CHAPTER IV

INTERNAL EFFICIENCY OF PRIMARY EDUCATION

THE PROBLEM AND METHODOLOGY

Internal Efficiency Vs External Productivity

4.1.1. As education is a sector of the economy which employs one of the highest proportions of qualified manpower and as nearly all projections imply a great and increasing amount of public expenditure on education, it is obviously important to make good use of the resources available. One has to be concerned not only with the amount of resources consumed in the educational process, but also with the results obtained by it.[1]

4.1.2. The criteria for determining the economic effects

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1. Manuela Ferreira Leite, et al, 'The Economics of Educational Costing' Part-II, Centro Da Economia E Finanças, Lisboa, 1970. p.39.

of educational increase is provided by external productivity and internal efficiency of the educational system. The external efficiency of productivity of the education system, in general terms, can be determined by the contribution it makes to the society, i.e., through the knowledge, skills and attitudes of the individuals that are educated. Manpower surpluses and shortages provide one of the quantitative criteria for determining the extent to which the education system is subserving social needs. As for internal efficiency, one has to determine the extent possible in quantitative terms, how efficiently the resources allocated are used to produce what is purported to be produced, i.e., a relationship of its output to its inputs.

4.1.3. In this chapter the concept of 'internal' efficiency may be in general described as the ability to produce the highest result with the lowest expenditure, and in this way the measure of efficiency implies the comparison of two sets of factors.[2] The result of this comparison, expressed by any kind of index, may be considered a measure of efficiency.

Criteria for measurement

4.1.4. Now in a given situation, as the range and depth of the knowledge provided increase, it may be argued that the number of individuals who are able to absorb it diminishes and conversely. Which is greater: a smaller number of people with a greater sum of knowledge, or a greater number of people with a lesser sum of knowledge?

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2. Manuela Ferreira Leite, et al, Ibid. p.39.

In other words, should we measure the results obtained from an educational service by the knowledge distributed, or through the number of persons who acquire a given portion or percentage of the possible knowledge?

Number of pupils acquiring knowledge

4.1.5. Here, the latter hypothesis has been chosen because it is closer to reality and because it gives more significance to comparisons between different systems of education. In fact, according to its own aims, each system lays down a syllabus to decide on the range of knowledge that it sets out to provide. So this is a datum in the educational process. The variable is the number of pupils acquiring such knowledge, and therefore it may be said that the final product of the educational process can be defined as those pupils who have proved, according to a given criterion, that they have absorbed a given range to previously established knowledge.

Efficiency indices

4.1.6. The internal inefficiency of the education system may exist in the following forms :

(a) Inability to provide universal education (schools at walkable distance)

(b) Inability to enrol all in the relevant age-group

(c) Inability to hold those enrolled

(d) Inability to set appropriate objectives

(e) Inability to achieve the objectives

Generally, the internal efficiency of primary education can be studied by the progress of children from grade to grade and the number of years it takes to produce a specified number of primary school graduates. In other words, the extent of inefficiency of the system can be measured by the rates of dropout and grade repetition. These phenomena have come to be termed as wastage and stagnation.

(i) Wastage

(a) If all children entering grade I, complete the whole 8 years of primary schooling, the system can be considered efficient and that contribution of education to national welfare is high. This would partly be an external efficiency measure.

(b) It is assumed that for permanent literacy, a minimum of 4 years of schooling is required. So, if all children entering grade I complete grade 4, the efficiency of the system from the point of view of contribution to eradication of illiteracy would be cent percent, as otherwise it amounts to wastage.

(ii) Stagnation

It is assumed that if all children entering grade I complete grade 4 in 4 years' time, the resources allocated are usefully spent. Those who repeat the grades use up more than the normal years of schooling and the resources associated with them.

Methodology of measuring wastage — The theoretical frame work

4.1.7. A number of methodoligies have been evolved over the years for measuring the extent of educational wastage. These are largely based on the specific definition of the concept as accepted by the research scholars. The UNESCO[3] classified the methodologies into three categories. They are : (1) apparent cohort method, (2) reconstructed cohort method and (3) true cohort method.

Apparent cohort method

4.1.8. This method uses either cross-sectional year-grade data or a time-series data on gradewise enrolment. While using cross-sectional data, enrolment in grade I in a given year is considered as a cohort. Enrolment in all other grades in the same year is compared with that in grade I and diminution from one grade to another is regarded as evidence of dropout. This method which provides only a rough estimate of educational wastage has its obvious limitations. The method using a time-series data on gradewise enrolment considers the enrolment in grade I in a base year as cohort and determines the relationship through diagonal analysis between cohort and the enrolment in successive grades in successive years. One of the approaches involves calculation of attrition rate which is the ratio of the difference between the enrolment in each grade, above the first, in each year and that in the previous grade in the previous year to the total enrolment in grade I in the base year. Cumulative attrition rate represents wastage (w) in the educational system. The internal efficiency

3. The Statistical measurement of Educational Wastage, UNESCO, IBE, 1970.

of the system symbolized by Ie, can be obtained by subtracting (w) from 1.

$$Ie = (1-w)$$

Reconstructed cohort method

4.1.9. This method was used in a world-wide survey of educational wastage conducted by the UNESCO Office of Statistics in 1969. The method uses successive year-grade data on enrolment and repeaters which are given a full cycle of cohort. From these data, the number of promotees (p) are first derived for each grade level by subtracting the given number of repeaters (r) from the total number of pupils on roll (E) in the grade.

$$p = E-r$$

When the number of promotees and repeaters for each grade are known, the number of dropouts (d) becomes the residual factor and can be derived by subtracting the sum of promotees and repeaters (p+r) from the total enrolment (E) in the grade.

$$d = E-(p+r)$$

This is followed by the calculation of three indices, the dropout rate, the repetition rate and the promotion rate. These actual values of three indices are then expressed as rates per 1,000 and are used to reconstruct the 'history' of the cohort, given certain assumptions. The reconstructed 'history' of the cohort is presented in a flow diagram.

Input/Output ratio

4.1.10. The two other important indices used in the method for measuring educational wastage which need special mention are, the unit cost of wastage (in non-monetary terms) and the input-output ratio. The unit cost of wastage for a cohort is the ratio of the number of graduates produced to the total number of pupil-years spent by the cohort before completing or leaving the stage/course. In other words, it gives 'pupil-years spent per successful completer'. The input-output ratio is the total number of pupil-years invested in a cohort expressed as a ratio of the minimum number of pupil-years required by these pupils, who completed the stage/course. This is obtained by dividing 'pupil-years spent per successful completer' by the duration of the stage/course.

4.1.11. The reconstructed cohort method marks a distinct improvement over the apparent cohort method, in as much as it focuses attention on the two separable but related phenomena of wastage, viz., the dropout and the repetition. But the method is not without its short-comings. It suffers from all the defects of the apparent cohort method except that it takes account of repetion. The main assumption of the method that there is a homogeneous behavioural pattern in the movement of pupils in a cohort is open to question.

True cohort method

4.1.12. Under this method, the career of a single group of pupils who enter the beginning grade of the stage/course of education under enquiry in a given year is

followed up in subsequent years till they graduate from the final grade. This requires longitudinal studies, so that it can be seen how many leave school and at what points, how many migrate to other schools of the same type or of other types within the country, how many migrate to other countries, how many repeat grades and with what frequency, how many die, how many get accelerated promotions, how many rejoin school after dropping out, and how long all those who ultimately complete the course successfully take to do so.

THE MEASUREMENT OF EDUCATIONAL WASTAGE

The Education Commission's (1966) Findings

4.2.1. According to the Report of the Education Commission (1964-66), the All India wastage percentage was 60.81 in 1964-66 and the retention rate was around 40 percent, i.e., the proportion of school-going children who become permanently literate was only 40 percent. This retention rate of 40 percent of India was one of the lowest in the whole of South East Asia, retention rates of Japan being 90 percent, Malya 81 percent, Afghanistan 74 percent, Philypine 69 percent, Ceylon 64 percent, Thailand 53 percent, Pakistan 26 percent and Burma 19 percent, the last two being the other countries with low retention rates.

4.2.2. The largest study on wastage and stagnation done by R.C.Sharma and C.L.Sapra[4] sponsored by National Institute of Education in 1966 shows that the total dropout/stagnation per 100 pupils upto I to VIII standards was as follows :

4. R.C.Sharma and C.L.Sapra: Wastage and Stagnation in Primary and Middle Schools in India, National Council of Educational Research and Training, New Delhi, 1968.

For each 100 pupils entering Class I,

39 dropout or stagnate in Class 1
11 dropout or stagnate in Class 2
8 dropout or stagnate in Class 3
8 dropout or stagnate in Class 4
7 dropout or stagnate in Class 5
3 dropout or stagnate in Class 6
2 dropout or stagnate in Class 7
2 dropout or stagnate in Class 8

80 Total dropouts or stagnation in Grades 1 to 8

4.2.3. At Rs 30 cost per pupil, more than a hundred crores of rupees or one-fourth of the total spent on primary education is wasted. Other findings of the study are :

(a) Rates of wastage and stagnation at the lower primary level is 65.3 percent and has remained relatively constant during the decade 1950-60;

(b) The rate of wastage for higher primary school is 22 percent;

(c) The highest rate is in Grade I and decreases through Grade I.

The wastage structure in Tamil Nadu

4.2.4. State level study—Methodology : The method adopted to measure the extent of wastage under apparent cohort method is explained below. The extent of wastage

is got by subtracting enrolment in Standard V from enrolment in Standard I five years earlier and the figure is further divided by the enrolment in Standard I five years before and multiplied by 100.

$$\text{Index of wastage (W)} =$$

$$= \left(1 - \frac{\text{Number of students in Std.V in 60-61}}{\text{Number of students in Std.I in 56-57}}\right) \times 100$$

$$= \left(\frac{\text{Number of students in Std.I in 1956-57} - \text{Number of students in Std.V in 60-61}}{\text{Number of students in Std.I in 1956-57}}\right) \times 100$$

4.2.5. Limitations : The method suggested here for Index of wastage has its own limitation, as it does not take into account fresh admissions in Standards II to V and also deaths, double or early promotion, though the error due to them will be very negligible. The estimate so suggested will be quite significant, because it is the extent that helps us to study the relative changes (rise or fall) that take place through the years in the magnitude of wastage due to dropout and stagnation. The relative changes measured on the same scale, will provide an (clear) accurate description of the phenomena under study, which will be useful in making policy decision by the educational administrators.

4.2.6. Wastage at primary level : Table IV-1 gives a graphic representation of the incidence of wastage at different classes of primary education in Tamil Nadu.

TABLE IV-1

PERCENTAGE OF EDUCATION WASTAGE BY STANDARDS
(TAMIL NADU)

Year	Enrolment in Std.I (in '000)	II	III	IV	V	VI	VII	VIII
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1957-58	874	22.10	12.70	8.90	7.50	8.41	9.53	1.48
1958-59	956	25.30	10.10	9.60	7.20	6.83	8.21	3.90
1959-60	1022	25.40	10.00	10.40	6.20	8.47	4.88	5.85
1960-61	1065	21.80	12.10	9.80	5.80	9.63	6.85	5.14
1961-62	1272	26.40	11.90	9.10	7.30	7.90	6.97	3.84
1962-63	1348	25.40	12.10	9.90	6.90	8.62	6.29	4.59
1963-64	1377	25.00	12.10	10.00	7.50	7.57	7.29	4.97
1964-65	1333	22.90	11.00	9.40	5.60	11.72	7.25	5.85
1965-66	1332	21.80	10.10	7.40	5.60	12.07	7.50	-
1966-67	1369	20.07	9.00	9.70	8.40	11.12	-	-
1967-68	1524	23.70	10.98	10.14	8.36	-	-	-
1968-69	1319	12.66	11.04	10.25	-	-	-	-
1969-70	1341	11.24	11.36	-	-	-	-	-
1970-71	1377	12.07	-	-	-	-	-	-

Source : 'Towards A Learning Society'--Report of the Task force on Education, Science and Technology 1972-84, State Planning Commission, Madras

4.2.7. The following inferences about the rate of index can be drawn from the Table IV-1 :

i) The wastage is maximum at the first standard of the primary stage;

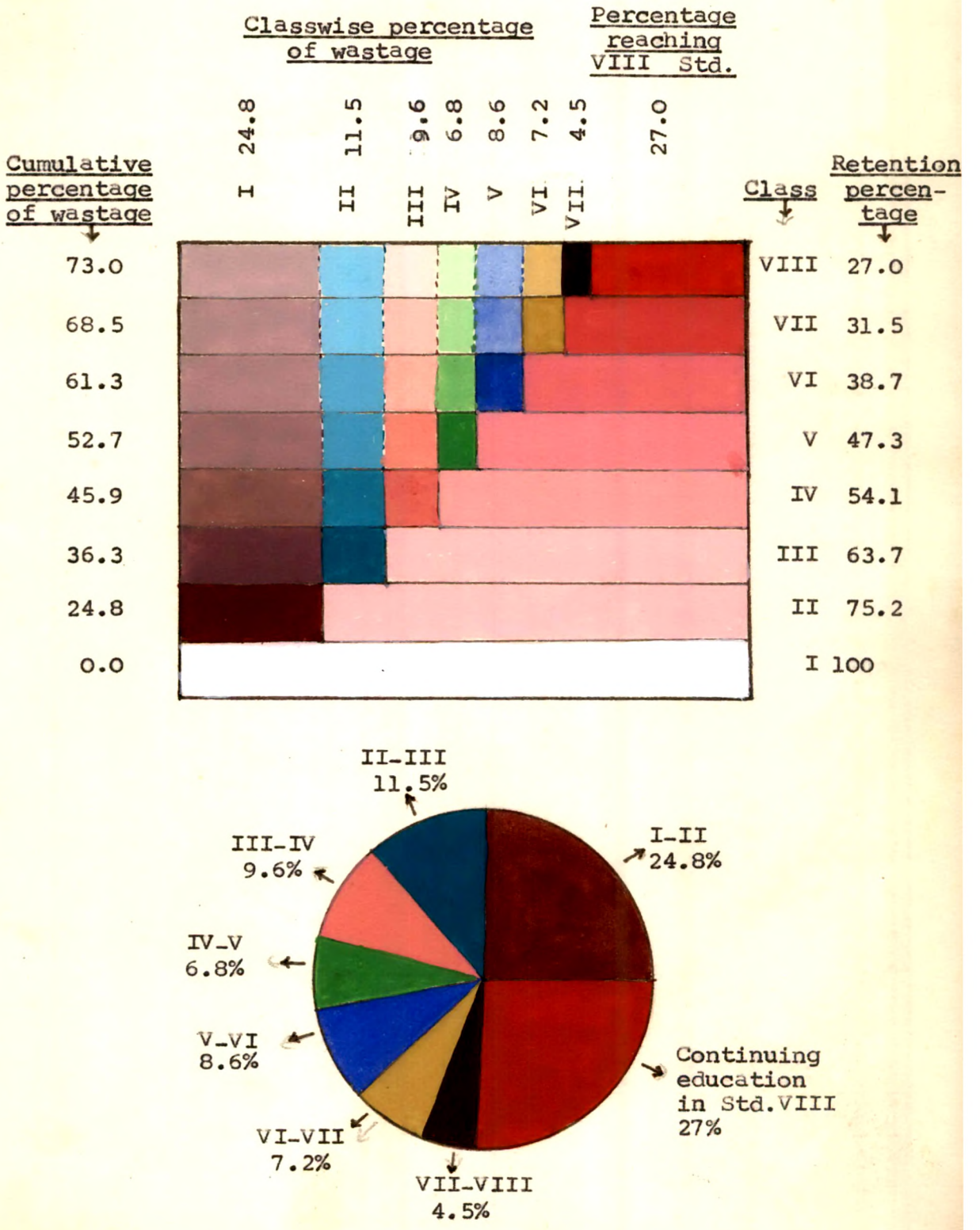
ii) With the passage of time the rate of wastage in Standard I has tended to decline from 22.10 percent in 1957-58 to 12.07 percent in 1970-71;

iii) Wastage is less prominent in higher standards of the primary stage, since it indicates the declining trend from II standard onwards. Wastage in the I Standard is more than double that of the wastage in II and III standards and it is more than 3½ times that of the IV standard. It may therefore be presumed that if a child can successfully complete I standard, there is every chance of his being able to complete the entire primary stage. Thus the problem of reducing the wastage at primary stage is one of reducing the wastage at the Standard I;

iv) The corresponding All India level in 1950-60 is 64.18 and this clearly indicates that the position in Tamil Nadu is comparatively better than that of All India level.

4.2.8. The classwise and cumulative mean percentage of wastage over the period 1957-58 to 1970-71 are shown in Figure-I. On the left of the oblong cumulative percentages

FIG.I CLASSWISE WASTAGE IN PRIMARY EDUCATION IN TAMILNADU
(Mean over 1957-58 to 1970-71)



of wastage are marked. It is seen that before reaching Standard V 52.7 percent of pupils dropout or repeat and before reaching Standard VIII 73 percent dropout or repeat. On the top of the oblong classwise percentage of wastage is shown. On the right side of the oblong, classwise retention percentages are shown. To give the effect of lapsing into illiteracy year by year the classwise percentage of parts have been reduced to light shades, dark shades representing depth of knowledge and light colour shows the shallowness. On the right side, retention parts become darker as they continue education showing the increasing depth of knowledge.

4.2.9. The Pie-diagram at the bottom, half of the figure shows the classwise percentage of wastage and final retention in Class VIII. It is clearly visible that nearly three-fourth of the pupils enrolled in Class I either dropout or repeat before reaching Class VIII. The pie-diagram also shows that the major wastage occurs in Class I and more than 50 percent occur before reaching Class V.

4.2.10. Table IV-2 shows the levelwise incidence of wastage and the total wastage upto primary level.

4.2.11. Tables IV-3 and IV-4 show the indices for boys and girls in lower primary level.

4.2.12. There is clear evidence that the incidence of wastage is higher in respect of girls upto V Standard, (the mean wastage is 56.02) whereas for boys it is only 48.12. The difference is also visible at each standard.

TABLE IV-2

PERCENTAGE OF WASTAGE BY LEVELS

Year (1)	In Primary (2)	In Middle (3)	Upto middle stage (4)
1957-58 ..	51.20	19.42	70.62
1958-59 ..	52.20	19.02	71.22
1959-60 ..	52.00	19.20	71.20
1960-61 ..	49.50	21.62	71.12
1961-62 ..	54.70	18.71	73.41
1962-63 ..	54.20	19.60	73.80
1963-64 ..	54.20	19.83	74.03
1964-65 ..	48.90	24.82	73.72
1965-66 ..	48.20		
1966-67 ..	48.00		
1967-68 ..	53.18		

Source : 'Towards A Learning Society'--Report of the Task Force on Education, Science and Technology 1972-84, State Planning Commission, Madras

TABLE IV-3

RATE OF WASTAGE AT THE LOWER PRIMARY STAGE PER 100 PUPILS ENROLLED IN GRADE I (BOYS)

Base year	Enrolment in Grade-I	Rate of wastage in Standards				
		I	II	III	IV	Total I-IV
1	2	3	4	5	6	7
1957-58	533,643	21.48	11.51	8.25	7.13	48.38
1958-59	576,515	23.64	9.58	9.46	5.90	48.55
1959-60	614,142	24.22	9.47	9.44	5.55	48.68
1960-61	631,243	20.87	10.97	8.91	5.81	46.56
1961-62	737,467	25.35	10.02	9.13	7.35	51.85
1962-63	765,498	23.72	11.22	9.11	5.75	49.80
1963-64	768,479	23.29	10.73	8.49	7.90	50.41
1964-65	751,996	23.56	9.12	8.40	4.69	44.77
1965-66	764,904	22.53	8.71	8.02	8.00	46.96
1966-67	781,314	21.09	8.11	8.33	7.71	45.24
		22.98	9.9	8.76	6.57	48.12

Source : Data collected from the Department of School Education, Madras

TABLE IV-4

RATE OF WASTAGE AT THE LOWER PRIMARY STAGE PER 100 PUPILS ENROLLED IN GRADE I (GIRLS)

Base year	Enrolment	Rate of wastage in Standards				
		I	II	III	IV	Total I-IV
1	2	3	4	5	6	7
1957-58	340,473	23.04	14.60	9.74	8.17	55.55
1958-59	380,406	27.70	10.98	9.89	9.13	57.70
1959-60	408,408	27.24	10.70	11.75	7.17	56.86
1960-61	434,058	23.20	13.70	10.94	5.71	53.55
1961-62	535,063	27.80	14.48	9.07	7.20	58.55
1962-63	583,084	27.70	13.26	10.90	8.35	60.21
1963-64	608,567	27.20	13.79	11.88	7.02	59.89
1964-65	591,150	23.30	13.28	10.77	6.77	54.40
1965-66	567,417	21.20	11.94	8.86	10.11	52.11
1966-67	585,085	20.30	10.29	11.55	9.25	51.99
		24.86	12.70	10.53	7.89	56.02

Source : Data collected from the Department of School Education, Madras

Incidence of wastage—Inter-district analysis

4.2.13. The State computations give the weighted mean percentages of wastage. With a view to identify the inter-district variation in the pattern of wastage and to locate the weak districts which need priority attention, an inter-district analysis is made. The Method adopted is same as it was used to compute state figures namely apparent cohort method. This is the only method which could be applied with the data available at this level. Table IV-5 shows the districtwise percentages of wastage occuring between I to V classes over the period 1970-1974. It also shows the sex variation in the wastage index.

4.2.14. The percentages of wastage of girls are higher than the percentage of wastage of boys. The wastage is highest in Dharmapuri for boys. It is highest in Dharmapuri for girls also. It is least in Kanyakumari for boys and also for girls. For both boys and girls, it is highest in Dharmapuri and least in Kanyakumari District.

4.2.15. It is worth noting that the wastage is highest in the districts where the enrolment ratio is least. Dharmapuri was backward in respect of enrolment and it is also the last district in retention. This affects the enrolment status of the districts to very great extent. It was also identified that the incidence of scheduled caste and scheduled tribe population, rural-urban difference and related socio-economic causes have relation with the enrolments. Therefore, the fundamental issue to improve the educational standard is to take effective socio-economic developmental measures. In

TABLE IV-5

DISTRICTWISE PERCENTAGE OF WASTAGE BETWEEN I-V CLASSES
(1970-1974)

District (1)		As percentage in enrolment in Class I		
		Boys (2)	Girls (3)	Total (4)
Madras	..	39.41	41.36	40.35
Chingleput	..	37.45	50.28	43.24
North Arcot	..	35.93	50.32	42.37
South Arcot	..	34.14	55.16	43.43
Dharmapuri	..	54.43	67.27	59.99
Salem	..	48.64	59.11	53.11
Coimbatore	..	43.16	51.36	46.82
The Nilgiris	..	35.55	44.94	40.05
Madurai	..	39.48	48.72	43.69
Trichy	..	34.99	49.84	41.84
Thanjavur	..	38.60	49.09	43.39
Ramnad	..	32.81	44.09	37.99
Tirunelveli	..	28.34	34.38	31.14
Kanyakumari	..	28.20	25.47	26.92
TAMIL NADU	..	38.22	48.73	42.99

Source : Computed from Educational Statistics, Directorate of School Education, Madras

addition to providing educational facilities and incentives. The districtwise variation in percentage of wastage is illustrated in the map(Figure-II). In this the districts have been classified according to range of wastage. Dharmapuri and Salem are in the most wasteful range. Kanyakumari is the only district in which wastage is less than 30 percent. Tirunelveli, Ramnad and The Nilgiris lie in the next range of 31 to 40 percent.

Input/output ratio based on special study on educational wastage by reconstructed cohort method—A case study

4.2.16. Input/output ratio is a vital indicator in assessing the efficiency of the school system. As State level data on enrolment, repeaters and promoted are not available, we made use of a special study on stagnation and dropouts undertaken recently by the National Council of Educational Research and Training. Utilising the data collected by the National Council of Educational Research and Training, we computed percentages of repeaters, promoted and dropouts as shown in Table IV-6.

4.2.17. On the basis of the above table the folow of pupils as a reconstructed history of pupils is shown in the diagram (Figure III). The methodology adopted to work out the input/output ratio and the flow chart is based on the UNESCO, IBE study.

4.2.18. It is observed from the diagram which picturises the reconstructed history of pupils projected for 1000 entering Class I in 1971-72. The number of conclusions arrived at are :

FIGURE II

DISTRICTWISE PERCENTAGE OF WASTAGE IN LOWER PRIMARY EDUCATION

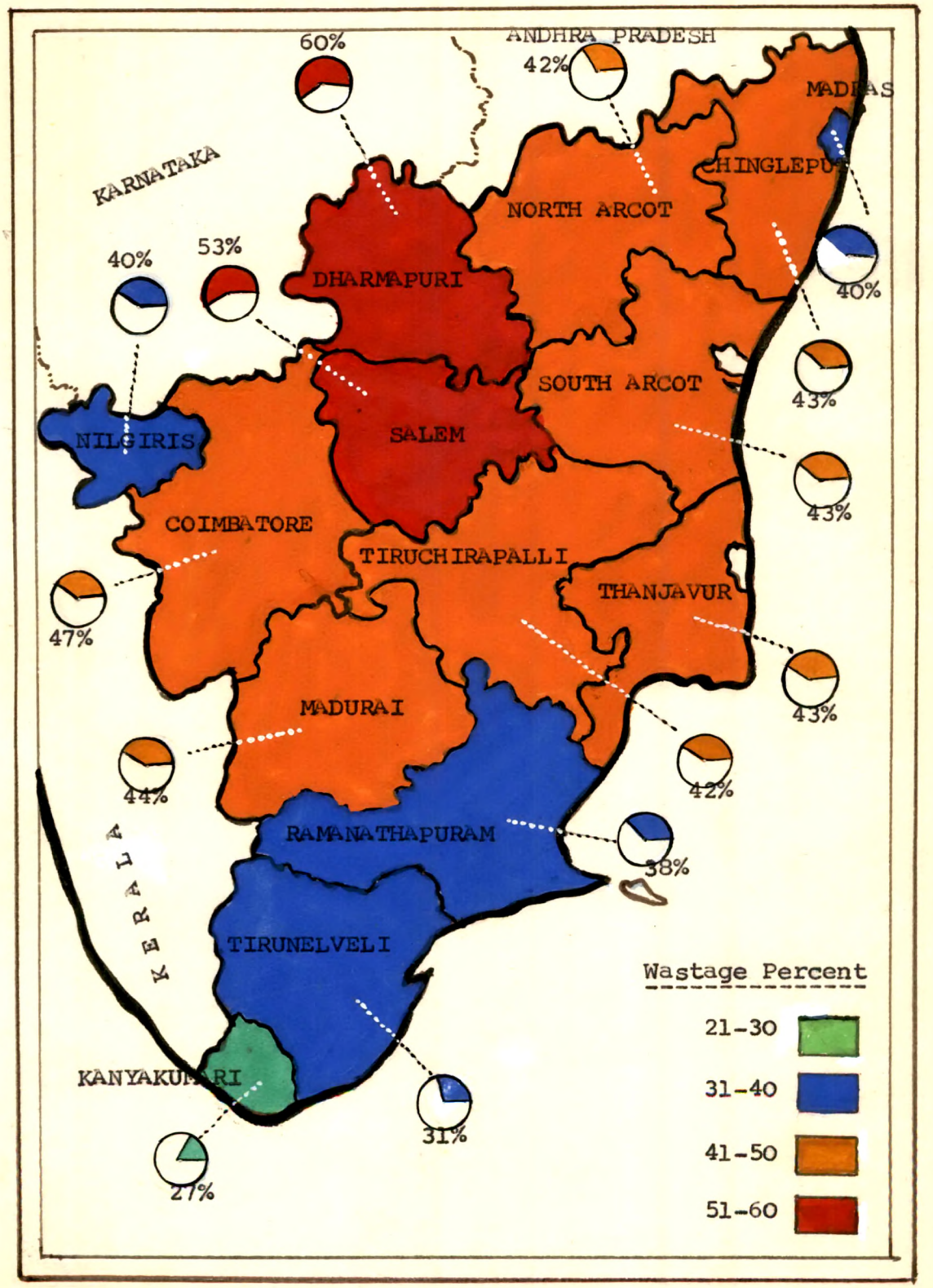


TABLE IV-6

ENROLMENT, REPEATERS, PROMOTED AND DROPOUTS IN I-IV CLASSES

(Sample: Government Primary School, Kothai Gramam, Kanyakumari District)

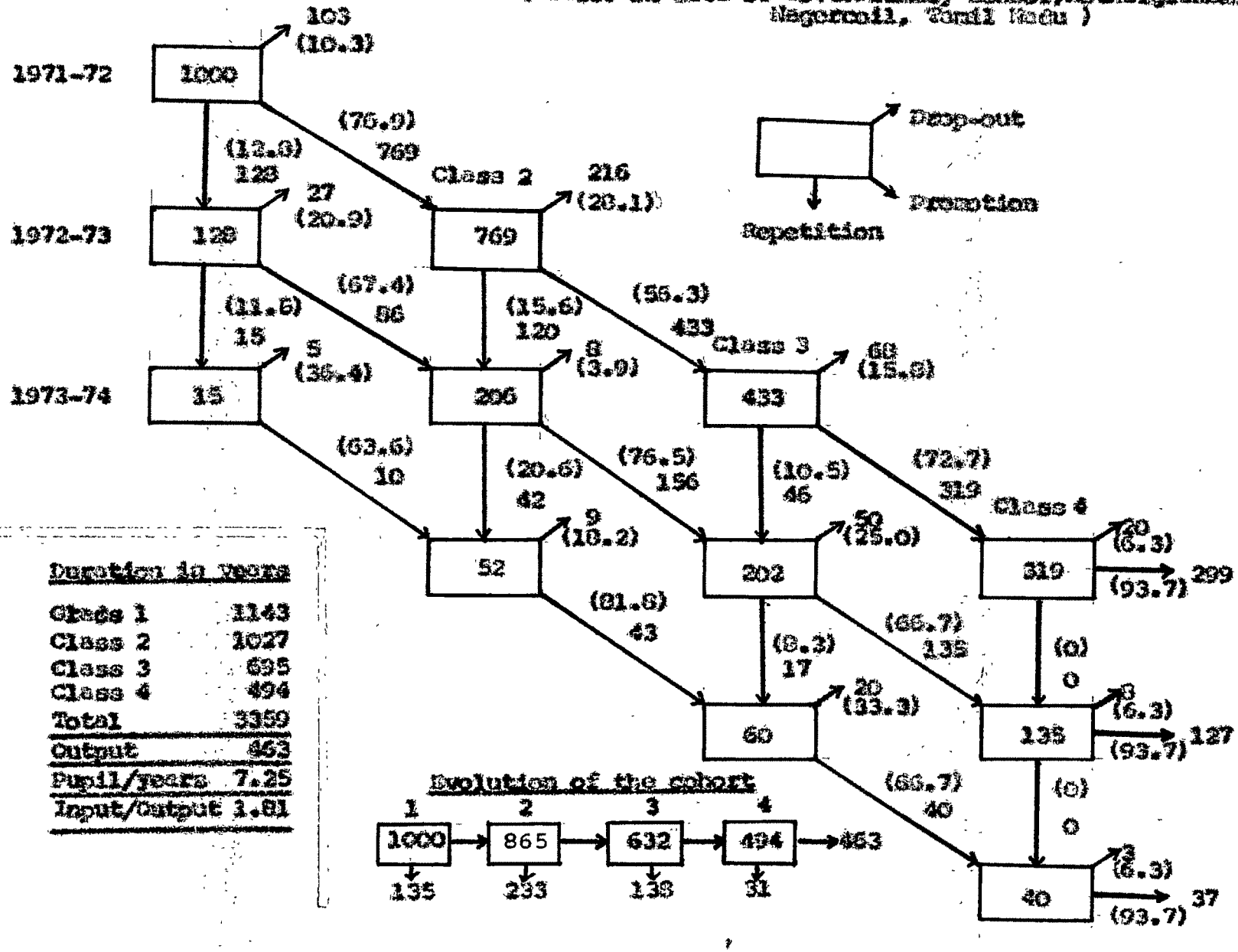
	Class				Percentage			
	1	2	3	4	1	2	3	4
1971-72 :								
Enrolment ..	39	26	27	22				
Repeaters ..	5	2	2	-	12.8	8.0	7.4	0.0
Promoted ..	30	23	22	20	76.9	88.5	81.5	90.9
Dropouts ..	4	-	3	2	10.3	0.0	11.1	9.1
1972-73 :								
Enrolment ..	43	32	25	22				
Repeaters ..	5	5	1	1	11.6	15.6	4.0	4.5
Promoted ..	29	18	22	19	67.4	56.3	88.0	86.4
Dropouts ..	7	9	2	2	20.9	28.1	8.0	9.1
1973-74 :								
Enrolment ..	30	34	19	23				
Repeaters ..	6	7	2	2	20.0	20.6	10.5	8.7
Promoted ..	19	26	14	15	63.3	76.5	73.7	65.2
Dropouts ..	5	1	3	6	16.7	3.9	15.8	26.1
1974-75 :								
Enrolment ..	44	26	24	16				
Repeaters ..	7	3	2	0	15.9	12.5	8.3	0.0
Promoted ..	36	20	16	15	81.8	76.9	66.7	93.7
Dropouts ..	1	3	6	1	2.3	12.5	25.0	6.3

Source : Computations based on data collected by the NCERT Field Office, Madras

FIGURE III

A RECONSTRUCTED HISTORY OF PUPILS (PROJECTED FOR 1000)

(Based on data of Govt.Primary School,Kothaigramam, Nagercoil, Tamil Nadu)



Duration in years	
Class 1	1143
Class 2	1027
Class 3	695
Class 4	494
Total	3359
Output	463
Pupil/Years	7.25
Input/Output	1.81

Evolution of the cohort

1	2	3	4	
1000	865	632	494	463
135	233	138	31	

(1) Only 299 completed the 4 years of schooling without repetition. This works out to be 29.9 percent;

(2) 127 pupils completed 4 years of schooling one year later by repeating once in the classes; the percentage of pupils who passed after one year repetition is 12.7;

(3) The number of pupils who completed the 4 years of schooling after two years of repetition is 37 (3.7 percent of the total population);

(4) Totally 463 pupils completed 4 years of schooling with or without repetition.

4.2.19. It is also inferred that totally 537 pupils have dropped out of the school during the period. The class-wise number of pupils dropped out are :

I Class	..	135
II Class	..	233
III Class	..	130
IV Class	..	31
Total	..	537

4.2.20. It is observed that nearly 36.8 percent of the total pupils enrolled in Class I have dropped out of the school before reaching Class III.

4.2.21. Another interesting calculation is the number of place-years occupied in each class which is then related to the output of this cohort and the result compared to the prescribed duration of 4 years.

4.2.22. This is explained in the small block at the left of the flow-diagram. It is seen that 1143 place-years were used in Class I, i.e., 1000 in 1971-72, 120 in 1972-73 and 15 in 1973-74. Similar computations for each class add up to 3359 years for 4 classes. Since 463 completed 4 years of schooling successfully, 7.25 places or pupil-years were required for each successful pupil.

4.2.23. The ratio of pupil-years spent per successful completer to the normal duration (4 years) shows the relationship between actual pupil-years used by a cohort to produce the output from that cohort, on the one hand, and the minimum required on the other hand. This indicator is known as 'the input/output ratio'. The input/output ratio for the school under study is 1.81 compared with the optimum ratio of 1.00.

4.2.24. UNESCO found that the input/output ratio for Asian countries was ranging between 1.003 to 2.48, the median being 1.31.[5] The evolution of the cohort as shown at the bottom of the flow-chart indicates that only 463 pupils out of 1000 pupils enrolled in Class I reach Class V and the rest dropout before completing Class IV.

4.2.25. The reciprocal of this input/output ratio which is known as 'The coefficient of efficiency' works out to be 0.55.

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5. M.A.Brimer and L.Pauli: Wastage in Education--A World Problem, UNESCO: IBE, 1971. p.53.

COST ESTIMATES OF WASTAGE

Measurement of Wastage

4.3.1. Rising Unit Costs : In general, the education expenditure has been rising more rapidly than can be explained simply by increase in school enrolments and in the duration of schooling. This in turn means that unit cost of education has been increasing. A part of it can be attributed to price increase and another portion to quality factors "There can be no doubt that in many countries part of the increasing unit cost of education results not from improvements or expansion but rather from repetition of grades and of premature school leaving."[6]

4.3.2. Educational factors such as examination results, socio-economic factors like migration and other factors like morbidity affect the events,promotion, repetition and dropout of any flow of cohort of pupils in education system. Pupils entering a given cycle are supposed to aim at completion within the prescribed period—the duration of that cycle. In this context, a dropout is wasteful, even if the pupil who drops out after several grades without finishing the cycle did, in fact, gain a basic knowledge that raised his level of educational attainment. The level of attainment concept leads to an assessment of the degree and quality of output while, within the more limited definition, the measurement of wastage must be in terms of the dynamics of school population in relation to the flow of pupils. Similarly, repetition is regarded as wasteful, since repeaters reduce the intake capacity of the grade in which they repeat and thereby prevent other children from entering

6. M.A.Brimer and L.Pauli, Ibid. p.44.

school or cause overflowing of classrooms, thus increasing education costs. Every school place occupied by a repeating pupil is causing additional expenditure that would not be needed if he were making normal progress.

Partial Vs complete wastage

4.3.3. Dropout may be only provisional and pupils leaving the school system may, and often do, become reintegrated. Two different situations can then arise. A pupil may return to the same grade in which he was enrolled during his last school year, in which case he is counted as a repeater, or he may join the next higher grade and be counted as promoted. A dropout may have received a considerable amount of education so that in educational terms it would not be correct to consider all his school career as wastage. Nevertheless, from the point of view of economic evaluation, it is more acceptable at the first level of education than at the second, to regard the dropout as contributing nothing to output.

The concept of literacy

4.3.4. Literacy is one of the most important indicators used all over the world as an indicator of the level of development. The reliability of this indicator largely depends upon the content of the literacy. There is no one single definition of literacy followed, across the cultures. Usually completion of study upto IV standard (inclusive) is considered as literacy level. In the following pages two levels are considered for computing the cost estimates of wastage: (a) completion upto IV standard (literacy level) and (b) completion of the first level of education reaching Standard VIII.

Excess cost of wastage in primary education in India

4.3.5. P.R.Gopinathan Nair[7] in his paper on 'Effective Cost of Education in India', makes a statewise analysis of excess cost of educational wastage. He has utilised the Markov Chain Model as a tool for analysing the inflows and outflows of the educational system and worked out in detail stagnation indices and dropout rate.

Index of cost

4.3.6. With the data on stagnation and dropout, it is possible to calculate the number of pupil-years required in each state, to get (1) one 'functionally literate' person and (2) one person with primary schooling (a person who has completed seven years of schooling and reached Standard VIII). The excess number of years spent over the minimum prescribed, gives the index of excess cost incurred due to dropout and stagnation. The indices of costs of education of one functionally literate person, and one person with primary education are furnished in Tables IV-7 and IV-8.

The effective costs

4.3.7. The effective costs are the lowest in Kerala and the states in the north-western part of India. Uttar Pradesh, Bihar, Nagaland, Manipur, Karnataka, Orissa and Andhra Pradesh are the states with the highest costs of education per functionally literate person. When effective costs are calculated per person completing seven years of schooling, Tamil Nadu also falls into the group of states with very high costs.

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7. P.R.Gopinathan Nair: 'Effective Cost of Education in India', Economic and Political Weekly, Vol.XI, No.38, September 18, 1976.

TABLE IV.7

EXCESS COST OF EDUCATION PER FUNCTIONALLY LITERATE PERSON

(PER CENT)

State	Excess cost due to drop out			Excess cost due to stagnation			Total excess cost index
	Boys and Girls	Boys	Girls	Boys and Girls	Boys	Girls	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Delhi ..	15.7	20.4	10.1	11.4	11.8	10.9	27.1
Punjab ..	22.1	22.0	20.8	8.8	9.4	8.2	30.9
Haryana ..	21.1	20.5	22.8	15.1	14.9	15.2	36.2
HimachalPradesh ..	21.0	16.2	30.2	19.9	18.7	19.9	40.0
Jammu & Kashmir ..	40.5	45.4	27.9	1.1	1.1	1.1	41.6
Kerala * ..	9.2	11.6	6.5	33.9	35.2	32.6	43.1
Maharashtra ..	31.1	24.8	41.9	34.8	32.3	39.4	65.9
Tamil Nadu ..	30.5	34.0	45.0	31.0	30.1	31.9	69.5
Rajasthan ..	53.4	57.1	40.7	25.6	26.1	24.2	78.0
Madhya Pradesh ..	42.2	38.6	51.9	36.9	36.6	38.1	79.1
Assam ..	38.6	32.9	39.7	41.2	38.7	41.2	79.8
Gujarat ..	33.4	32.0	35.5	39.6	39.7	49.8	83.0
Uttar Pradesh ..	69.4	59.3	90.2	32.8	30.1	38.1	102.2
Karnataka ..	49.8	40.3	63.9	60.4	58.5	64.4	110.2
Nagaland ..	38.5	31.9	29.3	80.2	72.0	94.0	110.7
Andhra Pradesh ..	54.3	49.3	62.8	58.7	55.6	63.7	113.0
West Bengal ..	47.1	45.6	49.6	67.9	67.2	69.8	115.0
Bihar ..	81.6	71.6	119.1	42.0	39.7	50.9	123.6
Orissa ..	73.2	59.8	104.1	62.7	60.1	68.7	135.9
Manipur ..	102.0	94.1	115.8	80.3	74.8	92.4	182.3
INDIA ..	46.3	42.6	53.8	39.4	38.2	42.0	85.7

* The rank of Kerala among the states would be the highest, since stagnation has been completely eliminated in classes I to III from 1972-73.

Source : 'Effective Cost of Primary Education in India' by P.R.Gopinathan Nair, Union Planning Commission, New Delhi.

TABLE IV.8

EXCESS COST OF EDUCATION PER PERSON WITH SEVEN YEARS OF COMPLETED SCHOOLING

(PER CENT)

State	Excess cost due to drop out			Excess cost due to stagnation			Total excess cost index
	Boys and Girls	Boys	Girls	Boys and Girls	Boys	Girls	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Delhi ..	22.3	25.1	18.6	13.0	13.3	13.0	35.3
Punjab ..	49.4	55.7	79.0	10.6	9.9	12.3	60.0
Haryana ..	34.0	24.2	69.5	15.2	14.4	20.3	49.2
Himachal Pradesh ..	70.3	43.1	168.7	24.7	21.8	38.5	95.0
Jammu & Kashmir ..	49.5	60.5	25.0	1.5	1.5	1.6	50.9
Kerala * ..	49.5	43.9	47.9	47.3	46.3	47.9	96.8
Maharashtra ..	60.2	56.0	93.6	36.5	32.7	45.3	134.7
Tamil Nadu ..	104.4	84.4	141.3	45.3	41.5	52.0	149.7
Rajasthan ..	77.8	75.2	91.7	27.0	27.0	26.3	105.5
Madhya Pradesh ..	84.0	75.6	111.5	39.7	38.5	45.0	123.7
Assam ..	60.0	52.9	73.5	62.1	58.8	69.2	122.1
Gujarat ..	77.2	72.3	86.8	52.8	32.4	55.4	130.0
Uttar Pradesh ..	103.8	73.6	239.9	37.4	31.3	65.0	141.2
Karnataka ..	86.5	63.1	133.6	67.8	61.1	79.9	154.6
Nagaland ..	62.7	67.7	53.8	94.9	83.7	110.3	157.6
Andhra Pradesh ..	120.8	92.4	189.8	75.6	62.9	107.2	196.2
West Bengal ..	60.0	52.9	73.5	62.1	58.8	69.2	122.1
Bihar ..	196.1	91.9	173.4	42.1	32.5	63.8	140.2
Orissa ..	122.8	93.6	222.7	73.0	64.8	97.0	195.8
Manipur ..	120.8	92.4	189.8	75.6	62.9	107.2	196.2
INDIA ..	83.1	68.6	118.7	44.1	39.5	50.1	127.2

* The rank of Kerala among the states would be higher, since stagnation has been eliminated in Classes I to III and reduced significantly in Classes V to VII from 1972-73.

Source : 'Effective Cost of Primary Education in India' by P.R.Gopinathan Nair, Union Planning Commission, New Delhi.

Cost estimate of wastage in Tamil Nadu based on apparent cohort method

4.3.7. It is observed that nearly 24 percent of pupils enrolled in Standard I did not proceed to Standard II, 11 percent of pupils in Standard II did not proceed to Standard III, 10 percent of the pipils did not proceed from Standard III to IV and 7 percent from IV to V Standard. It is seen nearly 52 percent of the pupils who enrolled in Standard I four years back, did not proceed to Standard V and thus there is a large scale wastage due to dropout and stagnation, before they complete the primary stage. This problem will be more frightening, if one analyses this in terms of monetary wastage. By assuming that the average cost per pupil in primary stage is Rs 33.90, it is estimated: In 1957-58 nearly an amount of Rs 64.47 lakhs was spent on pupils who did not proceed from Standard I to Standard II in 1958-59 the amount spent on pupils who did not proceed from Standard II to Standard III was Rs 37.66 lakhs, in 1959-60 Rs 26.32 lakhs was spent on pupils who did not proceed from Standard III to Standard IV and finally Rs 21.74 lakhs was spent on pupils who did not proceed to Standard V from Standard IV in 1960-61. Nearly Rs 150.19 lakhs were spent on pupils who enrolled in Standard I in 1957-58 and left the school before completing the primary stage. The total wastage for 4 years works out to be Rs 600.76 lakhs which constitutes nearly 23 percent of the total expenditure on lower primary education during the period 1957-58 to 1960-61 whereas the corresponding position for all India was 27.6 percent of the total expenditure spent on primary education.[8]

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8. R.C.Sharma and C.L.Sapra : op cit. p.2.

Cost estimate of partial wastage computation based on Satara Study

4.3.8. It has now been established that the incidence of lapse into illiteracy was somewhat exaggerated by the Hartog Committee which estimates it at about 50 percent. The Satara investigation into the problem showed that the total extent of lapse into illiteracy is very small, namely 6.6 percent. It is highest among those who leave school in Standard II — 15.6 percent; among those who leave school in Standard III, it is only 4 percent and among those who leave school in Standard IV, it is about 1 percent only. Literacy has to be attained before it can lapse. The assumption made in the calculation of wastage is that a child attains literacy on reaching Class IV. Children who leave school in Standard II or III cannot, therefore, be regarded as having 'lapsed' into illiteracy as such; and true cases of lapse are only of those children who leave school after reaching Standard IV. In their case, however, the extent of lapse is negligible.[9] Using the above findings, the cost estimates of wastage will be :

Wasted expenditure on those who leave Standard I	Rs 64.47 lakhs	Rs 64.47 lakhs
,, II	Rs 37.66 lakhs x15.6%	Rs 5.88 lakhs
,, III	Rs 26.32 lakhs x 6.6%	Rs 1.73 lakhs
,, IV	Rs 21.74 lakhs x 1%	Rs 0.22 lakhs
		Rs 72.30 lakhs
For 4 years = Rs 72.30 lakhs x 4	=	Rs 289.20 lakhs

This works out to be 9.03 percent of the expenditure on primary education.

9. The Indian Year Book of Education 1964, Second Year Book, Elementary Education, National Council of Educational Research and Training, New Delhi, 1964. p.143.

Excess cost of wastage upto primary level of education

4.3.9. The following computation shows the excess cost of wastage upto VIII standard. Here a student who enters the system is considered to be effective if he completes 7 years of schooling in 7 years. If he completes even functional literacy stage of 4 years of schooling from this point of view the whole expenditure on those who dropout before standard VIII is considered as waste. M.A.Brimer and L.Pauli[10] considered, 'Not only is it symptomatic of a defective operation of the system, but since the cycle itself is short, those who dropout before the end are not likely to have strengthened basic literacy and numeracy to the point where it becomes resistant to forgetting'.

Stage	Aggregate of mean percentage of wastage	Amount
Wastage upto V Standard (including Standard V)	60.68	Rs 179.77 lakhs
Wastage in VI and VII Standards (till the pupil reaches Standard VIII)	11.66	Rs 31.28 lakhs
Total wastage :		Rs 211.05 lakhs

4.3.10. This is a rough estimate which indicates the amount wasted in educating the pupils who do not complete the level of education envisaged under the directive principles of the constitution in optimum period. A precise estimate could be made if better tools are devised to

10. M.A.Brimer and L.Pauli: Ibid. pp.15-16.

measure objectively and if the educational statistical records are kept in such a way to give true and correct details regarding repetition and dropping out.

Waste or developmental cost

4.3.11. Most of the educational wastage in the form of stagnation and dropout occurs due to the dispersal of educational opportunities to the disadvantages, underprivileged and weaker sections of the society in democratising educational opportunities.

ECONOMIC CAUSES OF WASTAGE AND SPECIAL STUDIES ON WASTAGE

Global Analysis on Causes of Wastage

4.4.1. Educational 'wastage' in general is the result of intricate but interacting factors called 'stagnation' or 'repetition' and 'dropout' or 'school desertion'.

4.4.2. M.A.Brimer and L.Pauli[11] (1971) have classified the causes of these into two categories : (a) internal and (b) external.

(a) Internal causes : Internal causes are :

(i) The examination practice which is a dubious tool to judge pupils' achievement,

(ii) Parents' apathy : They have been conditioned by the education system and they resist innovation,

(iii) Teaching techniques and subjects : Non-individualised teaching and subjects like language and

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11. M.A.Brimer and L.Pauli, Ibid. pp.63-107.

arithmetic cause stagnation and resultant wastage.

(iv) Mostly 'second choice' candidates absorbed also induces wastage.

(v) Improper text books.

(b) External factors

(i) Relative poverty : The major external factor is poverty. The feeling of relative poverty in a heterogeneous society effects behavioural pattern, attitude and interest of the parents and children and puts them in a disadvantaged position and causes wastage.

(ii) The mass illiteracy.

(iii) Absolute poverty creating malnutrition and mental retardation effects educational achievement.

4.4.3. It is inferred that poverty of the individual directly affects the pupils whereas the poor national income reduces its ability to provide better educational facilities and that creates the most of the academic causes for wastage as seen above.

All India study

4.4.4. R.C.Sharma and C.L.Sapra[12] (1969) have classified the causes of wastage into three major heads : (a) causes relating to school variables, (b) causes relating to pupil variables and (c) causes relating to family variables. Summary of causes of wastage is discussed here.

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12. R.C.Sharma and C.L.Sapra, op.cit. pp.98-105.

(c) Causes relating to school variables

(i) Shift system
(ii) Less qualification of teachers
(iii) Lack of co-curricular activities
(iv) Teacher's non-residence.

4.4.5. Though these causes have been classified as school variables, on further consideration it can be observed that lack of sufficient funds to provide better facilities is one of the economic causes behind all of them.

(b) Causes relating to pupil variables

(i) Academic deficiency
(ii) Less/irregular attendance
(iii) Higher age
(iv) Lack of interest etc.

4.4.6. These variables are also related to economic factors. Academic dificiency is mainly due to malnutrition in pre-natal and post-natal period. Irregular attendance and admission at higher age are related to utilisation of children to improve the low income of the families.

(c) Causes relating to family variables

(i) Family size
(ii) Only child
(iii) First born
(iv) Orphans
(v) Scheduled caste and scheduled tribe community
(vi) Belonging to labour family
(vii) Educational status of parents
(viii) Low income
(ix) Parents' reactions to school.

4.4.7. In these factors, except (ii) to (iv) all items are related to economic factors.

Inter-State comparison of retention rate

4.4.8. Even achievement of universal enrolment will not be a proper measure of the efficiency of the system. It is the capacity to retain children, i.e., holding power of the system considered as a better index. Taking this retention rates has several advantages : It reflects the holding capacity of the schools. Data on this are available for almost all the States in India. It does not depend upon common curricula or examinations and it facilitates inter-state comparison. The successful completion of primary is taken as measure of the output because; (1) the successful completion of this cycle of education enables a boy to become a literate; (2) it is related to an individual's minimum productivity in the labour force in case he enters it; (3) the successful completion of this level enables a student to take advantage of future opportunities for training of a formal or informal character; and (4) study has shown that there is a significant relationship between such further training and increased productivity in the labour force.[13]

Relation with educational indicators

4.4.9. Table IV-9 shows the relation between retention rates of different states with the internal factors such as per pupil cost, per capita cost, percentage of trained, literacy rates which are considered to have influence over the retention rates.

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13. C.B.Padmanabhan: 'Output of Primary School in different States' in 'Teacher Today', Vol.17, No.4 (April-June 1975). pp.44-50.

TABLE IV.9

RELATION BETWEEN RETENTION RATES AND EDUCATIONAL INDICATORS
(Inter State comparison)

S.No.	State	Output	Per pupil cost	Per capita cost	Percentage of trained teachers	Literacy rate	
						General	Women
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	Kerala ..	813	39.2	15	94.4	60.16	53.90
2.	Delhi ..	680	-	-	-	56.65	47.64
3.	Maharashtra..	658	47.8	13.3	69.3	39.68	25.97
4.	Punjab ..	570	-	-	-	33.39	25.75
5.	Himachal Pradesh ..	535	-	-	-	31.3	20.04
6.	Tamil Nadu ..	495	50.8	13	97.5	39.39	26.33
7.	Jammu & Kashmir ..	491	46.2	10.6	47.4	18.30	9.1
8.	Gujarat ..	498	39.4	12.7	47.2	35.72	20.56
9.	West Bengal..	436	-	-	-	33.05	22.08
10.	Uttar Pradesh.	429	-	-	-	21.65	10.1
11.	Mysore ..	425	36.2	10.2	53.3	31.54	20.76
12.	Nagaland ..	412	-	-	-	27.33	19.21
13.	Assam ..	359	20.5	10.1	56.8	28.81	18.91
14.	Rajasthan ..	323	22.1	9.1	69.1	18.79	8.26
15.	Madhya Pradesh ..	314	33	8.9	84.5	22.12	10.84
16.	Andhra Pradesh ..	302	37.2	9	92.9	24.56	15.65
17.	Bihar ..	301	20.9	3	77.7	19.79	8.49
18.	Orissa ..	224	26.3	6.2	58.8	26.12	10.75

Source : 'Output of Primary Schools in different States' by C.R.Padmanabhan, 'Teacher Today', Vol.17, No.4 (April-June 1975)

4.4.10. The first two factors per pupil cost and per capita cost show the financial input level of the states and to certain extent indicates their effort. Tamil Nadu stands first in per pupil cost and third in per capita cost. In terms of per capita cost, Kerala stands first which indicates that Kerala enrols greater proportion of the age-group in schools. Though Tamil Nadu spends comparatively the maximum money per pupil in retention rate it stands in sixth place only which shows the need to improve the output by curtailing wastage. Another exceptional case is Rajasthan which spends the least amount per pupil but stands at fourteenth place, leaving behind Andhra Pradesh, Madhya Pradesh, Bihar and Orissa.

Trained Vs Untrained

4.4.11. Psychologically trained teachers constitute a better input than untrained teachers but the rank relation (columns 2 and 5) does not prove the hypothesis. Kerala occupies the second position and TamilNadu the first. Gujarat is among the advanced States in regard to education output though it has only 47.2 percent of the teachers trained. Madhya Pradesh, Bihar, Andhra Pradesh and Orissa and particularly the first three States are leading in regard to the percentage of trained teachers even though they occupy the lowest position in terms of output. It may well be that the economic backwardness far outweighs what trained teachers can accomplish by way of increasing the output in these States. This has been established by another indepth survey[14] of rural youth in two Indian districts—Dharmapuri (Tamil Nadu and Ahmednagar (Maharashtra). The report reveals: An attempt was made to

14. A Wasted Asset — A survey of rural youth in two Indian districts, prepared for the UNICEF by The Indian Institute of Public Opinion, New Delhi, 1973. p.31.

find out whether the quality of teaching staff had a bearing on the rate of dropouts. The survey data on the strength of teachers in the selected schools in Dharmapuri and Ahmednagar bring out the considerable proportion of untrained teachers in the selected Ahmednagar schools--119 out of a total of 694 teachers in 1969-70--as against 31 out of a total of 761 teachers in Dharmapuri. Also to be noted is the greater proportion of trained female teachers in Dharmapuri than in Ahmednagar. What these data prove is that there is, if at all, only a negative correlation between trained staff and dropout ratios since Dharmapuri has a higher rate of dropouts. But differences in the social and economic structure of the two districts make any generalisation on this score inexpedient.

Literacy rate and Retention rate

4.4.12. There is definite relation between literacy rate of the States and the retention rates. Kerala stands first in both rates and Rajasthan's literacy rates are far less and its retention rate is also not high. Tamil Nadu stands fourth in literacy level and sixth in retention rate. There is positive correlation between these rates and it indicates the mutual influence of the two factors.

Retention rate and Economic indicators

4.4.13. Table IV-10 shows the relation between retention rate and economic factors -- per capita income and contribution made by industrial sector.

Retention rate and per capita income

4.4.14. Classifying the states into three levels based on

TABLE IV-10

RELATION BETWEEN RETENTION RATES AND ECONOMIC INDICATORS
(Inter State comparison)

S.No.	State	Retention rate	Per capita income	Contribution by industrial sector to per capita income
(1)	(2)	(3)	(4)	(5)
				Rs
1.	Kerala ..	813	505	16
2.	Delhi ..	680	-	-
3.	Maharashtra ..	658	731	81
4.	Punjab ..	578	945	39
5.	Himachal Pradesh..	555	-	-
6.	Tamil Nadu ..	495	601	36
7.	Jammu & Kashmir ..	491	-	-
8.	Gujarat ..	488	657	58
9.	West Bengal ..	436	511	60
10.	Uttar Pradesh ..	429	518	11
11.	Mysore ..	425	515	29
12.	Nagaland ..	412	-	-
13.	Assam ..	359	545	44
14.	Rajasthan ..	323	480	10
15.	Madhya Pradesh ..	314	534	10
16.	Andhra Pradesh ..	302	513	15
17.	Bihar ..	301	402	20
18.	Orissa ..	224	325	20

Source : 'Output of Primary Schools in different states' by C.R.Padmanabhan, 'Teacher Today', Vol.17, No.4, (April-June 1975)

their average per capita income, it may be seen that the advanced states have the largest volume of output from the system of primary education, while the backward States like Bihar and Orissa have the smallest volume of output. Thus at the two ends of the continuum, the relationship between economic situation of a State as indicated by per capita income and the volume of output is quite close. But it is at the middle stage in regard to the average States the relationship is not so close.

Retention rate and contribution by industrial sector

4.4.15. The contribution made by industrial sector reflects the pattern of economic activity in every State, which is quite relevant, when attendance by children in primary schools is considered, because it is often said that in predominantly agricultural areas children are needed for helping the parents in the agricultural operations and this is responsible for the low outputs from schools. To the economists, this implies that the cost of primary education as indicated by the foregone earnings is very high to the poor families and it is this opportunity cost which stands in the way by continued attendance by children in the schools at the primary level. A comparison between columns 3 and 5 indicates that even if the economy becomes non-agricultural and therefore the opportunity cost of sending children to schools may not be high, only per capita income rises sufficiently, the output from primary schools can be raised. The fact that opportunity cost incurredby farming households, when they happen to send their children to schools, stands in the way of continuance of the children in the primary schools, is only part of the explanation. The opportunity cost has to be taken alongside with the overall economic situation of the routine as indicated by the per capita income.

4.4.16. The foregoing analysis thus shows that the output from primary schools is predominantly influenced by the economic factors particularly the level of per capita income and the contribution made by the industrial sector to per capita income. The States differ in regard to the volume of output from the primary schools because of the differences in their economic positions. But the educational factors within the school system as indicated by the efforts made by the States as well as the quality of the teachers also favour influence on the volume of output. Of course it has to be admitted that the economically advanced States will be in a position to devote more of their efforts to educational development and imply more of the trained teachers. In addition, the social factors like literacy of the parents particularly of the mothers exert their influence on the volume of output from the system in every State. Sometimes economic backwardness may nullify the effect of better inputs like trained teachers. Also it is possible to concentrate with advantage on the educational level of the parents for the purpose of enhancing the output from the primary schools.

Causes of wastage in rural India

4.4.17. Nearly 80 percent of the population in India live in villages. Studies with special reference to rural area also revealed that poverty is the main cause. The factors were analysed as internal and external factors, in a study[15] (1967) by the Agricultural Economic Research Centre, New Delhi.

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15. Primary Education in Rural India--Participation and Wastage, Tata McGraw Hill Publishing Company Ltd., New Delhi, 1971. pp.72-81.

Internal factors

4.4.18. The internal factors, rather surprisingly, failed to show any strong statistical association with the extent of retention. In other words 'quality' of education, as defined in this work, did not seem particularly relevant in explaining the phenomenon of wastage in primary education.

External factors

4.4.19. The role of some 'external' factors, on the other hand, seemed much more decisive in explaining retention. The level of income and the broad caste-composition appeared to be the two most dominant factors in this connection. Both disaggregated field survey data as well as more aggregated state-level data indicated the importance of the income-factor in explaining educational performance, especially retention. The impact of caste on education was also very sharp. The disaggregated field-survey data exhibited it very clearly, though this feature came out somewhat less sharply on aggregate state-level data.

4.4.20. Since, income and caste are typically correlated, i.e., 'lower' caste is usually associated with lower income groups (and this was also exhibited by the field-survey data), it was doubtful whether both caste and income could be treated as independent causal factors explaining retention. Attempts were made to isolate the caste factor by studying households in the same income-group. Despite this, the effect of the caste-factor remained. Nevertheless, this analysis could not be regarded as logically water-tight; for, distribution of

income within a given income-group could be systematically biased against the 'lower' caste households. If this is true, then the effect attributed to the caste-factor may essentially arise from the income-factor. And since the previous analysis indicates that income and caste tend to be correlated in general, such 'skewness' in the distribution of income even within a given income-group is quite likely. Household data on caste and income collected from the field-survey were not sufficiently refined to settle all doubts in this direction. Nevertheless, the analysis tended to confirm that 'external' factors like income and caste are possibly far more relevant in explaining wastage in primary education, rather than a set of 'internal' factors affecting the 'quality'of education. There is an important exception to this general statement which must be stressed.

Timing of Rural primary school

4.4.21. At least one 'internal' factor—the timing of rural primary school—seemed to have a considerable bearing on the question of wastage at the primary school stage. It was found that a complete lack of synchronization between agricultural seasonality and the school-timing led to sharp fall in attendance during agricultural peak seasons. Children worked with their parents on the family-farm (as a substitute for adult-labour) or even found jobs on a contractual wages basis. Since demand for labour tends to be high in agriculture during the peak seasons, the 'opportunity cost' of keeping a child in school also tends to be relatively high for the family during those seasons. Households that are economically worse off, have less ability to bear this cost. As a result, the withdrawal of children from schools

during the peak agricultural seasons was considerably higher among economically less privileged groups. Thus, the central findings reinforce one another factor and emphasise 'poverty' as a dominant factor in explaining educational wastage.

Tamil Nadu studies—A study by the Teachers' College Research Bureau

4.4.22. A study by the Teachers' College Research Bureau (1969) based on the records of the 51 primary schools, opinionnaires served on 100 Deputy Inspectors of Schools and 40 teachers revealed the following details :

Major causes of stagnation : (a) parents' apathy, (b) lack of facilities and (c) irregular attendance.

4.4.23. All the three major causes are intimately related to low income of parents and lack of funds to provide better facilities.

4.4.24. The study showed that stagnation in Standard I was heavy and it was considerably reduced in the succeeding standards. The stagnation was :

In urban schools, total 32 percent
girls 38 percent

In rural schools, total 50 percent
girls 50 percent

Among the rural schools the welfare schools contributed 62 percent of stagnation and the stagnation of girls was 80 percent.

4.4.25. The study also showed that failure was more among scheduled caste and scheduled tribe pupils. It is also

the case with students from backward classes : "Among the pupils enrolled 73 percent belonged to the scheduled (35 percent) and backward (38 percent) communities. 70 percent of the scheduled class pupils and 67 percent of the backward class pupils contributed to the total stagnation of all standards. In Standard I the number of stagnated pupils belonging to scheduled and backward communities was comparatively less in urban schools. In rural schools the percentage of stagnation of these pupils was more not only in Standard I but also in other standards." [16]

State Planning Commission's Study (1972)

4.4.26. The above facts were confirmed by recent study[17] made by the State Planning Commission. A special study for the State Planning Commission, carried out selecting the cohort from Thirukkalikundram and Kancheepuram revealed the following facts :

(i) The percentage of stagnation in primary schools of the rural area was more than that of stagnation in schools of the urban area (rural 65.2 percent and urban 37 percent);

(ii) It was revealed from the case-study of stagnated pupils that cases of stagnation were more in backward and scheduled communities.

Dropouts and Wastage

4.4.27. An analysis of the factors of wastage clearly reveals that socio-economic and psycho-educational factors

16. M.Jayaraman: Stagnation and Wastage in Primary Schools National Council of Educational Research and Training, New Delhi, 1967. p.16.

17. A Study of Educational Wastage, State Planning Commission, Tamil Nadu (unpublished paper).

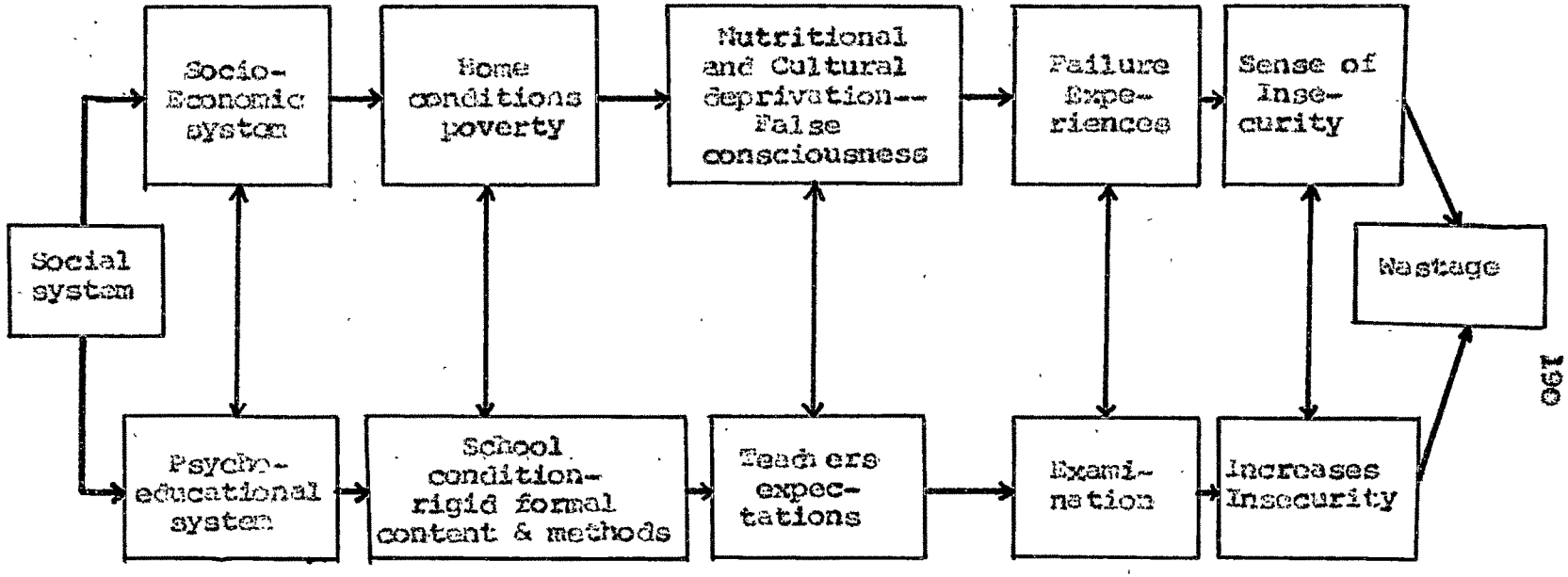
cause major percentage of educational wastage. Every analysis made indicates that the individual impact of the above two factors on the pupil and the interaction between the two factors ultimately result in educational wastage. In the socio-economic sub-system poverty causes nutritional and cultural deprivation, leading to failure experience and feeling of insecurity. In the psycho-educational system rigid formal content and methods combined with inflexible teacher expectation and examinations cause feeling of insecurity. These two major factors interact on the poor pupil and 'pushes him out'.(Figure-IV). Therefore, the term 'push out' implies better the cause of educational wastage as the combined interacting factors of socio-economic and psycho-educational systems. The Teachers' College, Madras Research Bureau[18] (1967) collected data ascertaining the causes of wastage from teachers and Deputy Inspectors of Schools. The following are the order of priority as revealed by the study :

Statements	Percentage of	
	Teachers	Deputy Inspectors
Parents engaging children in domestic affairs ..	92.5	84
Parents taking no interest in educating their children..	82.5	71
Parents taking their children to assist in their occupation ..	75	84
Non-availability of reading and writing materials ..	75	64
A teacher handling an unwieldy number of children ..	70	64
Lack of proper clothing ..	70	54

18. M.Jayaraman, Ibid. p. 9.

FIGURE IV

TWO DIMENSIONAL MODEL SHOWING SOCIO-ECONOMIC AND PSYCHO EDUCATIONAL FACTORS OF EDUCATIONAL WASTAGE



4.4.28. The study showed that the premature school-leavers among girls were found more in rural areas than in urban areas. Table IV-11 indicates the percentage of dropouts classwise and managementwise.

TABLE IV-11

SCHOOL LEAVERS AT DIFFERENT STANDARDS

Management	Number of pupils in Std.I		Percentage of school leavers				
			Std. I	Std. II	Std. III	Std. IV	Std. V
1	2		3	4	5	6	7
Municipal	Boys	128	14	25	18	7	-
	Girls	128	19	18	14	7	1
Welfare	Boys	112	21	20	10	9	-
Department	Girls	84	26	30	13	1	-
Panchayat	Boys	321	32	16	9	4	-
	Girls	193	41	18	6	3	-
Aided	Boys	91	24	19	9	12	-
Mission	Girls	65	35	13	18	7	-
Aided Non-	Boys	47	12	25	21	10	-
Mission	Girls	22	40	13	18	-	4

Note : The total number of pupils withdrawn in all the standards without completing V Standard was, 780. It means that 65 percent of the pupils admitted left the school wanting a few years of schooling. 75 percent of those pupils dropped away at the very early stage, i.e., in I and II Standards

Withdrawals of boys .. Urban schools: 64%, Rural schools: 63%
Withdrawals of girls.. .. 60% .. 70%

The withdrawal of girls was comparatively less in the case of urban schools. Percentage is to the number of pupils admitted in I Standard.

Source : Stagnation and Wastage in Primary Schools, NCERT, 1967. p.19.

Wastage in Rural Tamil Nadu

6.4.29. Parents attitude and poverty as causes : An indepth survey[19] has revealed that, in the case of 71 percent of sample dropouts in Dharmapuri, the parents concerned were responsible for their wards leaving school. This finding is originally related to the finding that, in the case of 80 percent of dropouts in Dharmapuri financial difficulties and need to help parents in their occupation/ cultivation were the twin reasons for their leaving schools. Relevant, in this context, are these findings on the family background of dropouts :

(i) Nearly three-fourths of the dropouts in Dharmapudi belong to the scheduled and backward castes or tribes—both agricultural and non-agricultural;

(ii) As many as 85 percent of the dropouts' parents in Dharmapuri are either illiterate or have not gone beyond the primary level of education;

(iii) The occupation of 70 percent of the dropouts' parents in Dharmapuri is related to agriculture—cultivation or wage labour on land;

(iv) Nearly 30 percent of the dropouts' parents in Dharmapuri own no land, while those with uneconomic holdings in the size range of less than 5 acres constitute 44 percent;

(v) The average monthly income of 71 percent of the dropouts' parents in Dharmapuri is in the lower range of upto Rs 100.

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19. A Wasted Asset—A survey of rural youth in two Indian districts: op cit. p.55.

Current study on out of school students

4.4.30. As a remedial measure in recycling wasted asset a pioneering out of school project for dropouts in the age-group 15 to 25 has been started in Tamil Nadu as it is known as Santhome Out of School Project. We canvassed the questionnaire in Appendix- II on the dropouts study for 'Santhome Out of School Project in Tamil Nadu'. It also established that the parents' object poverty was the cause of leaving school in 72 percent of the cases studied.

Earnings of dropouts continuing 'Out of School Education

4.4.31. Table IV-12 shows the earnings of dropouts continuing education in the special project.

TABLE IV-12

DROPOUTS CONTINUING NON-FORMAL EDUCATION IN OUT OF SCHOOL SANTHOME PROJECT, TAMIL NADU 1976

Pay range	Illiterates	Standards		
		I-V	VI-VIII	IX-XI
1	2	3	4	5
No income (not employed) ..	-	4	10	2
Rs 1 to 50 ..	-	2	-	-
Rs 51 to 100 ..	1	11	3	1
Rs 101 to 150 ..	-	6	1	4
Rs 151 to 200 ..	-	-	1	-
Rs 201 to 250 ..	-	-	1	-
Rs 251 to 300 ..	-	1	-	-

4.4.32. It is seen one-third of them are unemployed and another one-third are earning less than Rs 100 per month.

Social status of the dropouts

4.4.33. Only 23 percent of the dropouts in the out of school project belonged to forward community, the rest belonging to scheduled caste and backward class (77 percent).

Effect of free meals and books

4.4.34. It is found that 64 percent of the dropouts in the project were given free midday meals. Though midday meals helped to enrol and retain pupils, when they belonged to very poor family, they dropped out. Only 24 percent of the dropouts were in receipt of free books. Probably free supply of books would have enabled some of them to continue their studies.

Parents' income

4.4.35. Table IV-13 shows the distribution of dropouts according to the parents' income.

TABLE IV-13

DISTRIBUTION OF DROPOUTS ACCORDING TO THE PARENTS' INCOME

Pay range	Illiterates	Standards I-V	Standards VI-VIII	Standards IX-XI	Total
1	2	3	4	5	6
No income ..	1	13	5	1	20
Rs 1 to 100 ..	-	8	6	1	15
Rs 101 to 200 ..	-	3	3	4	10
Rs 201 to 300 ..	-	-	2	-	2
Rs 301 to 400 ..	-	-	-	-	-
Rs 401 to 500 ..	-	-	-	-	-
Rs 501 to 600 ..	-	-	-	1	1

4.4.36. It is seen that 72 percent of the dropouts belonged to families with income less than Rs 100 per mensem. Out of this, nearly 42 percent had no regular income at all. This study clearly indicates that poverty is the main cause for premature leaving of schools.

Parents' education

4.4.37. There is definite relationship between parents' education and wastage. Fathers of 64 percent of dropouts are illiterates and another 25 percent studied only upto V Standard. Mothers of 82 percent of dropouts are illiterates. This indicates the importance of girls' education as a multiplier agent in improving the literacy status of the State.

Causes of discontinuing education as recorded by dropouts

4.4.38. Table IV-14 shows the causes of leaving school as stated by the dropouts themselves.

4.4.39. The fact poverty is the main cause is corroborated by this recording and the next cause is parents' apathy to children's education which again depends on poverty.

Number of family members

4.4.40. In 64 percent of cases the number of family members is 5 and more. As analysed already, lack of education of parents and the resultant poverty induces them to have more children. This affects the economy as a whole by overloading the State with increased population. Further, the marginal population added to the society by them are inferior in quality and education which affects the productivity of the State.

TABLE IV-14

CAUSES OF DISCONTINUING EDUCATION AS RECORDED BY DROPOUTS

Causes (1)		Score (2)	Percentage (3)
Poverty and family income not sufficient	..	36	74
School environment and activities were not interesting and did not like the school	..	5	11
Teacher was harsh and hence did not like the teacher	..	4	9
Teacher was kind and good but could not follow what the teacher taught	..	7	15
Parents stopped him/her from school ..			
(i) to look after household duties	..	3	7
(ii) to earn and supplement the family income	..	10	21
Ill-health	..	4	9
Parents do not know the importance of education	..	10	21
He/she did not realise the importance of education	..	4	9
Joined school late and could not like to study with younger classmates	..	1	2
Parents were not in good terms and hence could not study well in such family condition	..	7	15
Social/community background was not encouraging	..	8	17

Note : Multiple answer type checklist and hence percentage worked out for each item separately

Coimbatore Study

4.4.41. We carried out another indepth study in Coimbatore canvassing the questionnaire (Appendix-III). Data were collected from the primary schools in the district and were analysed. It is found that totally 46.2 percent dropped out and 34 percent stagnated at the lower primary level.

Income of parents of the dropouts

4.4.42. An analysis of the income level of dropouts show that the 60 percent of the dropouts belong to families with income below Rs 1000 per annum and 36.4 percent to families with income below Rs 2000 to Rs 4000. In respect of scheduled caste students, 67.3 percent of parents had their annual income below Rs 1000. Another 23.7 percent of parents of the dropouts had their annual income between Rs 1000 and Rs 2000. This establishes the hypothesis that the poverty added to their social status has a dominant role in driving out the pupils from the schools.

Weightage of cause as considered by headmasters

4.4.43. Table IV-15 shows that the headmasters who are in close contact with pupils consider poverty as the main causes of wastage and stagnation.

TABLE IV-15

CAUSEWISE PERCENTAGE OF DROPOUTS/STAGNATION AS STATED BY HEADMASTERS IN COIMBATORE, TAMILNADU (1969-74)

Area	Due to economic reason		Due to academic reason		Due to any other reason	
	Drop-outs	Stag-nation	Drop-outs	Stag-nation	Drop-outs	Stag-nation
Rural ..	62	81	29	8	9	11
Urban ..	86	87	11	10	3	3
MEAN ..	74	84	20	9	6	7

Midday meals reduced wastage

4.4.44. The rates of dropouts among the midday meal beneficiaries is 2.1 percent which is considerably low and that establishes the hypothesis that midday meals is useful in reducing wastage and stagnation. Table IV-16 shows the percentage of dropouts among midday meals beneficiaries in Coimbatore District.

TABLE IV-16

PERCENTAGE OF DROPOUTS AMONG MIDDAY MEALS BENEFICIARIES AT LOWER PRIMARY LEVEL IN COIMBATORE, TAMILNADU(1969-74)

Area	No.of schools		Per-cent	No.of bene-ficia-ries	No.of drop-outs	Per-cent
	Yes	No				
Rural ..	1945	549	28	2176625	4099	1.2
Urban ..	326	109	33	54396	1735	3.3
TOTAL ..	2271	658	30	272021	5834	2.1

Practical measures suggested

4.4.45. The high incidence of wastage, which absorbs scarce resources can be curtailed by adoping the following practical measures :

(1) Curriculum reform :
   (a) Curriculum close to life
   (b) Curriculum related to economic development
   (c) Syllabus dovetailed to environment
   (d) Introduce trade courses
   (e) Introduce work experience
   (f) Strengthen co-curricular activities

(g) Improve language instruction

(h) Bestow special attention on linguistic disadvantaged children

(i) Special coaching on difficult subjects

(ii) Methods and individual attention

(a) Apply positive approach instead of finding faults always

(b) Use effective methods

(c) Special attention on I Standard dropouts

(d) Apply educational technology

(e) Provide special classes (supervised study)

(f) Training in plural class (teaching to reduce single-teacher-schools)

(g) Provide educational guidance

(h) Bestow special attention on handicapped children

(iii) Teacher

(a) Provide more quarters in rural areas

(b) Update teacher training

(c) Give incentives

(iv) Administration

(a) Experiment flexible timing for schools

(b) Trying ungraded school system

(c) Introduce examination reform

(d) regulate belated admission

(e) Tighten administrative control

(f) Introduce a scheme of accountability for administration and teachers on modern management principle

(g) Equalise educational opportunity

(h) Provide wide public information

(i) Keep community contact

(v) Research :

Undertake indepth research to localise regions/ areas/ institutions to take action plans.

(vi) Recycling the wasted assets :

Three types of educational openings should be provided to reprocess the wasted assets :

(1) Continuance of general education with vocational bias

(2) Occupational training to those who have committed themselves to specific occupations

(3) Occupational training according to preferences.

4.4.46. Some of these remedial measures though seem to be related to purely academic aspect, most of them, depend on financial input and better management of the system to attain optimal results. The question of assigning priorities to these remedial measures based on their cost-benefit ratio also arises. In addition, national level efforts to wipe out poverty and to increase mean income of the individuals will have better impact on reducing wastage in education also.

Observation

4.4.47. Our studies show that the effectiveness of Tamil Nadu Primary Education efforts are seriously hampered by the twin evils of wastage and stagnation, among other things. As we spend nearly one-fourth of the state budget on Education, it is imperative to make ways and means for the

effective use of these scarce resources. The adoption of the five pronged strategy suggested by us to improve the internal efficiency of the system, we hope will go a long way in making Primary Education more attractive to the scores of pupils now running away from the system and consequently may lead to greater economic impact.