..	..	..	3 oz
		scissors	cover glass	..	6
		forceps	..	..	6
		needles	..	..	12
		..	watch glass	..	6 doz.
		..	filter paper	..	3 pkt
		..	glycerine	..	1·5 lb
2.	To prepare blood film of frog/mammal or any other vertebrates, to show its various cells	..	haemotoxylin (ready use)	..	500 ml bottle
3.	To study population density of a particular plant/earthworm population in a field	metre scale	..	..	6
		trowel	..	..	6
		digger	..	..	6
4.	To test the presence of protein . .	beaker	..	..	30
		..	flour	..	750 gm
		test tubes	..	..	30
5.	To test the presence of sugar . .	beaker	..	..	
		..	Fahling A & B	..	500 ml each
		..	sugar	..	500 ml
6.	To test the presence of fat . .	..	..	fatty seeds	1 kg
		..	..	paper	1 kg
7.	To test the presence of starch in a given sample or green leaf	iodine	..	..	500 ml
		..	..	potted plant	
		..	..	black paper	
		alcohol	..	..	500 ml
		lamp	..	..	8
		tumbler	..	..	8
8.	Experiment to demonstrate necessity of light	..	..	potted plant	
		..		black paper	
		..	Potassium hydroxide		500 g
9.	Experiment to demonstrate the necessity of CO_2	test tube	..	..	
		..	..	potted plant	
		..	bell jar	..	3
10.	Experiment to show Co_2 is evolved during aspiration	bottle	..	..	6
		funnel	..	..	6
		tube	..	..	6 m
11.	Process of osmosis	capillary tube	..	..	6 m
12.	Process of budding yeast . . .	petri dish	..	..	6
		..	..	sugar	
		..	yeast tablets	..	150 g
13.	To observe mitosis from root tips of onion	..	..	onion	
		..	acetocarmine	..	100 ml bottle

1	2	3	4	5	6
14.	Movement in plants	heliotropic chamber	..	..	6
		..	..	potted plant	
		..	cotton	..	
		petri dish	..	..	
		..	..	seeds	
15.	Evaporation of Water	potometer	..	..	
		..	..	plant	
		stand	..	..	
16.	Translocation of food and water . .	..	..	field study	
		..	..	cotton thread	
		knife	..	..	
17.	Examination of phenotypic characters .			seeds of pea, gram, maize leaf and flower	
18.	Survey human genetic factor . . .	..	PTC paper disc	..	1
		..	7 charts for colour blindness	..	1
19.	Physical analysis of soil	beaker	..	..	
		..	..	soil	
		glass rod	..	..	
20.	Chemical analysis of soil . . .	beaker	..	..	
		..	PH paper	..	6 pkts
		..	..	soil	
		test tubes	..	..	
21.	Collection of diseased plant . . .	..	..	field study	
22.	Visit to agricultural and poultry farm .	..	..	field study	
23.	Collection and study of agricultural pests .	..	..	field study	

Total non-recurring : Rs. 3500

recurring : Rs. 500

BIOLOGY

CLASSES IX AND X

Details of Equipment for Demonstration

Theory (Syllabus Content)	*Demonstration*	*Equipment Required*			*Number Required*
		From Middle School Kits	*Additional Equipment*	*Available from Environment*	
1. To examine fundamental and vascular tissues after macerating any dicot/ monocot stem		test tubes	Conc. HNO_3 Safranin		1 lb 25 g 2 dozens
2. Presence of stomata and guard cells in the lower surface of leaves	To demonstrate the lower guard cells	Nil	Nil	Nil	—
3. Digestion of starch	To demonstrate action of saliva on starch	tumbler test tubes thermometer lamp stirrer	.. .. 	.. .. 	2 2
4. Unicellular organisation	To demonstrate protozoans in pond water, alimentary canal of frog, cockroach, etc.			pond water frog cockroach	

GMGIPMR—Job I—1 Edu. JC. 40—18-4-77—750

APPENDIX II

SCHEME OF VOCATIONALISATION OF HIGHER SECONDARY EDUCATION

OBJECTIVE

1. It is proposed to formulate and implement a Centrally sponsored scheme for vocationalisation of higher secondary education in the Fifth Plan. The main objective of the scheme is to encourage the State Governments to initiate the vocationalisation of higher secondary classes in the Fifth Plan period and to expand and consolidate it on a regular basis as a State scheme in the Sixth Plan. The Centre's role in the scheme is mainly to ensure country-wide acceptance of this new concept and to assist State Governments in establishing the relevance and importance of vocationalisation to our socio-economic needs. No doubt, some schemes of vocationalisation are already implemented in various parts of the country; but these efforts need to be further supplemented by central assistance and placed on a sound footing on the basis of careful planning and implementation.

RECOMMENDATIONS OF THE EDUCATION COMMISSION

2. The Education Commission, while recommending the adoption of the educational structure of 10+2+3, visualised a primary stage of 7-8 years,

a lower secondary stage of 2-3 years of general education and 1-3 years of vocational education, a higher secondary stage of 2 years of general education or 1-3 years of vocational education and a higher education stage of 3 years for the first degree. They anticipated that at the end of the primary stage about 20 percent may step off the school system and enter working life while about 20 per cent may move into different vocational courses at the lower secondary stage and the remaining 60% may continue their general education. At the end of the 10th year about 40% of these may step off the school system and enter working life. About 30% of the remaining numbers may enter vocational courses while the other 30% may go into general education. They also envisaged the introduction of work experience in schools as an integral part of the school system. This is however applicable to all students and is proposed as introduction to the world of work for the students and to inculcate in them respect for manual work, to make them aware of the importance of socially productive labour and to bring about integration between mental and manual work.

3. Vocational education at the lower secondary level aims at training semi-skilled and skilled workers as is being done in the I.T.Is. In fact, the suggestion of the Education Commission is to reduce the age of entry to the I.T.I. and to attract students from primary schools, principally those who show no aptitude for further general education. The State Governments can also open trade schools to enable them to train these students as skilled workers.

4. At the higher secondary stage, the Education Commission envisaged development of skills to provide middle level supervisory and technician level manpower. They felt that the role of the technician and middle level supervisors is not properly understood in India and that their numbers need to be substantially increased. At present our manpower pyramid is top heavy. They pointed out that many persons who are more highly qualified than need be are doing what should be regarded as a technician's job. This is a wasteful use of their skills and is an unnecessary charge on training costs. The most appropriate thing to do in the circumstances is to place emphasis on the training of middle level technicians.

5. They have recommended a greater diversification of vocational courses at the higher secondary level. At present it is mainly confined to technical training in polytechnics. The existing courses which are now run at this level for the training of teachers, para-medical personnel and in the women's polytechnics would all come under this programme. They have suggested that a great range of courses in commercial, scientific and industrial trades can be offered. They have also pointed out that training should cover not only people who seek employment but also those who are or may be interested, in self-employment.

6. Having emphasised the need to vocationalise higher secondary education and to diversify and expand these courses to cover 50% of the total enrolment at this stage, the Commission have stressed that most of these courses could be terminal in nature.

NATIONAL POLICY

7. The National Policy of Education Resolution agrees with these recommendations of the Education Commission on vocational education. To quote:

"There is need to increase facilities for technical and vocational education at secondary stage. Provisions of facilities for secondary and vocational education should conform particularly to requirements of the developing economy and real employment opportunities. Such a linkage is necessary to make technical and vocational education at the secondary stage effectively terminal. The facilities for technical and vocational education should be suitably diversified to cover large number of fields such as agriculture, industry, trade and commerce, medicine and public health, home management, arts and crafts and secretarial practice".

CENTRAL ADVISORY BOARD OF EDUCATION

8. The Central Advisory Board of Education, which is the highest body concerned with educational policy in the country, has also been concerned about this problem. While deliberating over it at its 37th session held in November, 1974, the Board observed that the amount of Rs. 10 crores provided in the Draft Central Plan for the intro-

duction of vocational courses at the higher secondary stage was inadequate and recommended that the provision should be substantially increased. The Board also observed that the new courses should be started after taking into account the existing facilities to meet the need of middle level persons in the concerned district/ State. They also suggested that the National Council of Educational Research & Training may work out model curricula and syllabii for such courses and provide guidelines to the State Governments. The Central Advisory Board of Education at its 38th meeting held in November, 1975, while noting with satisfaction the adoption of the educational pattern of 10+2+3 by most of the State Governments, deemed it necessary to stress the crucial importance of the stage of 2 years between the school and university stages of education. It reiterated that this stage should be regarded not merely as college preparatory but as a period for preparing an increasingly larger number of school leavers for different vocations in life. The Board was also of the view that guidance and financial assistance by Central Government would enable State Governments

to take quick and effective action in this direction and recommended the same.

PRESSURE ON HIGHER EDUCATION

9. It may be noted that till now wherever this class or stage has been introduced (or exists) it is known as pre-degree or pre-university class, intermediate or junior college, implying that it is mainly university preparatory in character. The eleven year higher secondary course had, in any case, been functioning in practice as preparatory for the university. This has resulted in enormous pressure on higher education and caused strain on the facilities for higher education in the country. It has also contributed to the lowering of standards of higher education, particularly for the weaker sections of the community whose children comprise the bulk of the student body of the numerous sub-viable colleges which have sprung up. But apart from this, neither the eleven year nor the existing 12 year course has served any useful purpose as it is not terminal in character. The youth who joined the course and did not and could not pursue university education only served to increase the cost of public education without necessarily adding to the better trained

or better qualified manpower. They merely came under the post-matriculation category and did not become necessarily employment worthy. It has been estimated that out of about 2 million students who come out of secondary schools about 60% join the pre-degree stage out of which about 60% continue with higher education. It is clear that there is a large measure of unpurposeful education at this stage.

NEED FOR DIVERSION

10. It may also be noted that the enrolment at primary and secondary stages keeps rising. The participation ratio at primary stage is now 86% and will, hopefully, reach 97% by the end of the Fifth Plan. The enrolment ratio in the age group 11-14 now at 38% should rise at least to 47%; and the enrolment for the age group 14-17 now estimated to be 21% may rise to 26% by the end of the Fifth Plan. This would mean an increase approximately of 2.7 million students. It is well known that because of their inability and delay in securing employment after matriculation, secondary school leavers decide to go in for higher education. As such no useful purpose will be served by accommodating in higher educa-

tion all those who come out of the secondary stage in university preparatory courses. In the absence of meaningful action to divert students to this stage the outturn of graduates and post-graduates will go on increasing without any relevance to manpower needs.

11. Further, if the number of institutions of higher learning keeps on increasing at the present rate, and there is no check on enrolments at this level, the per student expenditure which is already very low, would tend to fall even further with the result that the quality of education and research will suffer greatly even though the overall expenditure on higher education may keep rising.

12. At the post-matriculation level, polytechnics do provide alternative courses to general education but enrolment in polytechnics has to be closely related to the need of industry and public works like roads, bridges, canals, irrigation, projects, etc. According to the present estimates the intake capacity of 47500 of these institutions will be adequate till the end of the Sixth Plan.

13. The existing technical and multipurpose

schools can continue to cater to the vocational needs and requirements of the student body at lower secondary level.

JUSTIFICATION FOR VOCATIONAL COURSES

14. Doubts have been expressed whether there will be adequate employment opportunities if vocational courses are introduced at the higher secondary stage. The Education Commission has observed that the need for the middle level leadership has not been given adequate attention in our country. The reports on Occupational and Educational pattern in Public and Private Sectors prepared by the Director General of Employment and Training provide interesting information on this point. They reveal that the majority among the professional and technical personnel who include engineers, teachers, scientists, possess professional qualifications. But, on the other hand, many administrators, managers and those in charge of banks, insurance, transport and communication do not possess any professional qualifications. Most of them have completed only secondary education. In the case of craftsmen and skilled workers like textile designers, mechanics and electricians, very few possess general or professional qualifications. This confirms the

impression that we do not have adequate training courses at the middle level management. The D.G.E. & T. is also currently conducting pilot 'Area Skill Surveys' in 15 selected districts in various parts of the country. One of the objectives of these surveys is to determine the availability of skills and trained manpower, its findings are to be used in vocational guidance and for arranging needed training programmes. The surveys assess requirements for various categories of persons such as managers, book-keepers, salesmen, trades and garments makers, launderers, farm supervisors, dairy farmers etc. The data collected so far shows that employment opportunities are likely to be available on a fair scale in these categories. Some of the vocational education programmes will be designed to respond to these needs.

15. It seems reasonable to assume that jobs in organised industry and services would not increase fast enough to absorb any appreciable section of the educated working force. The aim of vocational education should, therefore, be:

(a) to train persons for middle level jobs that can be anticipated in industry and in the services sector; and

(b) to train people for self-employment in the agricultural sector (used in the broad sense), small scale industrial sector (including handicrafts, cottage industries, village industries, etc.) or services related to and including cooperative marketing, servicing, repairs and maintenance of agricultural tools or social service needed by the rural community and for which the community may be in a position to pay.

(c) To offer vocational courses which are not too narrow or specialised, experience of the past 25 years has shown that as a result of revolutionary changes in science and technology and the deliberate decision of the people of this country to bring about social transformation, training in narrow job specifications or in over specialised employment is likely to become obsolescent with the changing pattern of production and production relationship. Therefore terminal vocational courses should be designed in such a manner that, while they remain practical, they also seek to inculcate the capacity to utilize intellectual and theoretical training along with manual skills for socially productive labour.

16. Vocational education will also have significance for common citizens. A trained health assistant living in a village, even when he does not adopt a career, would be an asset to the rural community. So would be a person who has done a course in cooperatives even if he chooses to take to farming or teaching. Apart from the tangible benefits that will accrue to the individuals themselves, vocational courses will also create valuable community assets and an infra-structure upon which can be built developmental programmes necessary for the growth of the society.

NATURE OF VOCATIONAL COURSES

17. The most important objective of vocational education is to prepare a student for a proper vocation in life by enabling him to complete an educational course mainly terminal in character. But this is not to say that vocational education attaches any less importance to the fundamental purpose of all education, namely, to develop and cultivate a self-reliant and responsible citizen. We have to be very careful to ensure that in purporting to be terminal vocational education does not lose its essential character is education

which aims at the training of the mind and the body. With a fast changing technology and an ever accelerating pace of socio-economic change vocational training of today may not remain relevant to the needs either of the individual or of the society even 5 to 10 years hence. It is essential, therefore, that vocational education must aim at inculcating in the student the capacity to apply one's knowledge to the solution of concrete problems which he will face in life. At the same time the range of occupations to be offered should remain flexible so that courses which are no longer relevant or needed can be replaced by new ones having greater utility for the individual and the country.

18. The structure and the content of the courses will be adaptable through diversification so that courses will be adaptable through diversification so that courses of study may be pursued in conjunction with employment or training. The intending person could choose a specific course from broad areas such as agriculture, industry, trade and commerce, transport, health, public service, etc. In regard to the choice of vocation we may either have uni-disciplinary

approach or multi-disciplinary approach. For example, 3-year course of diploma in agricultural technology may comprise agricultural course, soil testing, use of fertilisers and maintenance of agricultural equipment, or it may be cold storage management which would include the maintenance of cold storage as also the effect of cold storage on agricultural produce.

19. The scheme of study would be comprehensive in one main vocational area and as far as possible in at least two allied subject areas. Duration may vary from 1-3 years. The content will include some general education, broad theoretical education related to the vocation and practical training. There will be strong educational content also in the courses. Study of languages and the relevant aspects of general science, mathematics, economics and other areas of general education required to support vocational subjects will be built into the course. The nature of training will be determined in consultation with the local industry and employing agencies. Adequate attention would also be paid therein to the social and economic aspects of the occupational fields and to organisational planning

and marketing. Common classes are contemplated for care subjects. It is envisaged that a State Board will organise examinations. While, as recommended by the Education Commission, provision will be made for the exceptionally brilliant students to switch over to university or colleges level education, after they have taken the necessary adjustment courses, vocational training will, for the large majority of students, be terminal in character leading to a specific occupation. The terminal nature of the vocational course will be made known to the students right at the time of their admission. That, however, will not prevent students from taking on additional part-time correspondence courses for the purpose of lateral or vertical mobility. That should be organised as an essential part of the education system.

20. It is expected that vocational education and training will not be provided only in class-rooms; it will include work in workshops and fields. Of course, adequate functional skills and training will be imparted before a student goes to the field or workshop. In developing instructional programmes services of practitioners

of actual vocations will be utilised. Students affecting vocational courses can also be brought under the Apprentices act in the light of the recent amendment effected in 1973. The time spent in practical work and in on-the-job-training would ordinarily be not less than 50% of the total instructional time. Fullest use will have to be made of the facilities for on-the-job training as it will not do to limit vocational education merely to simulate training in a laboratory or a school workshop. This means that a certain portion of the training would have to be given by those who are workers themselves. To arrange this, some provision may have to be made for remunerating worker-teachers on an allowance or honorarium basis.

21. The National Council of Educational Research & Training is already working on the preparation of model syllabuses for various courses. They have also set up joint working committees in collaboration with Indian Council of Agricultural Research and experts of the Health Ministry to work out details of courses in agriculture-animal husbandry, poultry keeping, dairying, food

preservation, nutrition, fruit culture, midwifery, lab-technicians, health visitors, nursing, para-medical personnel etc. (For details attention is invited to the enclosed list).

22. It is realised that vocational courses will have to be organised in consultation with employing agencies - Government Departments such as Agriculture, Health, Industries Development, etc. and Government and private owned industries needing trained personnel. The programme of vocational education in a district will be organised after making socio-economic survey of the district. It is common knowledge that matriculates by and large stay and work in their home districts. The existing wage structure for skilled workers and middle level technicians also does not stimulate large scale migration. Hence those offering vocational courses will have to be prepared mostly for jobs within the district and its neighbouring areas. The number of students joining a particular vocational course will have to be determined in the light of the demand from employing establishments. Needless to add district surveys and systematic monitoring of emerging jobs and occupation in the district will have to be

arranged on a continuing basis to meet the needs for this employment market.

23. It is also important that vocational courses are organised as economically as possible. Clearly there is a need to link this programme with the facilities in existing polytechnics, ITIs, agricultural colleges, veterinary institutions, junior technical schools, apprentice workshops and all other institutions offering some form of vocational training. As far as possible, institutions will be selected where there are already some facilities for providing vocational education so that it may be possible to organise vocational courses, with minimum additional facilities. The pattern of staff will also be such that it would be possible to redesign or modify existing courses and introduce new courses.

As mentioned earlier, vocational courses are expected to be organised in response to actual needs. Hence in each State there will be a State level committee consisting of representatives from different departments, industry and other sectors, to advise on the choice and organisation of vocational courses and to guide their implementation.

24. It is also proposed to establish a National Council of Vocational Education on the lines of the All India Council for Technical Education and the Central Apprenticeship Council.

DETAILS OF THE SCHEME

25. (1) State level committees with representatives of general education, technical education, labour, health, agriculture, veterinary and animal husbandry, industry (specially small scale industry), planning, and development departments, government and private industries and concerns will have to be constituted at State level. These committees will guide the implementation of the programme.

(2) A special officer will be appointed at the State level to organise and supervise the scheme. This is necessary as this is a new scheme and requires careful planning and implementation. This officer may also be required to act as the convener of the State level committee. The work of the district officers will have to be supervised and coordinated by him. He will also arrange for the preparation of syllabuses, instructional and other materials relevant to the organisation of vocational courses.

(3) The scheme of vocationalisation is expected to be implemented at the district level. As mentioned earlier, a survey is to be conducted in such district, the possibilities of employment opportunities determined, appropriate vocational courses drawn up and located in suitable institutions. All this will involve considerable amount of work at district level which it will not be possible for the existing District Education Officer to attend to. It is proposed, therefore, to appoint in each District a Vocational Education Officer of the rank of DEO on deputation to attend to this work. In some cases, particularly when the scheme is in its initial stages of implementation, it may be possible to combine three or four districts and put them under one vocational education officer. But in due course when the scheme has developedf fully with a large number of secondary institutions in each district offering vocational courses under this programme, a separate officer for each district may become necessary. The role of this officer will include the following functions:-

(i) To estimate through a proper socio-economic survey of existing job opportunities as well as those that are likely to arise in future. He would repeat the survey suitably from time to time to bring it up-to-date. This is necessary to ensure that the scheme of courses operating in the District is relevant to the present and future needs of its population;

(ii) To formulate proposals for organising vocational courses, modification of existing courses and introduction of new courses based on survey findings;

(iii) To collect information regarding existing facilities available in the district for vocational courses for minimising expenditure on the new programme;

(iv) To arrange for practical training programmes relating to the courses and to ensure proper coordination between the educational and training components of this programme;

(v) To arrange for the supply of equipment required for vocational courses and locate full-time and part-time staff required for running courses;

(vi) To render advise to teaching staff about operation of courses;

(vii) To organise meetings of concerned departments of Government and private organisations whose cooperation and involvement may be required for successful functioning of courses and for absorption of school graduates under the Apprenticeship programme;

(viii) To supervise functioning of institutions where vocational courses have been introduced; and

(ix) To minitor the programme closely with the help of advisers to ensure that courses are run in an effective manner and imbalances are curbed.

(4) Constitution of a district level committee to assist District Vocational Education Officer.

DETAILS OF CENTRAL ASSISTANCE

26. Central Government assistance will be confined to the following items:-

(1) The appointment of District Vocational Education Officers

As this officer will play a pivotal role in the programme, the Government of India will in the initial stages give assistance for the appointment of one District Vocational Education Officer for the entire plan period for 40 districts with the undertaking from the State Government that

ultimately when the programme develops the State Government will appoint one officer for each district. In addition financial assistance for appointment of 110 DVEOs for a period of 3 months will be given for conducting surveys.

(2) The Central Government will give assistance for the teaching and other staff to be appointed under the scheme. The assistance will cover full and part-time appointments as well as allowances and honoraria.

(3) Government of India will give assistance for the provision of equipment, subject, however, to a ceiling. This is with a view to supporting State Government's efforts to buy the essential equipment that may be required to organise the programme satisfactorily. In extending this support it is clearly stipulated that every effort will be made to make use of local facilities already available.

(4) The Central Government will also give assistance towards the survey to be conducted at the district level as this is an essential requirement of this programme and will ultimately determine its success.

STATE GOVERNMENTS' INVOLVEMENT:

27. (i) The State Government is expected to appoint the officer at State level.

(ii) It has to provide the staff on the non-vocational side.

(iii) State Government will have to provide the administrative supporting staff for the state and district officers and for the educational institutions.

(iv) The State Governments will have to locate the educational institutions and make the accommodation and other facilities in those institutions available for organising the courses. Whatever financial costs are involved in this regard these will have to be borne by the State Governments.

(v) The State Government will have to take over the scheme after the completion of the Plan period.

FINANCIAL ESTIMATES OF THE PATTERN OF ASSISTANCE

28. It has been suggested that on an average it may be most economical to start in each selected institution a group of 4 allied courses with 25 students each. Each course may, on the vocational side, require 2 full-time instructors or one full-time and two part-time instructors. Calculating

at the cost of Rs. 600/- per full-time instructor, it is estimated that one school running four allied courses for 100 students (in four groups of 25 each) would require 8 full-time teachers or approximately an expenditure of Rs. 60,000 per annum. Hence, it is proposed to sanction an assistance of Rs. 60,000/- per annum as recurring expenditure for staff for each institution. The exact expenditure on staff will of course vary from institution to institution depending inter alia on the nature and number of vocational courses, and the exact staffing pattern employed, and in this matter the State Governments would be given considerable freedom provided they satisfy the minimum requirements.

29. The Government of India will also provide an assistance of Rs. 45,000/- per institution for equipment and library. It is clear that the equipment for different courses will differ. Equipment for courses like garmet making may not cost much. For some of the courses the cost may not vary beyond 10-20 thousand but courses in areas like advanced agricultural technology may cost more than Rs. 40,000/- each. Since it would be difficult to lay down any definite pattern,

the stipulation is that a unit of four allied courses providing for a strength of 100 students would be given an assistance of Rs. 45,000/-. However, in the exact utilisation of this assistance, the State will be given freedom to spend less on one institution and more on another, depending upon its actual requirements provided the other norms regarding strength of students and the pattern of courses are satisfied.

Each State will in addition be given Rs. 10,000/- per district to conduct a survey in selected districts.

It will also be given assistance for appointing District Vocational Education Officer at the rate of Rs. 15,000 per officer. This amount will include his salary, and provision for travelling and contingent allowances. The assistance for appointment of these officers will be subject to the condition that the following supporting staff will be provided by the State Government:

Technical Assistant	-	1
Personal Assistant	-	1
Clerk	-	1
Messenger	-	1

The State Government will also have to assume responsibility for DVEOs office accommodation and other facilities required for the performance of his duties.

30. An inter-departmental steering committee at the Centre representing departments of education, agriculture, health, industrial development and planning will be appointed for overseeing the programme and for ensuring proper coordination among the various official and non-official agencies active in the field of education and vocational training.

31. It may be pointed out that norms suggested above can only be illustrative. The exact pattern of assistance to each State may vary within the broad limits indicated above depending upon local circumstances.

32. Education Minister had detailed discussions with Member (Education), Planning Commission on 6th May, 1976 about the scheme. It was agreed that the actual introduction of vocational courses to be taken up during 1977-78 and thereafter be confined to such states which will start or would have started XI of the higher secondary pattern by July, 1977. Central assistance should be initially made available for:

(i) appointment of District Vocational Education Officers who will be on deputation from the State Governments;

(ii) organisation of surveys; and

(iii) introducation of vocational courses;

(a) purchases of equipment;

(b) appointment of vocational teachers.

Assistance for the appointment of DVEOs and conducting of survey at the District level will be given only to those states which undertake to continue the programme during the Sixth Plan period even if there is not assistance from the Centre.

33. PHASING

1976-77: Assistance will be given for the appointment of 50 District Vocational Education Officers and to conduct surveys in 50 districts. Such surveys may also spill ever to 1977-78.

1977-78: 20 Districts out of the 50 surveyed during 1976-77 will be selected for introduction of vocational courses at the average rate of 16 courses per district. The DVEOs in these districts will continue

and the remaining 30 will be reverted after completion of the survey in their respective districts.

Surveys will be conducted in 50 more districts during the year, and DVEOs will be appointed in these districts on the presumption that surveys will be completed within a period of three months.

1978-79: 29 Districts out of the 50 surveyed during 1977-78 will be selected for introduction of vocational courses at the average rate of 16 courses per district. The courses in the districts selected during 1977-78 will also continue. In all 640 vocational courses will be started in 40 districts. The DVEOs in 30 districts where survey will be conducted, but vocational courses will not be introduced will revert to their parent offices where from they had been on deputation and the remaining will continue to implement the vocationalisation programme. Survey will also be conducted in 50 more districts during the year, and DVEOs will be appointed in these districts on the presumption that the surveys will be completed within a period of three months.

34. Estimates of cost during the Fifth Five Year Plan

(Rs. in lakhs)

Sl.No.	Item	1976-77	1977-78	1978-79	Total
1.	Assistance for salary of District Vocational Education Officers	0.63 C	4.88* + 1.25	7.88**	14.64
2.	Assistance for District Surveys	@ 5.00	5.00	5.00	15.00
3.	Assistance to States for starting Vocational courses:				
	i) Equipment	-	36.00A	36.00A	72.00
	ii) Teacher's salary	-	24.00£	72.00B	96.00
	Total	5.63	71.13	120.68	197.64
	Strengthening of Vocational Education Wing in the Ministry				2.36
				Total	200.00

(Two crores)

C 50 DVEOs for one month @ Rs. 15,000/- P.A. per DVEO
* 29 DVEOs for full year and 50 DVEOs for 3 months
** 40 DVEOs for full year and 50 DVEOs for 3 months
A Equipment for 320 courses @ Rs.11,250 per course (16 courses per district on an average)
@ 50 Surveys every year at the rate of Rs. 10,000/- per survey.
£ 640 teachers for six months @ Rs. 7,500 P.A. per teacher (Two teachers per course)
B Salary of 640 teachers for full year and 640 teachers for six months.

Note: I During 1976-77 provision for salary of DVEOs is being made only for one month, as no DVEOs is expected to be in position before 1st February. However, provision for financial assistance for District Surveys is being kept at the rate of Rs. 10,000/- per district as it would be possible to release the assistance to the States during 1976-77, though the expenditure may spill over to 1977-78 also.

II. Additional provision for 2 months's salary of DVEOs appointed during 1976-77 is being added to the cost estimates for 1977-78 as these DVEOs will continue to be in position for a period of 2 months in addition to 50 DVEOs to be appointed for 3 months during 1977-78.

35. It would not be possible to be more precise about the number and nature of vocational courses to be introduced it this stage. The type and number of courses will depend upon the findings of the details District surveys or group of districts in close geographical proximity as also the progress made by the States in the implementation of the 10+2+3 pattern.

LIST OF VOCATIONAL COURSES

COURSES IN AGRICULTURE

1. Grop production
2. Plant Protection
3. Weed control
4. Farm Machinery
5. Tractor Operation and Maintenance
6. Seed Production Technology
7. Seri-culture
8. Bee-keeping
9. Soil and Water Conservation
10. Agricultural Extension
11. Post-harvest Technology
12. Vegetable Production
13. Fruits and Vegetable Preservation
14. Fruits Production
15. Gardening and Nursery Management
16. Horticultural Extension
17. Dairy Farming
18. Milk and Milk Products
19. Livestock Health
20. Poultry Farming
21. Sheep and Goat Production
22. Pig Husbandry
23. Fish Culture

24. Fish Seed Production

25. Animal Husbandry and Dairy Extension

26. Tailoring

27. Food and Nutrition

28. Bakery and Flour Confectionary

29. Catering

30. Home Management

31. Child Development and Care

32. Home Science Extension

PARA-MEDICAL COURSES

1. Health worker (M)

2. Health worker (F)

3. Health Assistant (M)

4. Health Assistant (F)

5. Staff Nurse/General Nursing

6. Occupational Therapist or Physiotherapist

7. E.C.G. Technician

8. Radiographer

9. Jr. Radiographer

10. E.C.G. Technician

11. Dental Hygienist

12. Dental Technician

13. Dental Mechanic

14. Pharmacist (Compounder)

15. Laboratory Technician

16. Laboratory Assistant

17. O.T. Assistant

COURSES IN COMMERCE

1. Typewriting

2. Stenotyping

3. General Office Clerk

4. Office Management and Correspondence

5. Book-Keeping and Accountancy

6. Management in the Hotel and Catering Industry

7. Business Management

8. Sales Representative

9. Salesmanship

10. Insurance

11. Banking

12. Purchasing and Store keeping

13. Auditing

14. Medical Representative

15. Receptionist

16. Typewriter Mechanic.

APPENDIX III

GUIDELINES FOR IMPARTING WORK EXPERIENCE IN THE TEN YEAR SCHOOL

NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING
SRI AUROBINDO MARG
NEW DELHI

APRIL, 1977

These guidelines were drafted by Professor Rais Ahmed so that schools may be able to orient and organise work experience properly, on the basis of a clear understanding of its significances. The draft was referred to a number of well-known thinkers and experimenters for their comments and suggestions for improvement. Consequent modifications were made by Mr. S.C. Chaudhury, and finalised by the original writer.

Work experience activities are being increasingly adopted by the schools and it is hoped that these guidelines will help to improve the programme.

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I. THE NEED FOR TRANSFORMATION OF THE EDUCATIONAL SYSTEM.

We are in the midst of tremendious educational change. The new system, popularly called the "10+2+3" pattern of education, is a misnomer, because it gives an impression that the change is purely structural. The shifting of one class from the college to the school, and providing for 10 year general schooling followed by a diversified two-year programme of academic and vocationalised higher secondary education certainly has its own problems both financial and administrative. But the essence of the change lies in the objectives, quality and content of education which is being visualized.

The British colonial system buttressed by a feudal order in India developed an educational pattern which suited its socio-economic and political interests. Education was a privilege limited to a small section of society with its emphasis on a foreign tongue which created a gulf between the educated and the privileged, on the one hand, and the common man on the other. The books used were often published for English children, were out of tune with our common experiences, thereby encouraging rote learning re-inforced by the type of examinations that were instituted. Such "education" could only prepare people for petty official and clerical appointments. It was not conducive to cultivation of critical thinking, creativity and social sensitiveness. No wonder, then, that individuals so educated and little concern for improving the conditions of living of the

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common man, let alone involve themselves in the struggle for a better social order. In fact, such a socially irrelevant and bookish eduction promoted a false sense of pride amongst the educated in keeping themselves aloof from the common people, from the "petty" problems of daily life, and particularly from the vast field of manual work. The educated began to consider themselves belonging to a superior caste of "mental" workers, who had by their "intellectual labours" won for themselves a status above those who worked with their hands. Thus, the world of education become increasingly sterile and stood completely isolated from the life of the community.

This has led to a situation in which the so-called 'mental' work is elevated to a high pedestal and the physical labour degraded to a low status in society. Its educational implication that literary or the so-called liberal education is exalted, is justified by the theory that such education is the source of all knowledge and culture. The assumption underlying this belief is that knowledge consists of ideas which can be derived and developed through a pure mental process. But this is a spurious theory of knowledge, as it isolates idea from objective reality and divorces thought from action. Man's knowledge has in fact developed through his interaction with the environment - both social and physical. It is only through his struggle against nature and active participation in social processes that man has acquired knowledge and tested its validity. Knowledge, in the last analysis, is integrally related to

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man's continuous effort to provide the wherewithal for his material existence. Hence there is need for inclusion of productive activities in education as an integeral part of the school curriculum.

The characteristics of pre-independence education were so deeply engrained that they have continued to this day. We have not been able to universalize elementary education so far, and more than half of the enrolled students drop out before reaching class V. Although, we conceive of elementary education as a right, in practice it remains a privilege, thereby denying equality of opportunity to the masses of people to grow and develop, and vitiating social justice. Our education neither cultivates a proper outlook, attitude and character, nordoes it prepare for participation in social life. We cannot progress towards national integration, secularism or socialism with this kind of education. Our education is still book centred climaxed by a system of formal examinations - promoting an attitude of looking down upon manual work andon those who life by such work, namely the workers in our farms and in our factories. The situation has come to such a pass that even the children of workers, after entering into the world of education, begin to avoid the world of work. In fact, education alienates them from their own people; and the irony is that even their aspiration to get a petty white collar job often remains unfulfilled. Thus millions of people are uprooted from rural areas and join the army of unemployed youth in cities. This is partly due to the defective system of education through which they have passed.

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It is obvious that only a basic transformation of the educational system can remedy such a situation. The task is made difficult because most of the educated are unaware of the malady, and since they have been the beneficiaries of the system as it is, they really feel no urgency to rectify it. On the other hand, the country is in the midst of far-reaching socio-economic and political changes which require the full partnership of a proper system of education. It is realized that education, which is in tune with the needs and aspirations of our people, could be a powerful instrument of social change and national development.

II. THE NEW SYSTEM AND THE ROLE OF WORK EXPERIENCE

In view of what has been said before, it is our duty as educationists to work out an appropriate system of education and to implement it energetically. A new framework of the curriculum for the 10 year school has already been accepted through a country-wide discussion in 1975; and it is time that we engaged ourselves earnestly in putting it into practice.

Stated very briefly, the strategy of removing some of the major defects in school education may be mentioned as follows: Science and mathematics has been introduced for all from class I to X, not only to prepare students to live in a society which will increasingly depend on science and technology, but also to cultivate a rational and humanistic outlook. The content of these courses particularly in the primary classes will be functional and not formal, so that a student may feel and know that he is picking up daily something which effects his life. It touches uponsuch problems as sanitation

and health, nutri-tion, pollution and agricultural and industrial production.

Another major discipline is that of the social sciences which has to be learnt by all students from class I to X, whose main aim is to bring about a scientific and secular understanding of the society in which we live - of its historical and cultural roots, its productive forces, and its dynamism. The content again starts from a study of the environment in a functional manner and leads gradually to build a social consciousness with democratic values counteracting the divisive tendencies based on caste, community, sex, religion or language and region. A course of this kind would promote national integration and a common understanding amongst our people of the major problems of national development giving them confidence to tackle these problems.

An important area to be taken up in the school is that of artistic experience and expression. There was no need within the old parttern of education to promote appreciation of our national or regional culture, or to enrich the personality of students with an interest in music, painting, sculpture and dance. In the new curriculum, ample opportunities are to be provided for creative expression and self-discovery, the emphasis being on developing and asthetic approach to all activities. The learning of languages should also encourage the refinement of sensibilities, on the one hand, and provide a means of communicating with people of different cultures and languages living in the country, on the other.

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The expansion of the horizons of learning, and going beyond the aims of cognitive development to growth in the affective domain and character building obviously requires educational evaluation which would be far different from the examination system of the past. A New system of evaluation which is not punitive and which allows the progress of a student's abilities over a wide spectrum to be judged by the teacher has, therefore, been recommended as essential for the new system of education.

However, a major strategy for the correction of the insularity of education from the problems of real life is the introduction of work experience in the high school curriculum and vocationalization of higher secondary education. Work experience has the potential of substantially changing the attitude of the educated towards manual work and the working class. It can be a true and effective source of learning about materials and human relationships involved in productive process, since it would provide personal experience rather than the views of a teacher in this sensitive field, and it can lead to the development of necessary and desirable skills to meet the needs of society in the age of science and technology. It may not only provide a small earning for the student, and thus serve as an incentive for him in remaining at school, but also in the cumulative national sense, it may turn education from being a consumer of scarce resources to a direct generator of some. The implementation of work experience is likely to lead to the demolishing of barriers between the school and the community - a development we very much desire. Work experience has several other advantages,

for instance, it is a foundation for the vocationalization of the next stage of education, which is a combination of education and practical skills corresponding to the aptitudes of the individual and the needs of the socio-economic development of the region in which he lives. This higher secondary education in the new system is directly linked with resources and regional development.

We should now examine these features of work experience in some detail in order to develop proper practices and procedures for corresponding programmes in our schools.

III. SOME FEATURES OF WORK EXPERIENCE

1. A corrective to formal and elitist education

The very nature and organisation of formal education requires that work experience be included in the curriculum as an integral part of such education. Work is essential to produce the material goods which are needed for the existence of any society, and therefore, it has been natural to man. In traditional societies learning took place either in conjunction with ongoing work activity or in spare time - with the drawback that the learning did not seem to alter the patterns of work and behaviour. When formal schooling was introduced, particularly, for the benefit of children of the privileged classes, a child was withdrawn from participation in work and activities in the community. Education thus took place in an artificial environment where one of the sources of learning, namely, practical experience was missing. This defect is particularly

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conspicuous in our case, since it strengthen the tradition of denigrating work and alienates the students, especially, the first generation learner s from their homes and communities. Work experience in the school is thus a method of integrating theory with practice, or education with work. If the student gets rid of this inhibition to work with his hands, if he thus soils his hands, and if he has a chance to work schoulder to schoulder with working men, his attitude towards manual work and working people is bound to improve and on the whole he will become a better educated person. It would reduce the distinction between intellectual and manual work.

2. A contribution to industrial and agricultural productivity

Integration of work experience with education is essential in a modern society which adppts science-based technologies. In traditional societies the antithesis between education and work does not so much affect production, because the techniques of production are primitive, requiring neither formal education nor special skills. There, work is generally manual, low paid and confined to lower classes. Education in such societies is privilege of the upper classes who seek either refined mental work and administrative positions or leisure for enjoyment of life. In modern times this balance breaks down, because the complex technologies of production in all spheres including agriculture require a higher level of general and vocational education. Even at lower levels of work the brain becomes more important than the sheer physical strength. Work in factories and farms, therefore, becomes more productive

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and remunerative, and hence ceases to be looked down upon. Hence a combination of work experience with education helps to develop the appropriate manpower for a modern industrial society and a society which undertaken rural development in a big way. In the same measure, in the long run, it would help increase productivity.

3. A personal asset in a developing society

Proper kinds of work experience provided at the school should equip the student with technological know-how for modern living. Knowledge of the working of simple technical devices in our surroundings and ability to handle simple tools and materials would make it possible for a person to service his immediate needs. As the country advances, more and more of gadgets and technical fittings are found in the schools, offices and homes, but a corresponding competence and the desire to maintain these devices is not always readily available. Work experience could, therefore, fill this technological gap and educate the children for modern living. It is also possible that while working with different materials and technologies, the student might discover himself some of his own special aptitudes, and might refine his skills which will be an asset to him in later life. Some of these skills might serve as a stepping stone for a proper vocational training which can be acquired at the higher secondary stage of education.

4. A source of earning for the student and development of national resources

An important aspect of work experience, enhancing its educational value, is that the school should provide

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facilities for the students to manufacture of fabricate certain articles which can be sold. The erning from such production could partly be spent on improving the productive capacity of the school, but the major part should go to the students concerned. This would not only be an incentive and encouragement to the students but in the case of many of them it will be a welcome contribution to provision of their clothes or nourishment. More than this, the organization of production particularly from waste material or easily gathered material (such as paper, leaves or straw, rags or tins and boxes, etc.) would contribute to national resources, Even if the net yarly income from the work of a student comes to a few rupees, since the total number of students runs into millions, this could yield to the nation-a considerable net gain. The value of goods produced could easily run into tens of crores, thus being a valuable national resources. Since the work is indispensable for many other reasons stated above, the financial gain cannot be seen merely from a commercial angle. At this time, in our country when diverse developmental needs lead to a severe limiation on funds for education, the gain from work experience would change the entire social and administrative approach to the needs of the educational sector.

5. A source of learning and self-education

In the later stages of school education, work-experience activity to a great extent should involve students in actual work in a farm or a factory, or a workshop or a press or any other establishment where productive work and services are going on.

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This involvement should imply working in such an establishment as a regular semi-skilled or unskilled worker during the usual working hours, with discipline as applicable to other workers and with payment of wages as payable to any other worker. This activity and the productive activity described in the earlier section would lead to a great psychological and educational gain. Students, in this manner would really understand that human labour is essential for the production of goods we daily use or consume. An attitude of callousness or of making impractical demands on society which are sometimes shown by members of the community will be moderated by such an experience. The necessity of orderliness, discipline and teamwork for any sizable productive activity would be deeply appreciated, and even bonds of understanding between people of different castes, communities, regions and languages may be strengthened by the experience of working together. A perceptive student would learn the conditions, compulsions and options under which people labour and he would gather insight into human and social relations which cannot be obtained by the mere reading of a book more so because the "book" would always represent someone else's point of view. In these sensitive and critical areas of human understanding nothing can be a substitute for self-learning.

It is an established fact that man learns from other peoples' ideas and books, but he learns for more and meaningfully from his own experience. Encounter with materials, processes and human beings in the course of work experience provides a true source of such learning. An idea of a concept picked up from a book

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may have to be completely changed or seen in a different colour after it is tested in practice or confronted with reality.

In other words, learning remains stultified and incomplete without what we call work experience. In our country a revolutionary experiment was launched by Mahatma Gandhi in the form of basic education. The concept of work experience is essentially similar. It may be thought of as a redefinition of his educational thinking for a society launched on the road to rapid social change through the use of science and technology. If anything, introduction of work experience is the essence of the educational change which is being discussed throughout the country.

IV. IMPLEMENTATION OF WORK EXPERIENCE PROGRAMMES

1. Work-experience learning a skill or practice, a hobby

Since work experience transforms the very nature of education, concrete programmes fulfilling the needs of this experience can have various forms depending upon the situation of the school and the resourcefulness of the teachers. Any one activity such as gardening or woodwork for all students in a school cannot serve the comprehensive objectives of work experience. The most common mistake one comes across in the attempts that are being made to introduce work experience is that it is being equated either with a hobby of the learning of a skill. The school may provide for the learning of music or painting or clay modelling in the spare time of students but it would be obvious that however welcome the provision of such a facility may be, it could neither

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change the attitude of individuals towards work and workers, nor could it complement book education with another learning resources nor bring about understanding of the use of materials and processes and productive relations. Similarly woodwork, cooking or a stitching of clothes could be useful skills to learn, and even be a part of the work experience programme, but could not represent the whole of it. Work experience is not just learning to do work, it is an educational experience. Schools may, therefore, think in terms of a series of well considered activities relevant to local needs which may comprehensively, and in a graded manner with respect to the age of the students, fulfil the objectives of work experience.

2. Work experience in Classes I to V.

The initiation of the child in the world of work experience in classes I and II should be essentially by answering the child's natural curiousity towards the work going on around him. This includes work performed by men and machines: productive work, maintenance work, services and recreational work. The child is eager to explore what is going on around him and to know the purpose and method of working. His questios are centred around: what is going on here? how the work is being performed? and what is the result? We may remember that a teacher has to be well prepared to satisfy this curiousity since some of the questions the child asks are very difficult to answer in simple form and others are difficult to answer at all.

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The first step in providing work-experience is to make children observe how a particular work is done in its natural setting. A good technique would be to take children out on observational tours and try to expose them to different learning situations. Here explanations of work and activity going on would be most welcome. For example one may take them to the common shop in the locality. They can observe and ask questions about the weighing and measureing of articles. They would come to know that flour and cooking oil just cannot be measured in the same way. They would discover the names and appearances of different places in the country. At a bicycle repair shop they can observe the inner components of a simple machines, and they would get a wealth of information about different materials and their precise fitting. One a construction site they can watch a foundation being dug, or the method of compacting the floor, making the walls or the roof. There should be forays of discovery around where every situation should be exploited to answer the curiosity of the child. In agricultural communities there would be a series of seasonal activities and in small towns or big cities corresponding on-going productive activities and services could be a source of learning.

In the school itself, basides occasionally inviting a craftsmen to show children how he works ample opportunity should be provided to children to take up any kind of work with their hands. If there are simple wooden toys, or cheap clay or paper toys

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(such as a guriya whose head shakes, or a paper vans which revolves when turned into a stream of wind, or a paddle wheel which turns when water drops on it) children may be freely allowed to inspect them thoroughly. They will be led to discoveries by repeated operations of such devices and toys, and as a part of learning they should be allowed to do it. In fact, the teachers and the students of upper classes can make dozens of such articles from which younger children will learn a great deal.

These activities may be continued for children until about class V, but with exposure to increasingly sophisticated areas of work and working- ultimately like how an engine or a motor cycle works, or how electricity is generated, how a fan throws forward a stream of air, how a flush or a hand pump works, how a clock ticks away continuously, Understanding working principles without the formality of defining terms, and understanding what people of different professions do should be made possible for those young children upto the age of 10 or 11.

In the sphere of working with their own hands, children should be provided all possible facilities. The youngest cannot do very much but they can make paper cuts, paint with cheap coloured chalk or water colour; they can work with clay, soft stone or even wood. Waste material or freely collected material fromthe surroundings such as paper or straw, or boards and boxes leaves, grass twings, fibres, shells, cones and rocks can be given to them to exercise their

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ingenuity on. As they grew up they can get the joy of creation and learn to express themselves through different materials. While handling these materials they are bound to ask questions and the teacher should he prepared not only to answer them but to lead them to question and criticise what they are doing. They can be asked "scientific" questions about the materials they are handling and the processes they are observing. If they make a clay doll, the teacher should suggest how they might paint on stick coloured paper to it to make it lpok like one thing or another.

In the curriculum for the ten year school work experience and art have been deliberatly bracketted, since much of work experience would also be a creative activity. The time shown for these actigities is of the order of 25% of the whole school time and as is obvious, some of the time for field work connected with environmental studies would also be used in a similar manner. Thus the importance given to learning through such first hand experience is very considerable. The attitude of the chilren towards work is generally positive and they love soiling their hands and even clothes while playing or making things for themselves. The effort of the school should be to maintain this natural tendency by encouraging children to combine learning and work. If the teacher's attitude is right, children will learn a lot by doing things with their own hands.

Simple productive work like making of paper bags, decorative pieces, chalk, and candles etc., can also be taken up at this stage.

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3. Work experience in Classes VI to VIII

It is expected that by the time children complete Class V, they will have learnt to use simple hand tools and will have the ability to understand the common technical processes observed in the community. This ability would be further developed in the middle level of education so that a child who passes class VIII should have facility with the use of hand tools and the ability to adjust and repair simple gadgets electrical or electronic equipment which may be used in the school or at home. The competence at the middle level should develop to a point at least in a few skills where, in case of a student who gives up his studies, this competence may prove useful in making a living or form the basis of further training in those particular skills. They may also be encouraged to write and sketch brief descriptions of the fabrication processes which are common in the vicinity. They will have had a feel of materials and a tests of physical and manual labour in connection with perhaps the sharing of harvesting in the village, up keep of the school, or the vegetable plot or the simple machines and gadgets used in the neighbourhood.

At the middle school stage, children psychomotor control and skill in handling materials and tools reaches a level when they can participate in a productive activity either organised by the school or going on in the community.

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The time allotted for work experience at this stage is about 4 or 5 periods per week and they can be arranged in two units of about two periods each to give sufficient time for productive work. For some types of work, the productive activity could be for 5 periods once a week.

The school would have to select the articles to be fabricated on several considerations: (i) the techique involved should be simple although children in class VIII would be capable of fairly complicated work if the proper skills have been developed, (ii) the material required should not be very expansive, it should preferably be locally available, and it would serve the larger purposes of work experience much better if considerable work is done with waste materials or easily gathered materials, (iii) the articles produced should have as thetic or use value at home, in the school or for clearly visualized buyers. Numerous exemples can be given of schools in some states who are manufacturing articles ranging from chalks, dusters, black boards, chiars and desks, tat-patti, paper files, decorative wooden or clay articles, ready made clothese including knitwear to soaps, cosmetics, glass and plastic ware etc.

Here the links between the school and the rest of the society become very important. Firstly, productive activity can relate to agricultural production or such ancillaries as fishery, silk work rearing and poultry etc. This involves the community around, particularly to arrange a regular sale. In the fabricative activity the school should be given asistance

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by the Education Department of the State which can find out from other departments, and autonomous or private organisations what their regular annual purchases are. Co-operation of all developmental boards and co-operative societies needs to be enlisted. From this list, and an intelligent assessment of local needs, the articles to be fabricated may be decided, some of which should find a regular contractual market with the above mentioned agencies. Cooperative societies may be formed in the schools, The educational system can also give the school initial financial inputs, which should im no case be large and may particularly be used to buy some basic machines and equipment needed. A revolving fund may be created for the purchase of raw materials needed for the work-experience activities in the school. The system can advise the school regarding any loan facilities that could be available. The community around can provide some technical assistance to the school, particularly artisens and craftsmen can be called in on a part-time basis to train the students in the required techniques. Again, the community comes in the picture when it becomes the buyer for some of the goods.

One of the important featuresof work experience should be the learning outcomes of the productive activity. The product and the progress should provide questions regarding the use of scientific and aesthetic principles involved in the work and the products. Improvement in the technique and the products can be brought about by the intelligent use of science. Improvements in

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design and/colour schemes, quality of paints or finishes can be brought about by the use of arts. Product testing, costing standardization, packaging, selling and book-keeping techniques should also be taken up as /developrs in schools. Any innovative or creative productive activity/effort that students make in either fabrication or sale of the product should be encouraged. Eventually new and attractive designs should be developed for all possible products, if necessary, with the help of experts who may go round advising the schools on this question.

Financial rules may have to be modified in order that the income from the scale may be retained by the school so that a small percentage is kept for improving work experience facilities, but the major share is passed on to the students. The sharing of benefit by students could be on the principle of maintaining a record of who has done what and each is paid according to his work. However, as special consideration is necessary for students who come from the weaker sections of the population, and this may be done by earmarking 20 or 25 percent of the income to a special fund from which assistance in the form of books, uniforms or other facilities may be provided to such students.

We may give as much importance to service in the community type of activity as to productive activity. Under the leadership of their teachers students can survey local needs, particularly in rural areas, and can develop means of satisfying these needs, like developing filter for getting clean drinking water if that is the felt need

of the community and then fabricate the necessary article and instal it in appropriate places. Students can participate in local development activity, or activities such as eradication of insanitary conditions etc. There is great learning potential in this type of work experience.

4. Work Experience in Classes IX and X.

In classes IX and X, children should be mostly provided with opportunities to work in an establishment where some productive activity is going on. These places could be the farms, fields or dairies; workshops, factotrie or presses, and other centres where similar organised work is going on.

It would be apprpriate if children are allowed to work as unskilled or semi-skilled workers, In practice, where a 100 or more people work, there are always a few who would be absent and it should be possible to let children work in their place. The presence of the students should in no case distrub the working of the establishment; and this can be done only if the students work for a full day, between the usual hours, exactly under the conditions as any other workers. Obviously, the establishments should pay them the full day's wage.

It is to be emphasized that such work experience cannot be filled in the routine time table of the school; it would require a child going full time to a working place at least for a few weeks. This is certainly possible

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during the summer vacation and between semesters. Since about 10% time is shown in the chart for work experience in classes IX and X, it could also be possible to arrange for batches of students to be working in different establishments throughout the year. The establishments would thus get an on interrupted supply of unskilled or semi-skilled workers, needed by them in place of the expected absentees, and the students would not miss their classes significantly. Other arrangements can be devised by the schools depending upon the work available in the community; for example, agricultural work may be done in certain specific periods for each crop.

The procuring of those opportunities for their students is a challenge to the schools and teachers. The learning experience for the students are so valuable that no stone should be left unturned in making the arrangements. A real-life working experience would lead to first hand knowledge of the materials and the processes involved; and the teachers can build on this to inform the students about the inputs and output of the enterprise and to study the role it plays in the economy of the community. Possibilities of extension and development can also be explored. The student, on the other hand, will know the relations prevailing within the enterprise and will realise under what kinds of personal, social and managerial conditions people work and produce in our country. A social consciousness would develop which would not be the result of "propaganda" by any author with a certain philosophy, but would be based on personal experience,

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perceptionand insight. This kind of learning is beyond the reach of books; therefore, teachers and schools should attach the utmost importance to it.

The procuring and management of facilities for such work experience in agricultural, industrial or commercial fields is the joint responsibility of the educational system and the rest of the public adminstration. Public sector enterprises, and even private undertakings should be required to co-operate with the schools in establishing links for such work experience. This co-operation could be formalized on the pattern of Apprenticeship Act. The district level Vocational Education Committee inwhich schools, productive and service enterprises and respresentatives of Departments of Health, Industry and Agriculture etc. are included could be an excellent meeting ground for programming the aspect of work experience under discussion. In fact these Committees could also help in promoting the productive activities of schools discussed earlier, by streamlining orders for material needed by Government departments, and other enterprises, channalizing the products and providing for feedback on quality improvement.

The major public sector enterprises have their own shhools where mostly the children of their employees study. These enterprises could play a remarkable role in bringing the gulf between bookish education and the life, needs and aspirations of the common people by providing for work experience intheir undertakings.

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Indeed, being in the public sector and run by the tax-payers' money enterprises should show the way to others by responding to the needs of real education.

It is suggested that on the basis of work experience under real productive situations students should be allowed to summarise their experiences, suggestions for improvement and other comments through a variety of means of expression, they could write term papers, technical reports, essays, short stories, and popular articles etc. or they could write poetry and drama or point or compose music Experiencing a real situation, like sitting by the reverside in soft breeze, smelling the soil and contemplating about the beauties of nature, is very different from being made aware of the thigg through a book or a painting, at second hand. Such experiences therefore can light the creative spark in a person, and thereby make him discover himself. Teachers should ennourage this situation to occur and let the students report ontheir experiences intheir own personal way.

It will be very difficult at the beginning to find out enough situations for providing the above mentioned expereince. Moreover, all the students of class IX and X cannot be simultaneously be involved inthis work. Therefore, some production must be arranged in the schools also, in order to provide work experience to these children who are waiting for their turn for on the job training.

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One sees, therefore, "work experience" to be a remarkable strategy for transforming educationand integrating many worthwhile experiences. At the primary stage it is mainly psychomotor training combined with free artistic expression where a child's knowledge from books and his learning from environmental studies, science and social science melts into an activity of making things for pleasure, his own pleasure, parents and teacher's pleasure. The activity and the product enlarge the sphere of knowledge, understanding and application. At themiddle stage learning of techniques and skills leads a child to produce something which is needed by society. This takes him from the personal to the social world on the one hand. And from artistic or free expression to the ordering or disciplining of his workmanship for producing articles of use to society on the other. He applies his knowledge of materials, and of sciences to act on selected raw materials to turn them into goods having a value. Lastly in the high school classes (IX and X), he participates in productive activity in a real setting to enlarge his material and social experience and enrich his personality. In the processes of work experience throughout the school, students and teachers begin to interest with society, now exploring the market or persuading artisens and craftsmen to "teach" their arts in the school, now contacting the centres producing material goods and services for placement of students. Thus work experience demolishes the artificial walls between the school and the community, it is a source of learning and personal fulfilment to the students, and a means of augmenting the productive power of the country.

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5. Evaluation of work experience

In our school system examinations have become an end in themselves. There is a presumption that all evaluation be done through written examination at the end of the year. It is commonly believed that any other kind of evaluation will be arbitrary. If a student does not "pass" in one of the subjects it is believed that he has been negligent in his work or deficient in his intellect and therefore must be punished by detaining him in the same class for another year.

All this is gradually changing as a result of new thinking on education. It is being realized that the written test is only one of the several means of evaluation and that a variety of tools and techniques should be employed to measure the achievment in the light of different objectives of education, that the evaluation should not be punitive but should provide the student and the teacher useful information regarding the areas in which instruction and learning have to be improved.

Work experience, in particular, has been visualised as a broad-based educational activity expected to produce some gain in knowledge and understanding as well as to develop certain abilities and skills in order to manipulate materials, tools and equipment, it is also intended to bring about a change in attitudes towards manual work to cultivate social consciousness. In such a situation, it is not possible to assess the outcome of work experience by written tests alone. But we will

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.....have to use practical and oral tests, careful observation and noting by the teachers. Besides, some techniques will have to be evolved to test the quality of the finished product which may often be the result of a team or relay work of several students.

The placement of numerical marks by a grading system has been recommended to the Schools for various reasons, one of them being that most abilities and competences cannot be measured accurately on a 101 point scale ranging from 0 to 100 - they can more conveniently and realistically be placed on a scale such as:

Outstanding	A	7
Very Good	B	6
Good	C	5
Average	D	4
Below Average	E	3
Poor	F	2
Very Poor	G	1

This is called a seven point scale. Each one of these may be defined in terms of specific aspects of performance.

If the aspects of evaluation as listed below, are assigned relative weightage as shown, and a grade is awarded to each, an average may be computed representing the overall grade of a student in work experience for a semester or a year.

...

Aspect	* Relative Weight
1. Knowledge and understanding to be assessed through written or oral tests.	3
2. Attitudes, values, awareness, etc. to be assessed through rating scales and observational record.	5
3. Process: Skill, dexterity, ingenuity, resourcefulness, diligence, etc. to be assessed on the basis of the record to be maintained by the teacher.	8
4. Products: its quality to be determined on the basis of the judgement by a group of knowledgeable teachers.	4

For example, the overall, grade may be found, if a student has the following grades awarded.

1. Knowledge, etc.	D	or	4
2. Attitude, etc.	C	or	5
3. Process	B	or	6
4. Product	B	or	6

Multiply the relative weightage namely 3,5,8 and 4 by the grades.

$(3 \times 4) + (5 \times 5) + (8 \times 6) + (4 \times 6) = 109.$

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* These have been arbitrarily suggested by a working group and may be considered reasonable, or may be modified.

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If this figure is divided by the weight factor namely -

3+5+8+4 = 20 : we get the weighted overall grade of 109/20 = 5.45 or C.

Though it is a rough and ready method, it maybe employed to start with in the complex situation of evaluating work experience. Obviously the techniques of oral testing, maintaining check lists and records, and product of evaluating will have to be refined and given to the teachers for use.

6. Teachers for work experience

Introduction of work experience is a basic change in education. Therefore, pre-service training programmes for teachers must lay emphasis on explaining the philosophy and purpose of work experience. Pupil teachers should be made aware that within a broad framework, the programmes of work experience could be quite flexible; that is why no readymade curriculum is being suggested. Rural and urban schools, schools in desert areas and along the coasts of India, schools in the midst of communities where particular handicrafts thrive or where large public sector enterprises exist are very different from each other with respect to the needs and possibilities of work experience. Nevertheless, the same educational outcomes can result, if the stagewise suggestions given here are intelligently interpreted.

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In pre-service training, every would be teacher must learn at least one work experience activity and also realise its social ramifications particularly its relationship with the community. This can be done, if training colleges and training schools run programmes of work experience specially designed for their pupils.

In service training schemes of various kinds must also take up work experience and community interaction together in order that the teachrs may realise the practical importance of the entire scheme (apart from its philosophical appreciation).

The question whether special teachers should be appointed for work experience in classes I to VIII or this should become the responsibility of one or two teachers in each school, should be emphatically answered in the negative. Since work experience involves taking education out of narrow intellectual and bookish objectives, every teacher must be made aware of its importance and should become gradually capable of organizing suitable activities concerning work experience, At the primary level, a very large number of schools have only one teadher, and therefore he should take care of the work experience /similarly a class teacher should be able to conduct activities described earlier,/ work experience actifities, so far as his class is concerned.

In the middle and high school classes work has to be distributed according to the interest of the teachers. For example, activities concerning agriculture may be taken up by biology or life science teachers, handicrafts

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may be handled by the art and craft or even the physical science teachers; furniture making, papier mache and textile work may be entrusted to teachrs who may have the inclination and show interest in a particular activity. While calculating the work load of every teacher, it has to be kept in mind that they have to give some time to work experience. For technical jobs and specialized crafts, schools should be provided the facility of engaging craftsman, technicians and artisans on part-time payment for short periods, until students and teachers learn the techniques.

Schools may deem it not only desirable but necessary to appoint one or more coordinators of work experience programmes particularly in the middle or higher classes, since there would be varied programmes for these classes as well as individuals. Moreover, at the middle stage, the work experience programme involves procuring of orders, supplying of products and account keeping while in class IX and X, placement of groups of students in productive centres has to be taken up. The practical work in the real situation and in the school for these classes has to be supervised and the theoretical knowledge has also to be supplemented.

7. Accommodation, equipment and other assistance

In primary and middle classes, separate accommodation may not be necessary for work experience. Manapulative work at this stage is simple in nature and

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can be carried on in the classroom itself. But the classroom has to be adjusted to meet this need. Cupboards may be fixed on the walls for storing equipment, raw materials and finished goods. The desk has to be so designed as to serve different purpose e.g. writing and performing manipulative activities etc. Varandahs and other covered space can also be utilised for this purpose. Where there is no land for kitchen gardening, pots can be used for growing plants, or plants can be grown on the top of the roof. The tools have to be shared by the students. As it may not be possible for a teacher to attend to more than 20 students at a time, during practical work, the rest of the students have to be engaged in some other work e.g. writing of the work reports, drawing of diagrams and technical drawing, maintenance work or study in the library. There is a system of home-room period in many institutions. In this period, the students clear up their difficulties or complete their arrears of written work with the help of a general teacher who is available during the home-room period. Such arrangement can also be helpful for engaging those students who cannot be accommodated in the practical class.

The problem of supply of tools and equipment and raw material has to be solved tactfully. The basic tools have to be made available to the students. They may purchase some of these as they will require them in their homes also. The resources of the community may also be

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tapped. For heavy equipment like lathe, etc. it is advisable to depend upon the resources of the community, unless the capacity of such equipment is fully utilised in the school. Some payment may be made, in such cases, for the wear and tear of the equipment to the owner and this expenditure should be approved by the department or management. It is expected that some of this amount will be recouped from the sale-proceeds of the products. The reverse arrangement is also worth trying. In such a case, the equipment may be purchased by the institution and let out to the community members who will also train the students. It is advisable to go in for good tools, instead of the cheaper ones. Economy in this matter should not be insisted upon at the cost of efficiency. Even good workers are helpless when required to work with bad tools. Much of the natural and man-made materials can be collected by the students. In urban areas, lot of waste material which could be used for work experience is thrown away. This can be collected by installing 'waste bins' in every house. If the children are allowed to take away the goods prepared by them, they can be asked to bring the raw material from their homes

Suitable teaching aids and instructional materials can reduce the work of the teacher. These could be got prepared by the students. 'Do it yourself' type of materials, when properly programmed, will enable the students to work independently. Some instructional

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materials have already been prepared by the different states, though in the regio al languages. This could be consulted. This programme should be started only after making provisions for all the inputs.

Organising productive work.

It has been pointed out earlier that productive work and services are essential components of work-experience, particularly from the middle stage onwards. This work has to be planned intelligently. Only such work should be taken up which is within the capacity of the children who will be involved in it. The product should have consumer value, and there should be a ready market for it. In fact, the order for goods to be prepared, should be procured in advance. The needs of the community, the school, the department and other purchasing agencies may be ascertained before hand; and some agreement may be made with them for the purchase of the selected items. Sometimes, the demands may be created by taking up non-traditional items for production. The department or management of the schools may arrange for the purchase of raw materials in bulk, provided the efficiency of the distribution system is ensured. Permits should readily be issued for the controlled items for this work, by the concerned authorities. The condition for depositing the returns of such work in the treasury should be relaxed. The financial aspect may be operated through co-operative societies formed in the schools.

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Productive work taken up in the schools will be limited to the home and cottage industry level. Therefore, assistance may be sought from all these agencies which are engaged in promoting industrial development. The following six agencies may prove helpful in this respect :

1. The Khadi and Village Industries Commission.
2. The All India Handicrafts Board.
3. The All India Handloom Board.
4. The Central Silk Board.
5. The Coir Board.
6. The small Industries Board.

The Extension Directorate of the Ministry of Agriculture and Irrigation, Government of India and similar extension departments of the states may also prove helpful for this work. In order to undertake regular production work in the school, it may be necessary to employ professional workers under whose guidance the children will do such work which is within their capacity. The rest of the work in making finished products for marketing may be done by the professional workers, in order to maintain the standard of the product. For services, which should be remunerative, one has to be depend upon the facilities available in the community.

It may be made clear that it is not possible to engage all the students at a time in productive work. Therefore, it will be done by them in rotation and in groups. However, during their entire stay in the school, every student should undergo this experience during some part of his career.

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ANNEXURE IV

VOCATIONAL COURSES

Agricultural Vocations:

1. Dairying
2. Poultry
3. Fisheries
4. Forest Products
5. Basic Course in Fruit & Vegetable Growing
6. Agriculture
7. Small Farm Management
8. Agro Based Industries - Small Processing units of paddy, wheat, goats and millets, bread, biscuits and cakes
9. Agro Based Industries - Waste utilisation-bye-products - Paper making, manufacture of straw board out of straw and sugar cane bagasse.
10. Agro Based Industries - Re-cycling of animal waste
11. Farm Machines and Engineering

Commerce and Bussiness Related Vocations :

12. Office Management and Secretarial Practice
13. Stenography
14. Accountancy and Auditing
15. Banking and Insurance
16. Data and Key Punching Processes
17. Marketing and Salesmanship
18. Materials Management

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Engineering and Technical Vocations :

19. Basic Electrical Technology
20. Basic Electronic Technology
21. Basic Air-conditioning and Refrigeration Technology
22. Automobile Servicing and Maintenance
23. Elementary Sanitary Technology
24. Laboratory Technician's Course
25. Furniture Design and Manufacture
26. Textile Bleaching, Dying and Finishing
27. Leather Goods Technology

Vocations Related to Home Science :

28. Food Processing and Preservation
29. Banking and Confectionary
30. Nutrition and Food Preparation
31. Canteen Management (Small Scale)
32. Dress Desiging and Making
33. Textile and Designs

Education :

34. Pre-Primary Teacher Training
35. Primary School Teacher
36. Physical Education Teacher (Junior)

Health and Para-medical :

37. Multi-purpose Health Workers
38. Junior Medical Social Workers
39. Pharmacist's Course
40. Optometry

Miscellaneous Vocations :

41. Library Assistant
42. Tourism
43. Photography
44. Graphic Arts
45. Commercial Arts
46. Music ....

ANNEXURE V

STATEMENT MADE BY THE MINISTER OF UNIVERSITY EDUCATION KARNATAKA, ON VOCATIONALISATION OF HIGHER SECONDARY EDUCATION

Government have decided to introduce, during the academic year 1977-78 which is just commencing, a pilot scheme in the districts of Bangalore, Dakshina Kannada and Dharwad for vocational courses at the higher secondary stage in Junior Colleges. As this scheme has been designed by the Government of India as an employment oriented scheme and will, therefore, have a far-reaching effect onthe future of young people in our State, I shall briefly explain the background and the important features of the scheme.

2. In Karnataka out of about 40,000 students who will pass the pre-University course this year, only about 3000 can get admitted into professional courses and as many as 36,000 will take up higher education in arts, science and commerce at the University. When they complete their higher education, an overwhelming majority will face serious problems of unemployment, as jobs in organised industry and services will not increase fast enough to absorb more than a small fraction of them.

3. This growing problem of the educated unemployed has been examined by various Commissions and the Government of India and Karnataka at different times. It is only recently that the Government of India have recommended a comprehensive scheme with financial support for tackling...

it. The scheme is based on one of the main recommendations of the Education Commission that about 50% of enrolment beyond class X should be in part-time or full-time vocational courses affording apportunities of employment or self-employment in various vocations.

4. The Education Commission envisaged development of skills at the higher secondary stage to provide middle level supervisory and technician manpower. The role of the technician and middle level supervisor is not properly understood in India and their numbrs need to be substantially increased. At present our manpower pyramid is top-heavy and many persons who are more highly qualified than need be are doing what should be regarded as a technicians job. This is a wasteful use of their skills and is an unnecessary charge on training costs.

5. On the other hand, many administrators, managers and those in charge of banks, insurance, transport and communications do not possess any professional qualifications at all. Most of them have completed only secondary education. In the case of craftsmen and skilled workers like textile designers, mechanics and electricians very few possess general or professional qualifications. This confirms the lack of adequate training courses for middle level personnel.

6. The aim of vocational education, should, therefore, be.

(a) to train persons for middle level jobs that can be anticipated in industry and in the services sector;

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(b) to train people for self-employment in the agricultural sector (used in the broadest sense), small scale industrial sector (inlcuding handicrafts, cottage industries, village industries, etc.) or services related to and including co-operative marketing servicing, repairs and maintenance of agricultural tools or social service needed by the rural community and for which the community may be in a position to pay; and

(c) to offer vocational courses which are not too narrow or specialised.

7. The scheme contemplates that the course would be comprehensive in one main vocational area and, as far as possible, in at-least two allied subject areas. The content will include (1) some general education(2) broad theoretical education related to the vocation and (3) practical training in the selected vocation. However, the time spent in practical work and in on-the-job-training would be substantial, being not less than 50% of the total instructional time.

8. Out of more than 100 vocational courses listed by the Government of India we have selected during 1977-78 about 25 courses of immediate relevance to the employment potential existing in Karnataka in four broad areas - agriculture, engineering, health services and business (Appendix). The courses were developed in close association with employer groups or their professional bodies and often were designed directly by them. This would naturally encourage professional employers to prefer a product

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of their own design. The courses have been discussed with selected Junior Colleges in the three districts taken up and have evoked encouraging response from the Principals.

9. The pilot scheme, envisages that in each of the 4 institutions in a district 4 related courses in one broad area or 2 related courses in 2 broad areas should be introduced, each course admitting 25 students. The students will be required to make their choice at the time of admission to Class XI between the academic and vocational streams. If any student wishes to change over from one stream or course to another, his case could be considered by the Head of the Institution at the end of the 1st Semester depending upon the availability of a seat, his performance in the 1st Semester and other considerations, if any. If any change-over is desired after the 2nd Semester the case should be referred to the Government by the Head of the Institution alongwith his recommendations. The modular structure of the courses and provision of credits provide necessary flexibility for movement of students both horizontally and vertically. Those students who are allowed the change should be able to carry over the credits of the relevant courses already completed.

10. For the student the new scheme opens up a vista which holds distinct prospects of both employment and advancement in the chosen vocation.

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11. As employability is the cornerstone of this scheme, Government intend fully to associate potential employers with the courses throughout their duration. It will be Government's earnest endeavour to create conditions for the easy absorption of successful students by employers. Their involment has been sought in the following ways:-

(1) The design of the course and the syllabus have been prepared, wherever possible, by professional bodies having the confidence of employers. For example, the bankigg diploma course has been evolved by a group of prominent banks;

(2) Admission to courses will be through such aptitude tests as may be recommended by potential employers;

(3) In developing instructional programmes the services of the practioners of the vocations will be utilised;

(4) The nature of practical training will be determined in consultation with the concerned industry in the public and private sectors and facilities with such units in industry will be arranged for on-the-job training;

(5) The diploma to be conferred at the end of the course will entitle students to enter the related vocations in preference to those who do not possess such qualification. Government intends to bring employers and the students together during the course so that they may get to know each other;

...

(6) The Apprentices Act has been amended to cover those who have completed the course for the benefits of training and stipend under employers; and

(7) It is further the intention of Government to prescribe, in due course and in consultation with employers, that the diploma will be minimum qualifications for the related vocations.

12. Both the Government of India and the State Government are actively engaged in working out a scheme for providing further scope for the diploma-holders to attain higher standards and qualifications through advanced courses in the same or allied vocations. They need not, therefore, fear that these courses will deprive them of vertical mobility in their studies or further advancement in their vocations.

13. To the institutions which introduce these courses at the pilot stage, the Government of India has offered to finance (1) the cost of appointing two lecturers per course ofbudgeted cost of Rs.7,500/- per annum per teacher, and (2) the cost of equipment at Rs.11,250/- per course introduced. The State Government have also decided that during the two years ending with 1978-79 the entire net deficit (instead of 80% deficit) of these courses would be met by Government as grant-in-aid from the very first year of introduction.

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14. Government hope that the parents and students will receive this scheme well and the instutions will do everything in their power to make it a success. For in that success lies the future of most of our young boys and girls.

APPENDIX

I.	AGRICULTURE	1. Poultry
		2. Dairying
		3. Agriculture
		4. Fisheries
		5. Co-operation
		6. Pesticides, Fertilizers & Weedicides
II.	ENGINEERING	1. Building Construction Technology
		2. Servicing Technology (Office Equipment)
		3. Electrical Wiring and Servicing of Electrical Appliances
		4. Clock and Watch Repair Technology
		5. Photography
III.	HEALTH SERVICES	1. Laboratory Technician
		2. Physio Teraphy and Occupational Theraphy Technician
		3. X-Ray Technician (Radiological Assistant)
		4. Medical Record Technician
		5. Optitioner and Refractionist
		6. Multipurpose Basic Health Workers (Male)
		7. Psychiatric Assistant
		8. Pharmaceutice Operator
		9. Pharamacettional Laboratory Assistant
IV.	BUSINESS	1. Banking
		2. Accounting
		3. Auditing
		4. Costing
		5. Materials Management Technology

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The Government of Karnataka - Vocationalisation of Higher Secondary Education - pilot Scheme till 1978-79.

PREAMBLE

Government have accepted the scheme of Vocationalisation of Higher Secondary Education as enunicated by the Government of India intheir letter No.F.21-33/77.SCH.3 (VE) dated 25th February, 1977. The main objective of this scheme is to encourage the State Governments to initiate the Vocationalisation of Higher Secondary Classes in the Vth Plan period and to expand and consolidate it on a regular basis as a State Scheme in the VIth Plan. Extensive preparation has been undertaken by the National Council of Educational Research and Training (NCERT) in consultation with the State Government reprcsentatives.

Immediate measures are necessary for the introduction of the scheme. The Government of India have indicated that six Districts in the State may be taken up for conducting a survey immeditely to assess existing and potential job opportunities, organising appropriate vocational courses with reference to existing facilities, arranging practical training, supplying equipment needed and locating full-time and part-time instructors. 40% of such districts will be selected for the introduction of vacational courses during 1977-78. A State level Committee and District level Committees have also been suggested by the Government of India. A State - level Officer and district level officers are also to be appointed to implement the scheme.

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Copy of the order No.ED. 64 TPU 76, dated July 12, 1977 issued by the Government of Karnataka, Education and Youth Services Department, Bangalore.

Sanction is accordxd to the implementation of the scheme of Vocational Courses in accordance with the Government of India pattern. The Scheme including its academic content, should be brought under the purview of the State level committee which is an Advisory Committee of Government. This committee will guide the implementation of the programme with the assistance of the Director of Vocational Education who will be the State Level Officer responsible for organising and supervising the scheme including the preparation of the syllabus and arranging for instructional staff, material and training facilities.

2. Sanction is accorded to the constitution of the State Level Committee and Syllabus committees as may be required and the District level committees. The State level committee shall consist of reprsentatives of General Education, Technical Education, Labour, Health, Agriculture, Veterinary and Animal Husbandry Services, Industry (specially Small Scale Industries) Planning, Development, Government and Private Industries concerned. District level committees shall be constituted in each District selected in a similar manner. The members of these committees will be notified separately.

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3. Sanction is also accorded to the creation of a Directorate of Vocational Education under the Administrative control of the Education and Youth Services Department with immediate effect with headquarters at Bangalore. The Directorate will be headed by the Director of Vocational Education and will consist of the posts shown in the annexure for the time being.

4. The following Districts are selected for conducting surveys of the existing and potential job opportunities under the supervision of the Director of Vocational Education:-

1.	Bangalore	2.	South Kanara
3.	Dharwar	4.	Mysore
5.	North Kanara	6.	Raichur

The surveys shall be completed within 3 months. Surveys shall be conducted by the Deputy Directors of the Districts concerned.

5. The districts at Sl.Nos. 1 to 3 in para 4 are also selected for the introduction of vocational courses during the academic year 1977-78 and the Deputy Directors concerned shall, under the supervision of the Director of Vocational Education, organise appropriate vocational courses with reference to facilities available in institutions, arrange practical training, supply equipment needed, locate full-time and part-time instructional staff,

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co-ordinate the roles of public and private organisations for the benefit of the institutions, assist the absorption of successful candidates by employers directly and / or under the Apprenticeship Programme and generally supervise the functioning of the vocational courses and monitor their progress.

6. The expenditure on the staff and the scheme shall be debited to "277-Education - H 3. Other expenses - XVIII Scheme for vocationalisation-Plan". Assistance received from the Government of India will be credited by the Accountant General to the State Government under the appropriate head.

7. T.A.and D.A. of non-official members of the State Level Committee, the syllabus committees and the District committees will be governed as per Annexure to Annexure 'A' of Karnataka Civil Service Rules.

8. This issues with the concurrence of Finance Department vide their U.NO.Note No.FC/647/77 dated 4th April, 1977.

ANNEXURE TO GOVERNMENT ORDER NO.ED 64 TPU 76, DATED 12TH JULY,

Designation of the post	Scale	Duration of post	N p
1. Director Vocational Education	Rs.2000-2500	One Year	O
2. Deputy Director of Vocational Education	Rs.1300-1900	One Year	T
3. Deputy Director of Vocational Education	Rs.1300-1900	Three Year	T
4. Stenographers	Rs.400-900	One Year	F
5. Stenographers	Rs.400-900	Three months	T
6. II Division Clerks	Rs.300-700	One Year	F
7. II Division Clerks	Rs.300-700	Three months	T

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and economic change, this concept does not appear to permeate the planning processes in our country. As far as the Plans are concerned, education appears to have been treated in a narrow compartmentalised manner.

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MINISTRY OF EDUCATION & SOCIAL WELFARE
(DEPARTMENT OF EDUCATION)
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CONFERENCE OF EDUCATION SECRETARIES
OF STATES/UNION TERRITORIES
AUGUST 9, 1977, COMMITTEE ROOM 'B'
VIGYAN BHAVAN, NEW DELHI-110001.

Item No.IV: APPROACH TO SIXTH FIVE YEAR PLAN
ROLE OF EDUCATION IN PLAN

Education is meant to train people to become aware and use their capacities, intellectual and physical, to lead a fuller life and be useful members of the society. Education can be a powerful instrument for transformation of our society and country as we want it. In other words, education is a greatest instrument of rejuvenating the country.

While there is general acceptance the education must be an instrument of social and economic change, this concept does not appear to permeate the planning processes in our country. As far as the Plans are concerned, education appears to have been treated in a narrow compartmentalised manner.

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Investment on man is a critical factor that determines the direction and degree of development. The preparation of the people of a country for social and economic advancement is essentially a task of education. We seem to have lost sight of this objective in our national efforts as is evidenced by the tardy progress in universalisation of elementary education and adult education. It is essential to identify education as a national endeavour permeating all fields of development in the country and ensure that this objective is reflected adequately in the national plan. While identifying this role of education in the plans, it would be wrong to place emphasis only on financial resources. We have a large human force in the country. We have also material resources which are not adequately utilised. We have also a large academic community which can play a positive role in this task. The vast army of students in our educational institutions is also available to us for national programmes. We should be able to husband all our resources effectively.

CRITICISMS

We should also be aware of some of the criticisms raised against the present system of education. It is alleged that the system is yet to become mass based and lose its class character. The formal system dominates it to the extent of excluding the weaker and poorer sections from it. Programmes of non-formal education and open learning system have not found wider and ready acceptance. The concepts of social equality, respect for manual labour, relevance of environment are not yet adequately reflected in the curriculum and syllabus. Equalisation of educational opportunities specially for those coming from weaker sections and backward areas is yet to be assured. The urgent need to modify our system and infrastructure to introduce an open learning system with emphasis on free and ready access to all sections of the population is not adequately appreciated. The system is not yet related to our needs and requirement.

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SURVEY OF PLAN ACHIEVEMENTS AND UNFINISHED TASKS

A brief survey of the developments envisaged in the field of education in the country at the close of the Fifth Five Year Plan would be certainly useful while considering our approach to the Sixth Plan.

ELEMENTARY EDUCATION

87 per cent of the children in the age group 6-11 and 39 per cent of the children in the age group 11-14 are enrolled in classes I-VIII as reported in 1976-77. The enrolment for the age group 14-17 is about 22 per cent. The Fifth Plan target is 96 per cent enrolment for the age group 6-11 and 46 per cent for the age group 11-14. The annual rate of growth of enrolment has been estimated at primary as 2.1 per cent and at middle level 4.1 per cent. With these growth rates, it is unlikely that we will be able to achieve the targets envisaged for the Fifth Plan. Added to this is the problem of upward revision of population figures for these age groups which are under finalisation by the Registrar General of India. It is most likely that the problem of achieving 100 per cent enrolment in the age group 6-11 and substantial

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progress in the enrolment of the age group 11-14 will spill over to Sixth Plan. It is also clear that if we have to achieve considerable progress in the Sixth Plan, the present rate of growth of 2.1 per cent at primary and 4.1 per cent at middle levels will have to be stepped up considerably which can be done only if a vigorous implementation programme is envisaged. It must also be mentioned here that since under aged children are retained in primary and middle classes, the actual number in the age group 6-14 enrolled will be less than the number reported. While, on this question, it must also be remembered that the figures presented relate to the nation as a whole and some States lag far behind the all India averages.

While it is laudable that we have been able to provide educational facilities within walking distance for 97 per cent of the population in our country, there are still villages and habitations in inaccessible areas without educational facilities at this level. The ratio of middle schools to primary schools deserve to be improved and properly adjusted in most parts

of the country to ensure facilities for primary school children to continue their education into middle schools. While the Fifth Plan recognised and accepted the strategy of non-formal education for the age group 6-14 to enable access to educational facilities of weaker sections of population, who are not able to go to formal schools, not much progress has been made in the field. While we envisaged enrolment of 8 million in non-formal education programmes in the Fifth Plan, the progress is far short of this. Non-formal education programmes in this sector may be the only means of hastening universalisation of elementary education and at the same time introducing an open learning system.

WASTAGE AND STAGNATION

The problem of wastage and stagnation at elementary level has been repeatedly emphasised and it is even now estimated that out of 100 children enrolled in class I only 38 reach class V and 23 reach class VIII. It is rather unfortunate that the magnitude of this problem has not come down over the plan periods. It would appear that while this problem has attracted notice, no concrete measures of action have been implemented to overcome this problem.

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It must be remembered that one major step towards solving the problem of adult illiteracy would be to ensure universalisation of elementary education which would prevent population in this age group joining the ranks of adult illiterates.

ADULT EDUCATION

The position of adult illiteracy calls for special attention. Although the programmes of Farmers' Functional Literacy and Non-formal Education for the age group 15-25 would be in operation in about 200 districts by the end of the Fifth Plan, illiteracy continues to be a major impediment in expansion of education among children and in involvement of the masses in the process of development. Although the rate of literacy has increased since 1947 from 14 per cent to 33.85 per cent (excluding the age group 0-4) in 1971, the number of illiterate persons has also risen from 247 million in 1951 to 309 million in 1971. The number of illiterate persons in the age group 15-35 is now expected to be about 100 million and this age group has to be given the highest priority. Adult education should emphasise imparting of literacy skills;

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but the literacy programmes should be related to the working and living conditions of the learners, to the challenges of the environment and the developmental needs of the country. It would appear that an entirely new strategy envisaging a time-bound programme has to be planned in this direction.

SECONDARY EDUCATION

In the field of secondary education, it has not been possible for States to meet the pressures of expansion. The need for careful planning of the location of secondary schools and non-formal programmes to cater to the needs of weaker sections and backward areas requires urgent attention. The new pattern of 10+2 has not yet been fully implemented in all the States. The system is currently under review. The pattern which emerges may have to be implemented in full in all the States during the Sixth Plan period.

HIGHER EDUCATION

In regard to higher education, it has been possible to regulate expansion to some extent. The efforts may have to continue towards regulating

expansion while providing for increased access to weaker sections and backward areas through consciously planned programmes. Higher education courses may have to be restructured in the light of the new educational policy to be decided. Efforts to improve the quality of higher education and research must continue.

TECHNICAL EDUCATION

In the field of technical education, the allocation of funds in the State sector have generally been inadequate. This has affected the quality of education at the degree and diploma levels in the States and perhaps widened the gap between the standards maintained by the institutions of the Centre and the institutions with the States. While enrolment in these institutions may continue to be controlled with reference to manpower needs, programmes to replace obsolete equipment, modernise courses, liaison with industry, improved faculty and strengthening of libraries, laboratories and workshops may require support.

TEACHER EDUCATION

Improvement in the quality of teachers is

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basic to improvements of standards of education especially adoption of improved methods of teaching and evaluation. Efforts should continue to be made to improve the remuneration and conditions of work and service of teachers. Pre and inservice training of teachers at all stages of education and constant efforts to upgrade their knowledge and techniques should form an essential feature of the programmes of development at all stages of education.

ADMINISTRATION AND PLANNING

The administrative and planning machinery in the States which are responsible for implementing the development programmes in the field of education may have to be reviewed and geared to take on tasks of sixth Plan. Selection and planning of educational administration must receive adeqate allocation.

EQUALISATION OF EDUCATION OPPORTUNITIES

Equalisation of educational opportunities to ensure that weaker sections of the population and backward areas get access to education has been attempted through provision of educational facilities in inaccessible areas, introduction

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of means-cum-merit scholarships at various stages, expansion of hostel facilities in support for poor students, remedial courses, special coaching programmes, educational technology, part-time classes and other programmes. But these have not kept pace with the growth of the problem. They also require to be constantly reviewed to ensure maximum impact. Imbalances within the States, districts and even within the blocks are becoming noticeable. The ultimate objective of the programmes should be to ensure an open learning system bridging the gap between the haves and have nots.

OTHER SCHEMES

Some impact has been made in the field of development of languages, physical education, sports with mass base, book promotion, students and non-student youth during the Fifth Plan. It may be necessary to review these programmes and determine their nature and place in the Sixth Plan.

PLAN ALLOCATIONS

Some unhappy trends have emerged in the field of educational planning in the past. The outlay for education which constituted 7.2 per cent of the total plan outlay in the First Plan has

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dropped to 3.3 per cent of the total plan outlay in the Fifth Plan. However, it must be noted that outlays for education under other sectors have been rising. The percentage allocation for elementary education out of total outlay for education has dropped from 52 per cent in the First Plan to 32 per cent in the Fifth Plan. There has been marked increase in the allocation of funds for higher education. The funds for adult education in the State sector have been negligible. Many States have not contemplated special programmes for development of education of girls, Scheduled Castes and Scheduled Tribes and provision of facilities in backward areas. These trends may require to be reversed in the Sixth Plan.

NON-PLAN SECTOR

While plan allocation may not have increased, non-plan allocations for education and expenditure on education in the States have grown rather sharply. The major portion of expenditure on education in the States is on the non-plan outlay of the education should be kept in view while contemplating educational development in the Plan. More intensive and planned utilisation of existing facilities like

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buildings and equipment in the field of education is necessary. It is also possible to contemplate redeployment of resources like teaching staff to greater effect. A more rational utilization of resources in the whole may result in better impact with limited outlay. The Sixth Plan must imply greater effort at better and more intensive utilization of the existing facilities.

LARGE SCALE DEFICIENCIES

One of the problems of education sector has been the large scale deficiencies built into the system in regard to buildings, simple equipment like furniture, blackboards, teaching aids and other support programmes like libraries and laboratories and workshops. It is estimated that 40 per cent of the primary schools do not have adequate buildings and 10 per cent of them are in kucha buildings. About 40 per cent of the secondary schools do not have laboratories and generally speaking libraries and laboratories are not adequately equipped. The position is not very different in institutions of higher and technical education. These deficiencies which have been built into the system over the period

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of previous Plans, do have an adverse impact on new programmes of development of education. These have to be kept in view while considering the approach to sixth plan.

SEVENTH FINANCE COMMISSION

The Seventh Finance Commission has been set up. They may agree to the commitment on the recurring expenditure on the educational programmes during the Fifth Plan being covered by suitable grants. We may have to move them for earmarking grants on the non-plan side to cover the deficiencies built into the educational system. The Ministry of Education in collaboration with the States and the Planning Commission hopes to undertake a study in this regard, for presentation befcrc the Finance Commission.

MONITORING AND INFORMATION SYSTEM

The monitoring of the implementation of many of the educational programmes in the State and Central sectors in terms of physical achievements has to be strengthened considerably. The States may have to strengthen their monitoring and information system.

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APPROACH TO SIXTH PLAN

a PRIORITIES

The Conference may like to identify, among others, the areas mentioned below as requiring greater support and higher priorities in the Sixth Plan-

(1) Universaalisation of elementary education;

(2) Adult Education;

(3) Equalisation of educational opportunities for all sections of society;

(4) Removal of regional imbalances in educational development;

(5) Relating education to our needs at all levels and improving its quality.

b TARGETS AND PRIORITIES FOR THE SIXTH PLAN

The Conference may like to indicate some of the desirable physical targets to be achieved in key sectors like universalisation of elementary education and promotion of adult education.

c CENTRE-STATE COOPERATION

The Conference may also like to examine the role of Centre-State Cooperation and indicate the mutual support that may be required. As at present, major investment in the field of elementary

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education and secondary education are by the States; the centre investing only in programmes intended to improve quality; the Centre's allocations are mainly in the sectors of higher and technical education. Further, the centrally sponsored schemes have been reduced to the very minimum.

d GUIDELINES

The Conference may also like to suggest broad guidelines in regard to the collaboration between States and Centre in regard to the formulation of the proposals for the Sixth Plan to be recommended to the Planning Commission.

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MINISTRY OF EDUCATION & SOCIAL WELFARE
(DEPARTMENT OF EDUCATION)
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CONFERENCE OF EDUCATION SECRETARIES
OF STATES/UNION TERRITORIES
AUGUST 9 ,1977, COMMITTEE ROOM 'B'
VIGYAN BHAVAN, NEW DELHI-110001

Item No.V REVIEW OF THE NATIONAL POLICY RESOLUTION ON EDUCATION

Towards the end of the Third Five Year Plan, Government of India felt the need for the review of the entire educational system and set up an Education Commission under the chairmanship of Dr. D.S.Kothari. The Commission was to advise the Government on the national pattern of education and on the general principles and policy for the development of education at all stages and in all aspects.

2. The report of the Commission was discussed at length at the various conferences of State Education Ministers, State Education Secretaries, Directors of Education, Vice-Chancellors etc. A public dialogue was also carried on. The views which emerged were discussed in the meetings of the Central Advisory

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Board of Education. On the basis of these discussions and dialogues the Government of India enunciated a National Policy on Education in the form of a Resolution and placed it before the Parliament for approval. The Parliament discussed this Policy Resolution at length and finally approved it for implementation from 1968.

3. The National Policy Resolution broadly marked the areas for action in the field of Education. It also indicated a number of directions in which our educational system was to be reconstructed. In short, it laid down the priorities in education for the country as a whole.

4. In this Resolution itself the Government of India recognised that the reconstruction of education was not an easy task in view of the scarcity of resources and exceedingly complex nature of the problems involved. Considering the key role which the education, science and research play in the development of material and human resources the Government

of India agreed, in addition to initiating programmes in the Central sector, to assist the State Governments for the development of programmes of national importance where coordinated action on the part of the States and Centre was called for.

5. There are seventeen recommendations in this Resolution which are as follows:

(i) Introduction of free and compulsory education;

(ii) Improvement in the status, emoluments and education of teachers;

(iii) Development of languages;

(iv) Equalisation of educational opportunity;

(v) Identification of talent;

(vi) Introduction of work experience and national service in the curriculae;

(vii) Emphasis on Science education and research;

(viii) Emphasis on education for agriculture and industry;

(ix) Production of books;

(x) Introduction of Examination reforms;

(xi) Extension of facilities for secondary education;

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(xii) Regulation and improvement of the University education;

(xiii) Introduction of part-time education and correspondence courses;

(xiv) Spread of literacy and adult education;

(xv) Promotion of games and sports;

(xvi) Promotion of education of minorities; and

(xvii) Introduction of a uniform educational structure in all parts of the country.

6. Of these recommendations, considerable work remains to be undertaken regarding the introduction of free and compulsory education and adult education. The Parliament has already been informed that the present Government would like to give the highest priority to the universalisation of literacy in the country. At present only 87 per cent children in the age group 6-11 and 39 per cent in the age group 11-14 have facilities for primary and middle school education in our country. In regard to Adult literacy only 34 per cent of the population above the age of 4 are literate. The dimensions of these two problems are truly gigantic. In the recent years the introduction of the new pattern of education has also acquired considerable importance.

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7. Criticisms have been levelled against the National Policy Resolution. It is stated that there is no specific reference to the need to change the class character of our educational system. Priority and importance have not been given to adult education. The resolution does not urge the need to usher in an open learning system giving due importance to non-formal programmes.

8. The various recommendations of the National Policy Resolution are under different stages of implementation by the concerned agencies like the Central and State Governments, local bodies, Universities and Research Institutions and voluntary organisations all over the country. However, implementation of these recommendations have not been uniform. The priorities indicated in the Resolution have also not been adhered to strictly.

9. Education cannot be looked at in isolation, and it has to be related to the socio-economic condition. Moreover, if it does not keep pace with the changes in the society then that it will be nothing but an anachronism. While education is often

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regarded as an instrument of socio-economic change, it may not always be the correct to think in terms of quantitative improvements alone. The content of education must be functional and related to the lives of the people and the environment in which it is imparted. Education must imbue the country's youth with moral and social values and skills that we wish to develop. Unless there is qualitative improvement also, which will lead to socio-economic change for the betterment of the life of people in society, the whole purpose of education may fail.

10. The National Policy Resolution provides for a review, after every five years of the progress made and recommend guidelines for future development. Unfortunately, though almost ten years has elapsed since the National Policy was announced, no such review has been made. The Government of India, therefore, proposes to review the National Policy on Education as provided for in the Resolution itself and for the purpose invites the comments of the State Governments in the matter. Working papers will be prepared based on the views and opinions conveyed by State Governments

and experiences gained by the Centre. It is hoped that these papers will be discussed in detail by the Committees of the Central Advisory Board of Education. After all these deliberations it is proposed to place this matter before a meeting of the Central Advisory Board of Education to be held some time later this year.

MINISTRY OF EDUCATION & SOCIAL WELFARE
(DEPARTMENT OF EDUCATION)

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CONFERENCE OF EDUCATION SECRETARIES
OF STATES/UNION TERRITORIES
AUGUST 9, 1977 COMMITTEE ROOM 'B'
VIGYAN BHAVAN, NEW DELHI-110001

Item No. VI: EDUCATIONAL TECHNOLOGY PROJECT - A REVIEW

The Ministry of Education has an on-going Plan scheme which is intended to promote the utilisation of educational technology for purposes of education. This scheme, launched in 1971, envisages among other things, the setting up of an Educational Technology Cell in each State. The scheme is at present fully financed by the Ministry of Education. The pattern of assistance includes the salaries of three officers and supporting staff, costs of equipment and of programmes undertaken by the ET Cells. (Enclosure I)

2. So far ET Cells have been set up in 12 states viz., Andhra Pradesh, Bihar, Gujarat, Himachal Pradesh, Jammu and Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamilnadu, Uttar Pradesh. Six of these Cells have been set up very recently. Correspondence is in progress

with a view to persuading the remaining States to set up ET Cells within the present Plan Period.

3. Although at present Central assistance for the scheme is available only up to March 1979 it is important that setting up of ET Cells should receive the urgent attention of the States concerned for various reasons. Equally, there is need to review the functioning of ET Cells where they have already been in existence for some years. The reasons are briefly enumerated below:

(a) Need of concept of educational technology

The Ministry of Education has defined the object of the programme in the broadest possible terms i.e. to stimulate education at all levels and to bring about qualitative improvement in education through and integrated and full use of films, radio broadcasts, expanded television coverage in the country, and new educational techniques such as video-audio recorders, programmed learning etc. This objective, which has served a useful initial purpose, needs to be translated

into a detailed operational plan of action relevant to the States' needs. However in the process of implementation of the scheme the need for defining the concept of educational technology has emerged, particularly the need to differentiate it from and earlier audio-visual movement. Accordingly a First Statement on educational technology has been prepared which defines the new concept. (enclosure II). <u>This statement is for consideration and acceptance by the Meeting.</u>

It is necessary for the ET Cells to develop, plan, and help in the implementation of progremmes under the new concept. The ET Cells will serve as the focal point for educational technology programmes in the States.

(b) <u>Need to prepare for utilisation of increasing television facilities and the Indian Satellite</u>

Television facilities in the country are rapidly increasing and by 1980 when the Indian satellite is expected to come up there would be a tremendous and sudden expansion of television facilities throughout the country. It is extremely

urgent that the implications of these developments for education be appreciated and the necessary infrastructure created so that the States are in readiness to make the most of the important resource of television for educational purposes. Research studies undertaken by the Ministry of Education in collaboration with ET Cells in SITE States have revealed the great potential of television for improving the quality of education as well as the need to adopt a clear-cut policy for educational television to maximise benefits.

(c) Need to appreciate the full potential of educational technology

Our experience of the functioning of the ET Cells has revealed that the ET Cells are functioning in isolation of the State Education Departments. The States have not evinced much interest in the educational technology programme, nor thought of developing programmes which can help the State in a significant way. On the other hand, we find that in some of the States the necessary support for the ET Cells to develop has not been

given. In some ET Cells the staff i[redacted]igher taken away for long periods a[redacted]fted for other programmes or the o[redacted]er-in-charge is given considerable amount of additional work by the State Government which has nothing to do with educational technology or the services of the officer-in-charge are requisitioned for liaison work and special assignments as and when needed or the staff is transferred. The jeep or vehicle provided under the scheme to the ET Cell to help facilitate its work is placed under the State pool. This inhibits the working of the ET Cell.

It is suggested that the ET Cell should be developed as part of the State educational set up with the full involvement of the State Educational authorities in the planning and programming of the ET activities in the State.

(d) Need to develop a long term or permanent place for educational technology and the ET Cell in the State

The future of educational technology and the ET Cell in the State needs detailed attention.

Firstly, Central assistance is available only up to March 1979 and the nature and type of further assistance has to be thought of. Secondly, the location and the status of the ET Cell in the State educational complex of institutions has to be considered. Thirdly, ways and means of augmenting the resources of the ET Cells have to be found; if necessary, by diverting resources of organisations working in allied areas in the State. Fourthly, the hardware implications of an educational technology programme in terms of cctv, sound and graphic art studies, auditorium, printing press, photography, film and tape library have to be appreciated. Finally the specific role of the ET Cell has to be defined. In the view of the Ministry of Education, the ET Cell should become an expert body on educational technology by acquiring two functions - those of production and research in educational technology. The two processes of production and research are closely connected and in both new methods and techniques will have to be developed. This will necessitate

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the ET Cell to branch out on its own rather than to take over, particularly in research, the traditional methodologies of educational research. The new methodologies that have to be developed must be sensitive to the compulsions of media.

The Conference may review the educational technology project with a view to:

1. Setting up of Educational Technology Cells in States where they have not been set up so far;
2. bring about improvements in the functioning of ET Cells in States where they have been set up; and
3. consider the concept and role of educational technology for educational purposes (Enclosure-II)

Enclosure-I

Pattern of assistance

Educational Technology Project envisages the setting up of Educational Technology Cells in various states, in a phased manner. The States ET Cells are expected to draw up and implement suitable State programmes for making efficient use of mass media and modern Educational Technology for education, including school and college education, open schools and open universities, literacy, further and continuing education and scientific cultural and technological education for those already employed in various sections of the economy. Each of these Cells will consist of the following staff:-

Designation of the post	No. of Posts	Scale of Pay
i) Officer-in-Charge.	1	In the scale applicable to Under Secretary of the respective State Government.

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ii)	Programmer-cum-Script Writer	2	In the scale applicable to Senior Post-Graduate teachers of the respective State Governments plus 10% thereof, as Deputation Pay.
iii)	Office Superintendent	1	In the scales of pay of the respective State Governments.
iv)	Steno-typist	1	
v)	Assistant	1	
vi)	Peon	1	

2. The Officer-in-Charge to be appointed, is required to be an officer of Under Secretary's status drawn from administrative/aducational services having three years' experience in education preferably in the field of Educational Technology. He will be in overall charge of the Educational Technology Cell and will:-

i) draw up a programme for the State for making efficient use of mass media and modern educational technology for education, including school and college education, open schools and open universities, literacy, further and continuing education,

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and scientific, cultural and technological education of those already employed in various sections of the economy;

ii) co-ordinate with local All India Radio for the production of suitable educational programmes on radio and television;

iii) prepare a State plan for producing films for all stages of education and for out-of-school informal and adult education and teacher education particularly for work experience programmes and for craft education at the school level;

iv) assist in the selection and training of script writers, presenters and class-room teachers required for the implementation of Educational Technology Programme of the State, and

v) liaise between Government of India, Ministry of Education on the one hand and the State Department of Education and Educational Institutions on the other.

3. The post of the Programmers-cum-Script Writers is to be filled by deputation of Post-Graduate teachers with good academic record, possessing at

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least 5 years teaching experience and 3 years experience in writing scripts for films, radio, TV etc. Their duties are :-

i) to write scripts for radio, TV, and other educational programmes,

ii) to assist the local All India Radio stations in the actual production of radio and TV programmes,

iii) to prepare class-room materials to supplement the radio, television and other programmes, and

iv) to co-ordinate the class time-tables with the All India Radio's television and radio broadcasts,

v) to produce certain programmes of a local nature some of which may be live broadcast programmes, and

vi) to generally assist the officer-in-charge in the implementation of the State programme for making efficient use of mass media and modern educational technology for education.

4. The other posts are to be filled according to the Recruitment Rules obtaining for similar posts in the respective State Governments.

5. The entire staff of the Educational Technology Cells, will be borne on the strength of the State Governments, and will be subject to the State Governments' Rules and Regulations. They will also get dearness allowance, house rent allowance, compensatory allowance and other allowances, as may be admissible to the State Government employees.

6. The entire expenditure on the setting up and maintenance of the State Cells is to be met by the Government of India upto the end of the Fifth Plan or 5 years, whichever is earlier, after which the responsibility for the maintenance of these Cells will be that of the concerned State Governments.

Enclosure-II

Educational Technology - A first statement

The stated objective of the Ministry of Education's educational technology programme is to bring about a qualitative improvement in education by stimulating and promoting an integrated use of mass media and instructional technology at all levels of education. No attempt has yet been made to outline the manner in which this can be achieved.

2. The educational technology programme appears to be similar to the earlier audio-visual education programme as both involve the use of instructional media and have improvement of quality of education as their main objective. In Maharashtra an Educational Technology Cell was set up as soon as television came to Bombay and in the six SITE States, the ET Cells were involved in the utilisation of the new medium of television. For these seven States, educational technology has become synonymous with instructional television.

3. The audio-visual education programme is primarily a programme for the teacher. Over the years audio-visual education has become synonymous with a programme of film libraries and occasional audio-visual workshops for teachers. It has involved a

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very small number of teachers and institutions and is more a ritual than a well established purposeful system. To save educational technology from a similar fate, it is necessary that the educational technology programme should serve a well defined purpose and above all be pragmatic. The educational system should have a state in educational technology and not permit it to become merely a service to be utilised at the option of a teacher.

4. Important problems facing education are the expansion of educational facilities at all levels and the provision of new types of educational facilities to meet the needs of the scope of the formal system of education. The educational technology programme should therefore accept expansion as its first and primary objective and not the improvement of quality (which, in any case should be inherent in any worthwhile programme). An educational technology programme must therefore be a programme intended for large numbers. It must be a mass programme.

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5. Expansion under the educational technology programme will be different in character from that occurring in the traditional system, with its insistence on a defined teacher-pupil ratio, the presence of a teacher, need for a building and other such facilities. The educational technology programme, on the other hand, will enable expansion to take place on a much larger scale than is possible under the traditional system (given the limited resources) by making teaching an essentially impersonal process and by doing away with the accepted but arbitrary norms of teacher-pupil ratio. Educational technology will be applicable in areas which do not form part of the formal educational system and meet needs which it has not been possible to fulfil in the existing situation. It will also be a less expensive system in the overall. The programme must be a programme of excellence as any dilution in or indifference to quality can be disastrous, considering the large scale on which the educational technology programme will operate. For this reason also, qualitative research must be inbuilt into every educational technology programme.

6. The educational technology programme will employ mass media and exploit their characteristics of instantaneous diffusion to a mass audience. The press,

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radio, film and television between them have the capacity to reach infinitely large audiences while the time is not off when three satellites will suffice for total global communication. By means of the mass media, it is possible to multiply the written and spoken word as well as still and moving images in colour or black and white. The media can inform, motivate, persuade, educate. In fact there is almost nothing that an imaginative combination of media cannot achieve for desirable educational needs. In India for all practival purposes we have only two media at our disposal, the press and radio. Educational Technology programmes must therefore concentrate on exploiting the resources of these two media. Where television is available and to the extent that films, filmstrips and other aids can be produced these would also be used but the focus in the educational technology programme must clearly be radio-centred and oriented towards exploiting to the maximum the resources of printing technology. New roles will have to be given both to the broadcasting and the printing organisations in the country.

7. The audio-visual education programme has languished for want of financial and administrative

support. As this programme is intended for qualitative improvement within the formal system of education, there should be substantially increased support for it. Production and hardware facilities, training and evaluation should be in-built into this programme as well. There should also be appropriate linkages between the use of educational technology for formal and non-formal systems of education so that the community as a whole can benefit.

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MINISTRY OF EDUCATION & SOCIAL WELFARE
(DEPARTMENT OF EDUCATION)
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CONFERENCE OF EDUCATION SECRETARIES
OF STATES/UNION TERRITORIES
AUGUST 9,1977, COMMITTEE-ROOM 'B',
VIGYAN BHAVAN, NEW DELHI-110001

Item No.VII: PROGRESS AND PROBLEMS IN RESPECT OF IMPLEMENTATION OF THE ANTIQUITIES & ART TREASURES ACT, 1972

With the enforcement of the Antiquities and Art Treasures Act, 1972 from the 5th of April, 1976, it has now become obligatory for persons, including foreigners, possessing antiquities to register them with the Registering Officers. It is also not lawful for any person to carry on business of selling or offering to sell any antiquity except under and in accordance with the terms and conditions of a licence granted by the Archaeological Survey of India. Similarly, it shall not be lawful for any person other than the Central Government or any authority or agency authorized by the Central Government in this behalf to export any antiquity or art treasure.

2. For the purpose of registration of antiquities, 104 Registering Units have been set up in different States/Union Territories; and with the exception of Delhi, these Registering Units are under the administrative control of the respective State Governments/Union Territories.

3. In the original notification, dated the 5th of April, 1976, antiquities like sculptures and paintings, in all media, coins, medals, arms, armour, textiles, furniture, jewellery of historical interest, which have been in existence for not less than one hundred years, and manuscripts in all media and which have been in existence for not less than seventy-five years were included for registration.

4. The last dates for registration of the above mentioned categories of antiquities and for obtaining licences to carry on business of selling or offering to sell antiquities were 5th July and 5th June, 1976 respectively.

5. After considering various representations from different organizations, art-collectors and dealers in antiquities, a revised notification was brought out on 2nd July, 1976, after suitably amending the Act, by an Ordinance, promulgated on 4th June, 1976, since made into an Act.

6. As per the revised notification dated the 2nd of July, 1976, the following antiquities, which have been in existence for not less than one hundred years, were included for registration:

(i) sculptures in stone, terracotta, metals, ivory and bone;

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(ii) paintings in all media; and

(iii) manuscripts, where such manuscripts contain paintings, illustrations or illuminations.

Similarly the last date for obtaining licence was fixed as 4th October, 1976.

7. Till 30th June, 1977, twenty licences to carry on the business of selling or offering to sell antiquities in different parts of the country have been issued; likewise, up to the same date (viz. 30.6.1977) applications have been received for the registration of 2,04,556 antiquities. Though the last date for applying for registration expired on the 1st of October, 1976, the Registering Officers have been asked to receive applications considering each case on merit.

8. As per the original provision of the Act, institutions, museums, and offices, archives, educational or cultural institutions which are not owned, controlled or managed by the Government were required to register their antiquities. However, the Antiquities & Art Treasures (Amendment) Act, 1976 exempts institutions, museums, etc. owned, controlled or managed by the local authorities or any such body as the Central Government may approve for the purpose.

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9. Despite all these measures, the response from dealers in antiquities as well as persons owning antiquities, private museums and temple-authorities, etc. has not been encouraging. It is felt that a large number of notified categories of antiquities have yet to be registered.

10. Furthermore, museums under private control, and temples located in different parts of India have not the means for fulfilling the requirements like supply of photographs for registration. It is, therefore, felt that the State Governments/Union Territories may take suitable steps for adequate publicity, subsidy or any other such measures (but not invoking any penal provisions) so that more and more institutions and individuals come forward to register the notified categories of antiquities. In Tamilnadu, however, Hindu Religious & Charitable Endowment Board has been working in close cooperation with the State Department of Archaeology for registering the antiquities belonging to various temples. Other States may perhaps follow this example so far as the registration of antiquities in temples is concerned.

11. The State Governments/Union Territories may also consider giving adequate assistance and grants

to such bodies requiring financial help to comply with the requirements of the registration.

12. There is a proposal to include coins, arms, armour, manuscripts and unillustrated manuscripts to bring within the purview of registration. But at the moment we will prefer to defer such a step, as this may entail hardship to people and many of them out of fear may destroy the valuable antiquities.

13. The State Governments/Union Territories may at the same time initiate steps to collect such antiquities referred to in para 12, through the various agencies, museums and institutions.

14. It is also suggested that State Governments/ Union Territories may instruct the museums and institutions under their control to complete photo-documentation of their collections. It may be mentioned here that all the educational institutions and universities, in spite of the fact that they are yet to complete their documentation, have been given exemption from registration of antiquities. The State Governments may perhaps impress upon such institutions to complete photo-documentation and other records.

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15. The State Governments/Union Territories may also think of taking over the private collections of individuals, Trusts and other bodies, since many of them have expressed their willingness to offer them to the Government.

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VIII(1)

MINISTRY OF EDUCATION & SOCIAL WELFARE
(DEPARTMENT OF EDUCATION)

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CONFERENCE OF EDUCATION SECRETARIES
OF STATES/UNION TERRITORIES
AUGUST 9 ,1977, COMMITTEE ROOM 'B'
VIGYAN BHAVAN, NEW DELHI-110001.

ITEM NO VIII : UNIFORM SERVICE CONDITIONS FOR EMPLOYEES IN UNIVERSITIES AND COLLEGES

There have been suggestions that the provisions for ensuring security of service of teachers and other employees in universities and colleges are inadequate. These suggestions were made because there was a feeling that the machinery available for settling the disputes between the employees and the management in several cases was insufficient.

2. In the recent enactments/amendments concerning Central Universities, provision has been made to cover all the employees by the arbitration clause. In March, 1974, while communicating the revised salary scales of university and college teachers, the State Education Ministers were requested to consider the question of providing security of service to teachers. It was also suggested that they

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might consider initiating suitable legislation for this purpose, wherever necessary, on the lines of the central legislations.

3. In 1968, the University Grants Commission had appointed a committee to recommend service conditions of non-teaching employees of the universities. This Committee had formulated a set of rules containing provisions relating to general conditions of service, tenure, pay and allowances, leave, conduct, disciplinary action including penalties and appeals etc. These rules were brought to the notice of all universities by the University Grants Commission in February, 1970 for information and guidance.

4. The Gajendragadkar Committee on governance of universities (1971) had also considered the conditions of service of non-academic staff in universities. The Committee's view on constituting a joint consulatative Committee was that each University should examine this matter for itself in the light of its special needs and circumstances. In the opinion of the Committee there should be a formal procedure for redressing genuine grievances. This could . . .

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be done through a mandatory provision for arbitration in the case of individual grievances, and through a Committee which would deal with the grievances of employees as well as the conditions of their work.

5. Notwithstanding these efforts made in the past, it is obvious that there are still no satisfactory arrangements to ensure the security of service of teaching and non-teaching employees in the universities and colleges. Even if there can be no absolute uniformity in this matter, it is necessary that certain minimum provisions are incorporated in the university legislations relating to the service conditions of teaching and non-teaching employees. There have been persistent demands from the Associations of non-teaching employees, in particular, to provide sufficient safeguards to ensure security of service. The matter was also raised in Parliament on several occasions. It is suggested that each university may be asked to examine the existing provisions relating to conditions of service and, wherever necessary, incorporate the provisions recommended by the University Grants Commission for this

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purpose in February, 1970.

6. There would still remain the question of security of service of employees in colleges. A large number of these colleges are run by private managements and there have been several complaints against arbitrary actions by their managements. There have also been representations that there are no provisions regarding the conditions of service of teachers and non-teaching staff working in the colleges. Since a large number of these colleges necessarily depend on Government grants for their maintenance, there is no reason why appropriate provisions relating to the conditions of service of employees are made a pre-condition for continuance government grant. It is also necessary that acceptance of suitable terms and conditions of service as formulated by the University is made a condition for granting and continuing affiliation of such colleges with the University.