

**DROP-OUT RATE AT PRIMARY LEVEL: A NOTE
BASED ON DISE 2003-04 & 2004-05 DATA**

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Background

Free and compulsory education to all children up to the age of fourteen years is our Constitutional commitment. The Government of India has initiated a number of programmes to achieve the goal of Universalisation of Elementary Education (UEE) among which the *Sarva Shiksha Abhiyan* (SSA) is the most recent one. It aims at achieving universal primary education by 2007 and universal elementary education by 2010. Achieving universalisation means achieving universal access, universal enrolment, universal retention and universal quality of education. Though indicators to monitor progress towards universal access, enrolment and quality are well defined but the general perception about same is not clear in case of indicators of universal retention. In simple terms, universal retention at primary level means every child enter into the system through Grade I should retain in the system up to Grade V. Universal retention under Sarva Shiksha Abhiyan by 2007 means that all children enrolled in Grade I in 2002-03 should retain in the system and move up to Grade V in 2007. Depending upon the availability of data and understanding of concept of drop-out, indicators of drop-out are computed and analysed.

* District Information System for Education is a joint initiative of Government of India, UNICEF and NIEPA, New Delhi towards strengthening EMIS in the country.

Keeping in view availability of data, an attempt has been made in the present note to discuss computation procedure of a variety of drop-out and survival rates. Since recent grade-specific enrolment and repeaters data are available only from DISE, the same is used to construct indicators of drop-out. Broadly the following methods have been discussed in the present note:

1. Retention/Survival Rate
2. Grade-to-Grade Transition Rate: Promotion, Repetition and Drop-out Rate
3. Average (Overall) Promotion, Repetition and Drop-out Rate
4. Re-constructed Cohort Method: For calculating Cohort Drop-out/Survival Rate and indicators of Internal Efficiency of Education system
5. Transition from Primary to Upper Primary Level of Education

In view of availability of enrolment and repeaters data, a particular method for assessing drop-out and retention is applied. However, it is the **True Cohort Method** which presents true picture of retaining capacity of the system. A number of states have initiated child-tracking studies across the country but in view of resource and time constraints the same is not an easy task to undertake True Cohort Method annually. Each and every enrolled child in a school is tracked/monitored over a period of five years or till a child remains in the system. The research studies undertaken in the recent past tracked child for five years to measure completion rate; thus presents percentage of children those who completed primary level exactly in five years. This presents incomplete completion rate as a number of children still remain in the system even after five years because of repetition. The system should be monitored till the last child remains in the system. If resources are available, child-tracking is the only way through which drop-out, retention, survival and completion rates should be analysed. School registers for five years are used to track a group of children those who enter into the system together. A few states have designed their own formats and even developed software for the purpose. If tracked for different cohorts and separately for boys and girls, the same can help in monitoring progress towards retaining capacity of the system as well as assessing completion rate.

Retention/Survival Rate

There are a number of ways through which drop-out and retention rates can be measured. In the most commonly used method of assessing the retaining capacity of the system, enrolment in Grade V is linked to enrolment in Grade I four years back. Hundred minus retention rate is termed as drop-out rate which can be computed both at the primary as well as upper primary level of education. If number of repeaters is not considered in calculation, the rate obtained is known as Gross Retention Rate and corresponding drop-out rate, the Gross Drop-out Rate. Retention rate is also known as Survival Rate. This rate has been used in India for assessing retaining capacity of system as well as quantum of drop-out over last more than 40 years. However, the calculation procedure fails to take notice of enrolment in other grades i.e. Grade II, III and IV and also repeaters in these grades.

Depending upon the requirement, the retention as well as drop-out rate can be worked-out at different levels such as block, district, state and national levels. Within these levels, the same should also be analyzed separately for rural and urban areas as well separately for boys and girls. The following data set is required for measuring retention rate at the primary level of education:

- Enrolment of Grade V in an year, say 't'
- Repeaters in Grade V in year 't + 4' and
- Enrolment in Grade I in year 't'.

The formula for calculating retention rate is given below. Retention rate, if subtracted from 100 gives drop-out rate at primary level.

$$RR (t+4) = \frac{\text{Enrolment in Grade V in Year } t+4 - \text{Repeaters in Grade V in Year } t+4}{\text{Enrolment in Grade I in Year 't'}}$$

Table 1
Retention Rate (%) at the Primary Level: 2004 & 2005

State/UT	Education Cycle	YEAR			
		2003-04		2004-05	
		Number of Districts	Retention Rate	Number of Districts	Retention Rate
Andhra Pradesh	I-V	-	-	18	61.49
Assam	I-IV	9	35.73	9	48.98
Bihar	I-V	8	35.33	11	36.86
Gujarat	I-IV	3	42.89	3	41.13
Haryana	I-V	7	64.3	6	66.29
Himachal Pradesh	I-V	4	87.69	4	82.36
Jharkhand	I-V	5	40.86	6	36.50
Karnataka	I-IV	11	63.1	16	84.06
Kerala	I-IV	6	98.66	6	84.83
Madhya Pradesh	I-V	27	68.51	28	81.39
Maharashtra	I-IV	7	67.22	16	84.06
Orissa	I-V	8	53.99	8	58.61
Tamil Nadu	I-V	4	90.05	4	93.54
Uttar Pradesh	I-V	14	51.12	48	61.65
Uttaranchal	I-V	-	-	5	54.07
West Bengal	I-IV	10	47.47	10	49.29
Average of All Districts*	I-V	123	53.43	184	58.11

Note: * Enrolment in Grade V is considered in calculating average of all districts. Average in 2004-05 based on 184 districts.

Over a period of time both the number of districts and schools in a district covered under the District Information System for Education (DISE) has increased significantly. Therefore the number of districts covered under DISE varies from year to year. In the latest year i.e. 2004-05 for which DISE data is available, as many as 581 districts across 29 States & UTs are covered. In the previous year, the coverage was limited only to 539 districts across 25 States & UTs. During 2006, a few of the remaining states and districts are expected to cover under DISE. In view of the varying coverage, it is not possible to calculate retention rate at the national level. However, the same can be calculated in states which have got enrolment data available over a period of five years. But in any of

the 29 states covered under DISE, enrolment data is not available over a period of five years for the entire state. However, there are a few districts in each state which has got grade-specific enrolment data over five years. Based on the data of these districts, retention rate at the primary level of education is calculated and the same is presented in the Table 1. The retention rate presented does not imply to the entire state/country but fairly indicate the retaining capacity of primary education system in a state. Most of these states are the DPEP states.

The retention rate for years 2003-04 and 2004-05 presented in Table 1 is based upon the enrolment data of 123 and 184 districts. For the latest 2004-05, it is based upon the data of every third district of the country. The average retention rate shows improvement (58.11 per cent) in 2004-05 over the previous year (53.43 per cent). Though retention rate shows an improvement of about 5 percentage points but still it is too low to achieve goal of universal elementary education. A retention rate of 58 per cent indicates that about 42 per cent children dropped-out from the system before reaching Grade V. However, a few states have much higher retention rate than the average (58.11 per cent) of 184 districts. Tamil Nadu (93.54 per cent), Kerala (84.83 per cent), Himachal Pradesh (82.36 per cent) and Madhya Pradesh (81.39 per cent) are such states. Though retention rate in these states is not based on the entire state data but as it seems that with a little more effort, these states can easily move towards achieving goal of universal retention at the primary level of education. But the situation in rest of the states included in the analysis is not encouraging. In Bihar and Jharkhand, it is low at 36 per cent compared to 54 per cent in Uttaranchal, 62 per cent in Uttar Pradesh, 49 per cent in Assam and West Bengal and 61 per cent in Andhra Pradesh. Without much improvement, neither these states nor country as a whole can achieve the goal of universal retention. Clearer picture will emerge when more consistent enrolment data over a period of five years for the entire country becomes available.

Grade-to-Grade Flow Rates

The retention rate presents retaining capacity of the system but fails to identify the problem in the system. Therefore, it would be better to analyse grade-to-grade flow rates

between the primary grades. If calculated separately for boys and girls at disaggregated levels, such as block, the same would help in identifying block and grades where there is problem of high incidence of repetition and drop-out. With the help of enrolment and repeaters, first number of promotees, repeaters and drop-outs across primary grades is obtained which in turn is linked to enrolment in previous year, to obtain transition rates, such as, promotion, repetition and drop-out rates. If number of repeaters is not considered, promotion rate is termed as grade ratio and is treated as crude indicator. Flow rates, also known as transition rates, can answer a variety of typical questions, such as, at which grade in the cycle is the repetition or dropout rate highest? who tends to drop-out and repeat more frequently, boys or girls? and what is the total accumulated loss of students through drop-out?. The answer of these questions can be obtained, if flow rates for different target groups and for each grade are computed. The following set of data is required for calculating flow rates at primary level:

- Grade-specific enrolment for Grades I, II, III, IV, V and VI (for 2005 only) for at least two consecutive years, say 2004 and 2005
- Grade-specific repeaters for Grades I, II, III, IV, V and VI in the latest year, say 2005.

The rates can be computed by using the following formulae:

Promotion Rate:

$$= \frac{\text{Number of students promoted to grade 'g+1' in year 't+1'}}{\text{Total number of students in grade 'g' in year 't'}} \times 100$$

In notations, it is expressed by the following equation:

$$\left(\begin{matrix} t \\ p \\ g \end{matrix} \right) = \frac{\begin{matrix} t+1 \\ P \\ g+1 \end{matrix}}{\begin{matrix} t \\ E \\ g \end{matrix}} \times 100$$

Repetition Rate:

$$= \frac{\text{Number of Repeaters in Grade 'g' in Year 't+1'}}{E_{g}^t} \times 100$$

$$(r)_g^t = \frac{R_g^{t+1}}{E_g^t} \times 100$$

Drop-out Rate:

$$= \frac{\text{Number of student's dropping-out from grade 'g' in year 't'}}{E_g^t} \times 100$$

$$(d)_g^t = \frac{D_g^t}{E_g^t} \times 100$$

By using two year's data not only grade-to-grade repetition, drop-out and promotion rates can be obtained but average of these rates at primary level of education can also be worked-out. The average indicates the value of these rates during the intermediary period i.e. between two years on the basis of which grade-to-grade rates are worked out. The average rates are also known as overall rates. The computational procedure is presented below:

Let enrolment and repeaters in Grade I, II, III, IV, V and VI in an year is denoted by E₁, E₂, E₃, E₄, E₅ and E₆ and R₁, R₂, R₃, R₄, R₅ and R₆ respectively (see Table 2). The

promotees in a grade are obtained by subtracting repeaters from the enrolment in subsequent grade the following year. Number of drop-out children is obtained by subtracting repeaters and promotees from enrolment of a particular grade. Number of promotees and drop-outs is obtained for all the grades in an education cycle, say primary level. Similarly, grade-specific promotion (PR), repetition (RR) and drop-out (DR) rates in year 't' (say 2004) is denoted and the following formulae are used to compute average of these rates.

Average (Overall) Repetition Rate

$$(i) \quad \frac{(R_I + R_{II} + R_{III} + R_{IV} + R_V) \text{ in year 't+1'}}{(E_I + E_{II} + E_{III} + E_{IV} + E_V) \text{ in year 't'}} \times 100$$

Average (Overall) Promotion Rate

$$(ii) \quad \frac{(P_I + P_{II} + P_{III} + P_{IV} + P_V) \text{ in year 't'}}{(E_I + E_{II} + E_{III} + E_{IV} + E_V) \text{ in year 't'}} \times 100$$

Average (Overall) Dropout Rate

$$\{100 - [(i) + (ii)]\}$$

It may also be noted that while calculating number of promotees in Grade V in year 2004, enrolment and repeaters of Grade VI in year 2005 are considered. **This is supposed to give slightly a lower promotion and higher drop-out rate because it also consider children those who successfully completed primary level but did not transit to Grade VI.** It is better to consider number of successful primary graduates but the same for the year 't+1' i.e. year 2004-05 is not available through the DISE data set. DISE collects information on number of graduates each year but of the previous academic year which in the present case is 2003-04.

Table 2
Denotations: Calculation of Average Floe Rates

Parameter	GRADES					
Enrolment in first year 't', say 2004	E_I	E_{II}	E_{III}	E_{IV}	E_V	E_{VI}
Enrolment in second year 't+1' say 2005	E_I	E_{II}	E_{III}	E_{IV}	E_V	E_{VI}
Number of Repeaters in year 't+1', say 2005	R_I	R_{II}	R_{III}	R_{IV}	R_V	R_{VI}
Number of students Promoted, in year 't', 2004	P_I	P_{II}	P_{III}	P_{IV}	P_V	P_{VI}
Number of Drop-out children in year 't', 2004	D_I	D_{II}	D_{III}	D_{IV}	D_V	D_{VI}

One of the major limitations of the DISE enrolment data is its inconsistency. As has already been mentioned that over a period of time the number of schools covered under DISE has increased significantly. Not only new schools joined DISE during 2004-05 but at the same time a few schools covered during 2003-04 couldn't be covered in 2004-05 because of the one or other reason. Therefore, in the present exercise grade-specific flow rates, such as promotion, drop-out and repetition as well as averages of these rates are calculated based upon the grade-specific enrolment and repeaters of common schools. Common schools are the schools which have been covered both in years 2003-04 and 2004-05 and also submitted enrolment and repeaters data during these years. The number of common schools and percentage of such schools is presented in Table 3 which suggests that more than 83 per cent of the total schools are common i.e. the supplied data for both years.

Table 3
Percentage of Common Schools: 2004-05

State	Number of Schools 2003-04	Common Schools 2004-05	Percentage of Common Schools, 2004- 05
Andhra Pradesh	84579	39831	47.09
Assam	39459	33644	85.26
Bihar	52202	48306	92.54
Chandigarh	164	156	95.12
Chhattisgarh	35448	29179	82.31
Gujarat	34786	30625	88.04
Haryana	11342	7175	63.26
Himachal Pradesh	14964	13686	91.46
Jharkhand	22010	20149	91.54
Karnataka	51546	43260	83.93
Kerala	11988	8349	69.64
Madhya Pradesh	86327	75086	86.98
Maharashtra	77382	64209	82.98
Meghalaya	6229	5684	91.25
Mizoram	2274	1735	76.30
Nagaland	2271	1980	87.19
Orissa	49063	46770	95.33
Punjab	9949	4367	43.89
Rajasthan	78158	52539	67.22
Sikkim	984	823	83.64
Tamil Nadu	45952	43572	94.82
Tripura	3143	2227	70.86
Uttar Pradesh	134225	129734	96.65
Uttaranchal	17471	13396	76.68
West Bengal	59556	56926	95.58
All States	931472	773408	83.03

This otherwise also suggests that more than 8 out of 10 schools imparting elementary education in the country are considered in calculating flow rates. This is a very high sample of the total elementary schools and findings can easily be generalized. Except in a few states such as, Andhra Pradesh, Haryana, Kerala, Mizoram, Punjab, Rajasthan, Tripura and Uttaranchal, the percentage of such schools is more than 80 per cent across 25 States and UTs for which DISE data is available for two years, i.e. 2003-04 and 2004-05. Total number of schools that reported DISE data for the year 2004-05 is 10,37,813 as against 9,31,472 which indicates that during the period the number of schools covered increased by 1,06,341 which is 11.42 per cent of the total schools covered during the

previous year. Thus, of the 1,58,064 uncommon schools observed during 2004-05, as many as 1,06,341 schools (67.28 per cent) are the new schools added during 2004-05. Hence, as it seems that only 51,723 schools are uncommon in both the years which is below 5 per cent of the total schools that impart elementary education in the country. Efforts are being made to ensure consistency in coverage of schools across the country. States are advised to update and prepare complete list of all recognised schools at disaggregated levels, such as cluster, block, district and state levels. In addition, CRC Coordinators are being made accountable to ensure coverage and consistency of DISE data.

Analysis of Flow Rates

The state-specific promotion, repetition and drop-out rates for cohort 2003-04 have been presented in Tables 4, 5 and 6.

Promotion Rate

Table 4 indicates an average promotion rate of 81.53 per cent in primary classes. However, a few states have lower than the average of all states. Andhra Pradesh (72.55 per cent), Bihar (76.98 per cent), Chhattisgarh (74.63 per cent), Haryana (72.74 per cent), Jharkhand (78.68 per cent), Madhya Pradesh (79.01 per cent), Rajasthan (73.05 per cent), Uttaranchal (78.84 per cent) and West Bengal (75.10 per cent) are such states. The lowest 67.86 per cent is noticed in Meghalaya followed by 70.87 per cent in case of Sikkim both of which are from the north-eastern part of the country. Further, it is observed that only 75.49 per cent children in Grade I were promoted to next grade compared to only 69.65 per cent in case of Grade V. Low promotion rate in Grade V may be because of Grade VI enrolment considered in calculating flow rates instead of number of graduates which is not available through the DISE data. Rest of the primary grades has above 87 per cent promotion rate. The low promotion rate is despite the policy of no detention generally being followed across the country. Very low promotion rate in Grade I in a number of states need careful examination. Without improving promotion rate in Grade I efforts being made through SSA in attaining goal of universal primary education are not likely to

be realised. The states with very low promotion rate in Grade I are Chhattisgarh (68.19 per cent), Jharkhand (64.57 per cent), Meghalaya (52.12 per cent), Rajasthan (54.78 per cent), Sikkim (71.77 per cent), Tripura (69.67 per cent), Uttaranchal (68.94 per cent) and West Bengal (63.13 per cent).

Table 4
Promotion Rate: Cohort 2003-04
(Based on Common Schools for the year 2003-04 and 2004-05)

State/UT	Class I	Class II	Class III	Class IV	Class V	Average Primary Classes I-V
Andhra Pradesh	76.33	80.43	81.25	84.22	38.04	72.55
Assam	81.76	92.85	94.30	96.06	82.75	88.96
Bihar	60.59	86.30	89.64	97.68	64.72	76.98
Chandigarh	97.32	94.98	97.69	92.58	87.30	93.91
Chhattisgarh	68.19	80.45	75.90	78.24	71.67	74.63
Gujarat	75.31	82.81	81.29	82.71	81.34	80.51
Haryana	75.73	80.51	77.88	80.15	45.08	72.74
Himachal Pradesh	84.96	91.11	92.06	90.14	81.51	87.95
Jharkhand	64.57	87.02	87.84	90.91	74.15	78.68
Karnataka	91.06	93.29	93.26	93.60	87.22	91.71
Kerala	97.48	93.56	93.87	91.96	94.97	94.34
Madhya Pradesh	80.20	84.21	80.04	85.49	64.41	79.01
Maharashtra	85.36	89.67	88.98	79.18	87.71	86.20
Meghalaya	52.12	77.05	76.91	77.10	76.83	67.86
Mizoram	77.94	109.07	98.79	107.22	91.62	94.82
Nagaland	94.53	94.80	90.63	79.04	91.33	90.57
Orissa	82.90	91.39	91.23	92.48	76.04	87.04
Punjab	88.17	91.13	90.72	92.29	53.50	83.64
Rajasthan	54.78	73.83	81.85	91.06	81.32	73.05
Sikkim	71.77	75.76	68.05	70.76	66.71	70.87
Tamil Nadu	90.81	94.55	95.46	95.63	93.41	93.97
Tripura	69.67	83.13	68.70	72.97	75.45	73.59
Uttar Pradesh	84.72	89.41	86.54	88.75	50.49	82.05
Uttaranchal	68.94	85.93	84.80	88.28	68.75	78.84
West Bengal	63.13	89.12	89.72	77.53	61.51	75.10
All States	75.49	87.54	87.22	87.54	69.65	81.53

Repetition Rate

The grade-specific as well as average repetition rate in primary classes is presented in Table 5 which indicates that as many as 7.83 per cent children repeated primary grade during 2004. On the one hand the promotion rate in Grade I is observed low on the other hand, the repetition rate in Grade I is noticed highest (12.34 per cent) among primary

grades. In rest of the primary grades, repetition rate varies between 5 to 7 per cent. The average repetition rate in a few states, such as, Chhattisgarh (16.68 per cent), Gujarat

Table 5
Repetition Rate: Cohort 2003-04
(Based on Common Schools for the year 2003-04 and 2004-05)

State	Class I	Class II	Class III	Class IV	Class V	Grade VI	Average Primary Classes I-V
Andhra Pradesh	11.32	4.50	3.60	2.77	2.81	2.44	5.02
Assam	4.88	2.62	2.44	1.87	7.62	6.23	3.81
Bihar	24.97	9.86	7.62	6.19	5.11	3.95	13.66
Chandigarh	4.01	3.49	3.58	3.82	7.37	9.21	4.48
Chhattisgarh	22.28	15.33	17.08	14.83	11.21	16.01	16.68
Gujarat	18.90	14.24	15.03	12.08	12.34	9.74	14.72
Haryana	9.18	12.12	16.77	15.29	10.23	13.67	12.67
Himachal Pradesh	10.27	6.75	6.05	6.96	2.69	11.53	6.60
Jharkhand	26.16	10.71	8.18	6.77	5.81	5.92	14.33
Karnataka	2.66	2.47	2.59	2.47	3.21	2.75	2.68
Kerala	0.34	3.99	3.96	4.12	4.29	4.80	3.36
Madhya Pradesh	11.74	8.89	10.33	10.16	13.18	8.73	10.86
Maharashtra	9.28	7.07	7.36	5.52	7.61	7.16	7.42
Meghalaya	37.75	13.37	13.66	14.60	11.36	8.16	9.84
Mizoram	6.39	2.81	3.67	2.42	2.82	2.52	3.95
Nagaland	7.44	7.22	7.44	6.76	7.04	6.57	7.21
Orissa	1.89	1.07	0.93	0.81	0.74	0.48	1.15
Punjab	11.93	10.13	10.30	9.38	8.09	7.22	10.02
Rajasthan	20.25	14.14	7.94	4.21	3.08	9.28	11.93
Sikkim	21.16	24.21	27.66	26.83	25.48	30.70	24.87
Tamil Nadu	3.41	2.68	2.73	2.71	2.76	6.61	2.86
Tripura	22.97	16.00	27.78	22.33	16.48	26.45	21.55
Uttar Pradesh	3.65	2.25	2.24	1.84	1.60	1.37	2.45
Uttaranchal	16.69	8.87	7.95	5.56	1.73	7.43	9.10
West Bengal	18.63	7.13	5.94	6.26	25.02	20.85	13.12
All States	12.34	6.45	6.03	5.18	7.47	7.59	7.83

(14.72 per cent), Jharkhand (14.33 per cent), Sikkim (24.87 per cent) and Tripura (21.55 per cent) is observed to be very high and above national average (7.83 per cent); hence need immediate attention. High repetition rate among primary grades in these states is because of very high repetition rate in Grade I. Most of the major states have reasonably lower repetition rate in primary grades.

Drop-out Rate

The drop-out rate presented in Table 6 indicates an average drop-out of 10.64 per cent among primary grades. This shows that during the intermediary years 2004 and 2005, as many as 10.64 per cent children enrolled in Grades I to V dropped out from the system before completion of a primary grade against 11.27 per cent during intermediary years 2002-03 and 2003-04. This is average of all the grades during 2004 and 2005 and is different than the drop-out/retention rate presented above based on the enrolment data of five years. As mentioned above the grade-wise drop-out rate as well as average drop-out rate is based on enrolment data of only 2 years and not 5 years used in calculating retention rate. While calculating retention rate the focus centered around a group of children (cohort) those who enter education system together in a year. This group of children (from the same cohort) is then observed over a period of time to see how many of them reach Grade V and also how many drops out before reaching Grade V. Unlike this, as mentioned above the grade-wise drop out rate is based on enrolment data of only 2 years; thus indicating that children in Grade I, II, III, IV and V are from different cohorts and they enter into the education system 1, 2, 3, 4 or more than 5 years back. These rates fail to provide any indication about the retaining capacity of the system but shows number of children in each primary grade those who dropped out from the system before completion of a primary grade. An average drop-out rate of 10.64 per cent in primary grades during intermediary years i.e. 2003-04 and 2004-05 indirectly indicates a high drop-out rate at primary level over a period of five year.

A cursory look at grade-specific drop-out rate indicate that about 12.17 per cent children enrolled in Grade I in 2003-04 dropped out before completion of Grade I between 2003-04 and 2004-05. In many states, drop-out rate in Grade I is noticed to be alarmingly high all which need careful examination and appropriate strategies to check drop-out rate. In a few states, drop-out rate even comes out negative which is largely because of the inconsistent enrolment data. Among major states, Rajasthan has a very high (24.97 per cent) drop-out rate in Grade I. Bihar (14.44 per cent), Haryana (15.08 per cent), Meghalaya (37.75 per cent), Orissa (15.21 per cent), Uttaranchal (14.38 per cent) and West Bengal (18.24 per cent) also have very high drop-out rate in Grade I. Unlike Grade

I, Grade II, III and IV have lower drop-out rate and the same varies between 6 to 7 per cent. However, a few states, such as, Andhra Pradesh (Grades II, III and IV), Meghalaya (Grades II, III and IV), Rajasthan (Grade II and III), Uttar Pradesh (Grade III), Maharashtra (Grade IV) and West Bengal (Grade IV) reported high drop-out rates even in rest of the primary grades.

Table 6
Drop-out Rate: Cohort 2003-04

(Based on Common Schools for the year 2003-04 and 2004-05)

State	Class I	Class II	Class III	Class IV	Class V	Average Primary Classes I-V
Andhra Pradesh	12.34	15.06	15.15	13.01	59.15	22.43
Assam	13.37	4.53	3.26	2.07	9.63	7.22
Bihar	14.44	3.84	2.75	-3.86	30.17	9.36
Chandigarh	-1.33	1.52	-1.27	3.60	5.33	1.61
Chhattisgarh	9.53	4.23	7.02	6.93	17.12	8.69
Gujarat	5.79	2.95	3.68	5.20	6.32	4.77
Haryana	15.08	7.37	5.35	4.56	44.69	14.60
Himachal Pradesh	4.77	2.15	1.89	2.90	15.80	5.44
Jharkhand	9.27	2.28	3.98	2.33	20.04	6.99
Karnataka	6.28	4.24	4.14	3.93	9.56	5.61
Kerala	2.18	2.45	2.18	3.91	0.75	2.30
Madhya Pradesh	8.06	6.90	9.64	4.36	22.41	10.13
Maharashtra	5.36	3.27	3.65	15.30	4.68	6.38
Meghalaya	37.75	13.37	13.66	14.60	11.36	22.29
Mizoram	15.67	-11.88	-2.46	-9.64	5.56	1.23
Nagaland	-1.97	-2.02	1.94	14.20	1.63	2.22
Orissa	15.21	7.54	7.84	6.72	23.22	11.80
Punjab	-0.11	-1.27	-1.02	-1.68	38.40	6.33
Rajasthan	24.97	12.03	10.21	4.74	15.60	15.02
Sikkim	7.07	0.03	4.29	2.41	7.81	4.26
Tamil Nadu	5.78	2.77	1.82	1.66	3.82	3.17
Tripura	7.36	0.87	3.51	4.71	8.07	4.86
Uttar Pradesh	11.63	8.34	11.22	9.41	47.91	15.50
Uttaranchal	14.38	5.19	7.25	6.16	29.52	12.06
West Bengal	18.24	3.75	4.34	16.20	13.47	11.78
All States	12.17	6.01	6.76	7.27	22.87	10.64

Note: States showing negative drop-out rates indicate inconsistent grade-specific enrolment data.

States Grouped by High & Low Drop-out & Repetition Rate

The average drop-out, promotion and repetition rate sorted according to drop-out rate and distribution of states according to high and low drop-out and repetition rate is presented in Table 7 and Table 8 respectively. The states are distributed according to below 5 per cent, 5 to 10 per cent, 10-15 per cent, 15-20 per cent and above 20 per cent drop-out and repetition rate.

Table 7
States Arranged According to Drop-out Rate in Descending Order
Cohort 2003-04

(Based on Common Schools for the year 2003-04 and 2004-05)

	State	Average Flow Rates: Primary Classes I-V, COHORT 2003-04		
		Drop-out	Repetition	Promotion
1	Andhra Pradesh	22.43	5.02	72.55
2	Meghalaya	22.29	9.84	67.86
3	Uttar Pradesh	15.50	2.45	82.05
4	Rajasthan	15.02	11.93	73.05
5	Haryana	14.60	12.67	72.74
6	Uttaranchal	12.06	9.10	78.84
7	Orissa	11.80	1.15	87.04
8	West Bengal	11.78	13.12	75.10
9	Madhya Pradesh	10.13	10.86	79.01
10	Bihar	9.36	13.66	76.98
11	Chhattisgarh	8.69	16.68	74.63
12	Assam	7.22	3.81	88.96
13	Jharkhand	6.99	14.33	78.68
14	Maharashtra	6.38	7.42	86.20
15	Punjab	6.33	10.02	83.64
16	Karnataka	5.61	2.68	91.71
17	Himachal Pradesh	5.44	6.60	87.95
18	Tripura	4.86	21.55	73.59
19	Gujarat	4.77	14.72	80.51
20	Sikkim	4.26	24.87	70.87
21	Tamil Nadu	3.17	2.86	93.97
22	Kerala	2.30	3.36	94.34
23	Nagaland	2.22	7.21	90.57
24	Chandigarh	1.61	4.48	93.91
25	Mizoram	1.23	3.95	94.82
	All States	10.64	7.83	81.53

Tamil Nadu, Kerala, Chandigarh UT and Mizoram falls in the group which has below 5 per cent drop-out as well as repetition rate. They are comfortable with regard to drop-out

rate in primary grades during the intermediary period (2004 and 2005) which is also reflected in retention rate presented in Table 1. These states required to sustain their efforts as both repetition as well as drop-out rate is quite satisfactory. On the other hand a few states, namely Nagaland, Gujarat, Tripura and Sikkim too have below 5 per cent drop-out rate in primary grades but repetition rate in these states is above 5 per cent. Tripura and Sikkim even reported above 20 per cent repetition rate.

Table 8
Distribution of States by Drop-out and Repetition Rate: Cohort 2004

Repetition Rate ↓	Drop-out Rate				
	Below 5 %	5 to 10%	10-15%	15-20%	Above 20%
Below 5%	Tamil Nadu Kerala Chandigarh Mizoram	Assam Karnataka	Orissa	Uttar Pradesh	
5 to 10%	Nagaland	Maharashtra Himachal Pradesh	Uttaranchal		Andhra Pradesh Meghalaya
10-15 %	Gujarat	Bihar Jharkhand Punjab	Haryana West Bengal Madhya Pradesh	Rajasthan	
15 -20%		Chhattisgarh			
Above 20%	Tripura Sikkim				

A number of other states have average drop-out rate between 5 to 10 per cent and also have repetition rate below 5 per cent or between 5 to 10 per cent. Assam and Karnataka and Maharashtra and Himachal Pradesh fall under this category. Whereas Bihar, Jharkhand and Punjab have drop-out rate below 10 per cent but at the same time repetition rate in these states varies between 10 to 15 per cent. Chhattisgarh in this category has even a repetition rate of 16.68 per cent. In rest of the states, Orissa,

Uttaranchal, Haryana, West Bengal and Madhya Pradesh have drop-out rate in primary classes between 10-15 per cent. Orissa too have a low repetition rate of below 5 per cent compared to 9.10 per cent in Uttaranchal. The remaining states in this category have high repetition rate between 10 to 15 per cent.

Out of 25 states covered, only four states have an average drop-out rate of above 15 per cent in primary classes. The states are Uttar Pradesh, Rajasthan, Andhra Pradesh and Meghalaya. However, Uttar Pradesh has a low repetition rate of 2.45 per cent, the second lowest in the country. Unless the promotion rate in Uttar Pradesh is improved, the repetition rate will continue to remain high. Perhaps, it is Rajasthan that need immediate attention as both the average drop-out and repetition rate is quite high. The drop-out rate in Rajasthan is as high as 15.02 per cent compared to 11.93 per cent repetition rate. Not only it need to check repetition rate in Grade I (20.25 per cent) but also need to develop appropriate strategies to check high drop-out rate in Grade I (24.97 per cent). Without significant improvement overall drop-out rate in primary classes in Rajasthan is not expected to improve. There are only two states, namely Andhra Pradesh and Meghalaya which have above 20 per cent average drop-out rate in Primary classes. These states also have a repetition rate of 5.02 and 9.84 per cent respectively. Andhra Pradesh needs to improve promotion rate which is low at 72.55 per cent.

While preparing Annual Work Plan and Budget under SSA, the states should thoroughly analyse reasons of low promotion and high repetition and drop-out rate and adopt appropriate strategies. On the one hand, a large number of children are getting enrolled and on the other hand 10 out of 100 children enrolled drop-out before completing a primary grade all of which need serious interventions. This is despite SSA interventions and mid-day meal across the country. However, more clearer picture of drop-out rate will emerge when the entire country is covered under DISE and consistency of enrolment data is also improved.

Internal Efficiency of Primary Education System

The flow rates presented above fails to produce any information about the internal efficiency of the educational system. In simple terms, efficiency can be defined as an

optimal relationship between the input and the output. The best system is one which has both the input and output exactly the same, which is known as a perfect efficient system. If a child remains in the system for two years then it is considered that the system has invested two student years on that child. On the other hand, every successful completer of a particular cycle is termed as the output, which is also known as the 'graduate'.

Table 9
Indicators of Internal Efficiency: Cohort 2003 & 2004
(Based on Common Schools for the year 2003-04 and 2004-05)

State	Co-efficient of Efficiency		Years Input per Graduate		Input-Output Ratio	
	2003/04	2004/05	2003/04	2004/05	2003/04	2004/05
Andhra Pradesh	67.6	-	7.4	-	1.48	-
Assam	82.9	80.7	6.0	7.4	1.20	1.48
Bihar	48.8	61.0	10.3	9.8	2.06	1.96
Chandigarh	-	88.2	-	6.8	-	1.36
Chhattisgarh	77.6	59.6	6.4		1.28	
Gujarat	-	73.7	-	8.1	-	1.62
Haryana	-	41.1	-	14.6	-	2.93
Himachal Pradesh	88.9	75.8	5.6	7.9	1.12	1.58
Jharkhand	101.8	66.5	4.9	9.0	0.98	1.8
Karnataka	93.7	82.4	5.3	7.3	1.06	1.46
Kerala	101.1	90.9	4.9	6.6	0.98	1.32
Madhya Pradesh	76.3	59.9	6.6	10.0	1.32	2.0
Maharashtra	-	74.9	-	8.0	-	1.6
Meghalaya	-	52.7	-	11.4	-	2.28
Mizoram	-	99.6	-	6.0	-	1.2
Nagaland	-	81.7	-	7.3	-	1.46
Orissa	92.0	67.3	5.4	8.9	1.08	1.78
Punjab	-	53.9	-	10.4	-	2.08
Rajasthan	45.1	59.5	11.1	10.1	2.22	2.02
Tamil Nadu	89.1	89.5	5.6	6.7	1.12	1.34
Tripura	-	64.7	-	9.3	-	1.86
Uttar Pradesh.	96.1	44.3	5.2	9.7	1.04	1.94
Uttaranchal	81.2	57.5	6.2	10.4	1.24	2.08
West Bengal	68.3	57.7	7.3	10.4	1.46	2.08
All States Together	76.9	87.8	6.5	6.8	1.30	1.36

By using the following assumptions, the Reconstructed Cohort method is used to obtain indicators of internal efficiency of education system. Input-Output Ratio, Coefficient of Efficiency and Input per Graduate (in terms of years), have been presented in case of all the 25 states for which 2 years enrolment and repeaters data is available. Coefficient of Efficiency is defined as the ratio of actual number of pupil years to the ideal number of pupil-years. Ratio closer to one means the better internal efficiency. The input-output ratio is simply the inverse of coefficient of efficiency, and is equal to years input per graduate divided by five which is length of the primary cycle. The assumptions used are as follows:

- ◆ The promotion, repetition and dropout rates presented above (based on DISE 2004 and 2005 data) would remain constant throughout the evolution of the cohort;
- ◆ A student would not be allowed to continue in the system after he/she has repeated for three times; thereafter, he/she will either leave the system or would be promoted to the next higher grade; and
- ◆ No student other than the original ones would be allowed to enter the cycle in between the system.

The coefficient of efficiency presented above reveals that primary education system is efficient to the tune of only 87.8 per cent. There is good scope of further improvement as 12.2 per cent of the total resources have gone waste. In Bihar (48.8) and Rajasthan (59.5), the coefficient of efficiency obtained is much lower than the average of all states. Much of the resources in these states are going waste. Kerala, as it seems, that the primary education system is an efficient one. On an average a primary graduate is taking 6.8 years to become graduate compared to ideal 5 years. Students in Bihar are taking 9.8 years compared to 10.1 years in Rajasthan which clearly shows that the primary education systems in these states are highly inefficient ones. This is also reflected in the input-output ratio which means a student is taking double time resources in these states to become primary school graduate. Had there been no wastage in the system, a ratio of one is considered to be the ideal one. Most of the states have the ratio well above one. Unless the efficiency of education system is improved, the goal of UPE in these states may not be realized in the near future. Clearer picture of efficiency will emerge next year when

enrolment data of other states over a two-year period will be available and consistency of data also improved.

Transition Rate

One of the important indicators on which the expansion of upper primary education depends is transition rate from primary to upper primary level of education. Two years' grade-specific enrolment data is required to work out transition rate which is defined as follows:

$$\text{Transition Rate} = \frac{\text{New Entrants into Grade VI in Year 't+1'}}{\text{Enrolment in Grade V in Year 't'}} \times 100$$

$$= \frac{E_{g+1}^{t+1}}{E_g^t} \times 100$$

Table 10
Transition Rate (%) from Primary (V) to Upper Primary (VI) Level of Education
Cohorts: 2003 & 2004

COHORT	Number of Districts	Boys	Girls	Total
2003	461	76.01	71.98	74.15
2004	539	79.96	75.78	78.01

It may be noted that two year's grade-specific enrolment data is not available through DISE in case of all the 29 States & UTs covered in 2005. However, enrolment data along with grade-specific repeaters is available for two years in case of 539 districts across 25 states (except Punjab because of incomplete data in 2003-04) all of which supplied DISE data for the year 2004 too. Repeaters subtracted from enrolment in Grade VI or V, as the

case may be, in 2005, is divided by enrolment in Grade V or IV in the previous year (2004) and is then multiplied by 100 to obtain the transition rate for cohort 2004. This has been obtained separately in case of boys, girls and all children together and presented in Table 10 and Table 11.

Table 11
State-specific Transition Rate from Primary (IV/V) to Upper Primary (V/VI) *
Level of Education: Cohort 2004

State	BOYS	GIRLS	TOTAL
Andhra Pradesh	91.64	87.47	89.59
Assam**	102.98	100.25	101.66
Bihar	68.21	61.61	65.56
Chandigarh	84.19	85.08	84.57
Chhattisgarh	75.51	66.82	71.38
Gujarat	84.79	80.29	82.74
Haryana	65.12	66.69	65.86
Himachal Pradesh	92.65	88.6	90.71
Jharkhand	73.26	68.71	71.31
Karnataka	90.63	88.73	89.72
Kerala	87.08	86.11	86.6
Madhya Pradesh	73.82	64.37	89.47
Maharashtra	75.65	73.61	74.68
Meghalaya	97.83	100.38	99.15
Mizoram**	112.3	111.56	111.94
Nagaland	79.93	81.26	80.57
Orissa	78.16	76.02	77.17
Rajasthan	98.62	83.27	92.4
Sikkim	68.61	72.4	70.58
Tamil Nadu**	102.24	98.99	100.67
Tripura	76.96	77.06	77.01
Uttar Pradesh	59.24	55.74	57.62
Uttaranchal	90.58	88.63	89.63
West Bengal	80.95	77.22	79.09
All States	79.96	75.78	78.01

*: As the case may be

** : Technically more than 100 transition rate is not possible.

The transition rate presented in Table 10 shows improvement over the previous year i.e. 2003 based on data of 461 districts. The average of 539 districts suggests that more than 78.01 per cent children in 2004 transited from primary to upper primary level of education against 74.15 per cent during the previous year. No significant difference in transition rate is noticed in case of boys and girls. Separately, transition rate in case of boys and girls both shows improvement in 2004 over the previous year. Against 79.96 per cent boys, about 75.78 per cent girls transited from primary to upper primary level of education in 2004 against 76.01 per cent boys and 71.98 per cent girls during the previous year i.e. 2003. Though transition rate from primary to upper primary level shows improvement but still about 22 per cent children drop-out in transition which may play significant role towards moving goal of universalisation of elementary education.

Further, a significant deviation is noticed when state-specific transition rates are analysed which is presented in Table 11. As against a low transition rate of 57.62 per cent in Uttar Pradesh, the same is very high in case of a few states such as Himachal Pradesh, Assam, Kerala, Mizoram, Rajasthan, Tamil Nadu, Uttaranchal and Andhra Pradesh. In Uttar Pradesh only 59.24 per cent boys and 55.74 per cent girls transited from primary to upper primary level of education in 2004. Bihar too has a low 65.56 per cent transition rate. The other major states that need immediate attention is Chhattisgarh (71.38 per cent), Haryana (65.86 per cent), Jharkhand (71.31 per cent), Madhya Pradesh (69.47 per cent), Maharashtra (74.88 per cent), Orissa (77.17 per cent), West Bengal (79.09 per cent) etc. As it seems that the goal of universal elementary education in these states may not be realised in the near future if transition rates are not improved significantly. By conducting studies, the states should know reasons of low transition, which should be followed by incorporation of reason-specific strategies in the Annual Work Plan and Budget. In a few states such as Chhattisgarh, Madhya Pradesh and Rajasthan, significant difference is noticed in case of transition rate of boys and girls. In Rajasthan only 83.27 per cent girls transited from primary to upper primary level against 98.62 per cent boys; thus showing a gap of about 15 percentage points.

Concluding Observations

Depending upon availability of data, an indicator to measure drop-out rate should be developed. If resources available, true-cohort study where each and every enrolled child is tracked should be undertaken which can be used for both assessing drop-out as well as completion rate. If resources are not available and data available, retention rate by using enrolment and repeaters data over a period of five years should only be utilized to assess retaining capacity of an education system. The retention rate so obtained is subtracted from 100 to obtain drop-out rate at an educational level. To know real cause of low retention/high drop-out rate, it is essential that the same be calculated and analysed at disaggregated levels and if data available, separately for boys and girls, rural and urban areas and for SC and ST children.

The root cause of high drop-outs can be identified by calculating grade-to-grade flow rates such as, promotion, drop-out and repetition rate. This will help a district/state in identifying in which grade there is high incidence of drop-out and repetition and also in knowing whether the same is because of boys/girls SC/ST children. The grade-to-grade drop-out rates can also be used in assessing average drop-out and repetition during intermediary year. The average indicate quantum of drop-out during intermediary year in relation to total enrolment in primary grades. Average drop-out rate can also be used to examine trends in drop-out and repetition rate over a period of time but the same is different than the retention rate which is based upon enrolment data over a period of five years where as average drop-out rate is simply based upon enrolment and repeaters data of only two years. As has been demonstrated in this note, grade-to-grade transition rates can also be used to do construct indicators of internal efficiency of education system.

By just quantifying drop-out rate, the situation will not improve automatically for that purpose the first major exercise is to know reasons of low promotion and high drop-out and repetition. This should necessarily follow by reason and area specific strategies without which no improvement is expected. This should form part of Annual Work Plan and Budget under SSA and the Project Approval Board should rigorously monitor it. Year 2010 is approaching fast and we cannot sit hoping that situation (with regard to drop-out) will improve automatically. Still we have more than four years to more

optimally and rigorously utilize provisions made under Sarva Shiksha Abhiyan to work towards achieving universal elementary education.

Further Reading

District-wise Drop-out Rates: Concept, Methods of Calculation and Cohort Drop-out Rates derived by Reconstructed Cohort Method, Research, Evaluation and Studies Unit, TSG, Educational Consultants India Limited, NOIDA, UP, 2005

Indicators of Educational Development: Concept and Definitions, Arun C. Mehta, National Institute of Educational Planning and Administration, New Delhi, 2003