

Educational Outcomes: DPEP or 'Catching Up'?

This paper evaluates the District Primary Education Programme interventions in two DPEP Phase I districts of Madhya Pradesh by using one of them as the control group. It aims to assess the progress made towards achieving the overall goals of DPEP, namely, providing access to primary education for out-of-school children and increasing the retention rate. It also assesses the extent to which gender disparities and differences between social groups such as scheduled castes and tribes and others have been reduced in respect of enrolment, dropout rates and learning achievement. In some instances, especially when outcomes across low and high literacy districts are studied, DPEP appears to have positively facilitated interventions in districts that started off with low female literacy rates. Also, interventions to facilitate access to schooling and to ensure social equity appear to have had an impact.

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The basic goal of the District Primary Education Programme (DPEP) was to achieve universalisation of primary education in a given time frame and to bring about change in the system to ensure overall qualitative improvement in primary education in a cost-effective manner and on a sustainable basis. It was approved as a centrally sponsored scheme of the government of India to be implemented in selected districts to achieve the following objectives: (i) to reduce differences in enrolment, dropout and learning achievement among gender and social groups to less than 5 per cent; (ii) to reduce overall primary dropout rates for all students to less than 10 per cent; (iii) to raise average achievement levels by at least 25 per cent over measures of baseline levels and ensuring achievement of basic literacy and numerical competencies and a minimum of 40 per cent achievement levels in other competencies, by all primary school children; and (iv) to provide, according to national norms, access for all children, to primary schooling wherever possible, or its equivalent non-formal education.

In order to provide greater access to primary education and to ensure that children out of the school system get enrolled, a number of interventions were planned and inputs were provided under DPEP in each participating state. Since DPEP is a decentralised programme in which the plan for expansion and improvement of primary education is developed at the district level taking into account actual district needs, the way it is implemented and its achievements are expected to vary greatly from district to district. DPEP has been implemented in a phased manner, starting with 42 (now 52) districts of seven states in 1994 (Tamil Nadu, Kerala, Maharashtra, Madhya Pradesh (MP), Karnataka, Assam and Haryana) in Phase I. In Phase II, the programme expanded to cover 272 districts in 18 states. These include the 52 districts of Phase I.

I Need for Study

As the project was nearing completion in Phase I districts, the MHRD considered it necessary to perform an external evaluation to identify the extent to which the programme had succeeded

in achieving its objectives. This task was entrusted to the four Indian Institutes of Management to cover the seven states. IIM-Lucknow was entrusted with MP, Chhattisgarh and Haryana. The present study aims to evaluate DPEP interventions in DPEP-I districts of MP, due to the availability of a control group only in this state. In each of the other states – Haryana and Chhattisgarh – only one district could be sampled due to budgetary considerations. Jind in Haryana and Surguja in Chhattisgarh were chosen (criteria for choice of all districts are explained below). The evaluation study was expected to not only provide an unbiased evaluation of the achievements and shortcomings of DPEP, but also to help in deciding the modifications to be made in the implementation strategy in the districts involved in second phases of the programme. The study was also expected to provide useful inputs for the Sarva Shiksha Abhiyan (SSA), the national programme for universalisation of elementary education.

The format for the research including research design, preparation of survey instruments, sampling procedures, field work methods, data processing and analysis was the same for all states and districts. Each state was, however, allowed enough flexibility for the programme's complete evaluation within the context of its local framework. The state of MP implemented DPEP in 26 districts in phase I, and 22 districts in phase II. After the reorganisation of the state in November 2000, only 17 districts of phase I and 16 districts of phase II remain with MP districts in MP for implementation of DPEP in phase I were chosen by the state on the basis of: (i) educationally backward districts with female literacy below the national average; and (ii) districts where Total Literacy Campaign had been successful leading to enhanced demand for elementary education.

Study Objectives

The specific objectives of this study are as follows:

- (i) To assess the progress made towards achieving the overall goals of DPEP, namely, providing access to primary education for out-of-school children, and increasing the retention rate.
- (ii) To assess the extent to which gender disparities and disparities between social groups such as scheduled castes (SC),

scheduled tribes (ST) and others have been reduced in respect of enrolment and dropout rates, and learning achievement.

Overview

This study is organised as follows. The following Section II briefly describes the DPEP programme and its structure. Then we review past literature on the subject (Section III). Following this in Section IV, we describe the methodology and sample design used for field-work including data collection and constraints posed by the field work. After this, we give a brief profile of the state in which we performed our study. Next, in Section V details of our data analysis is provided pertaining to enrolment, retention, dropout rate, grade completion rate, based on primary data. We then report results from correlation analysis between various performance indicators and school-level and classroom infrastructure in various schools. Following the results from primary data, we summarise results from secondary data regarding access to schooling, gross and net enrolment rates (Section VI and VII). The final section summarises and points to policy implications for DPEP in the state of study.

II Description of DPEP

The District Primary Education Programme initiated in 1994, aimed to achieve the goal of universalisation of elementary education in India through district specific planning, with emphasis on decentralised management, participatory processes, empowerment and capacity building at all levels [Data from Ministry of Education, GoI 2001]. It consists of several interventions at the state, district, block, panchayat, and village levels.

Under DPEP, all states have established state project offices responsible for state level planning and implementation of the project. The state project offices work through a general council headed by the state's chief minister, an executive council headed by the state's chief secretary, state-level organisations such as State Council of Education Research and Training (SCERT), State Institute of Education Management and Training (SIEMAT), and other institutions invited to support the programme. At the district level, a separate project office headed by a district project officer is established to plan and implement district specific schemes suited to local conditions. Similarly, at the block and panchayat levels, DPEP has appointed block and cluster level coordinators. At the village level, a committee of people's representatives called as village education committees (VECs) is formed, headed by the village pradhan, and the head teacher of the school is its ex-officio secretary. At the village and school levels, DPEP interventions include but are not limited to the following: (i) Improved school infrastructure through construction of new buildings or extension of school building by providing additional class rooms, toilets; (ii) school contingency for improving classroom facility and up-keep of school building; (iii) introduction of more teachers, i e, at least two per school; and ensuring their better training; (iv) new and more scientific text books; (v) training and financial grant for preparing and using teaching-learning material for imparting experiential education; (vi) provision for non-formal education centres through which dropouts or late starters can be trained and mainstreamed; (vii) redesigning access to, and entrance of, schools to facilitate trouble-free movement, distribution of implements and appliances

to physically challenged students; (viii) emphasis on gender and social equity by encouraging SC, ST and girls to join schools; financial help to SC and ST children; (ix) facilitating continuance of primary schooling for school age children by providing early child care and education facilities near to/or in the school with the help of anganwadi workers belonging to the Department of Women and Child Development; and (x) community mobilisation through parent-teacher meetings.

Typically, cluster resource centre coordinators, block resource coordinators and VEC office-bearers have taken part in sensitising the community to send their children to schools.

III Review of Literature

Previous literature has examined the performance of government and primary schools (Singh and Sridhar, 2002, in Uttar Pradesh, India; Leclercq 2003 in Madhya Pradesh, India), demand for schooling (Sridhar and Singh, 2002, that studied UP schools), and the performance of DPEP (Sarangapani and Vasavi, 2003, who studied Karnataka's DPEP).

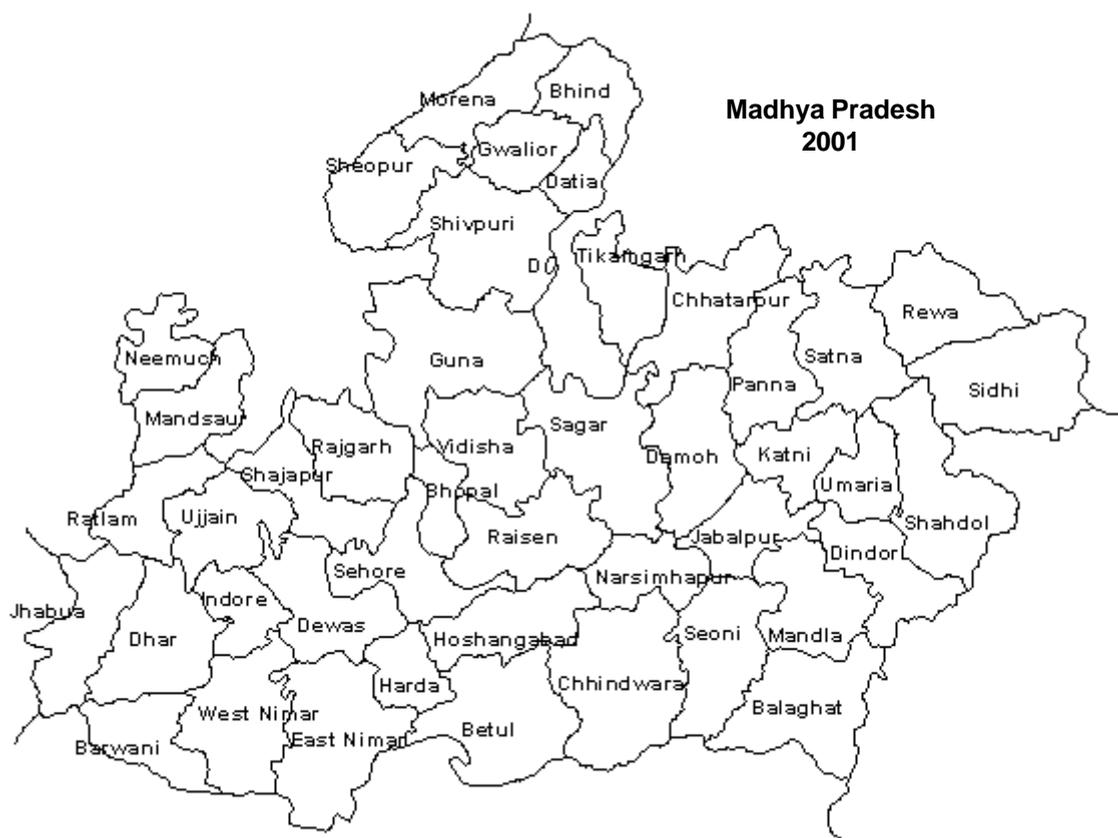
Sridhar and Singh (2002) examine differences between government and private schools by estimating demand for schools to determine factors that motivate choice of schools, in two districts in Uttar Pradesh, India. They find that demand for schools decreases with fee increases, which implies that lower income groups are excluded from private schools. Further, they find that learning achievement scores are on average higher for private schools. Their qualitative analysis showed that private schools had good infrastructure, discipline, teaching, and punctual teachers, consistent with expectations. They summarise implications for government schools.

Singh and Sridhar (2002) examine disparities across government and private schools with regard to enrolment and retention rates, and look at gender differentials in the above. This study finds a declining trend in enrolment in government schools and rising proportion of enrolment in private schools in UP and lower incidence of dropout in private schools. When enrolment trend by gender differentials and attendance rates are studied by school type, however, they find that government schools are more responsive to gender equity issues than private schools, lending support to the fact that governmental interventions such as DPEP continue to have an important role to play.

Leclercq (2003) presents the results of a field study of government schools in Betul, M.P., (one of the districts in the present study as well) and Dewas districts of MP. This study aims to document the functioning of government schools and to understand the impact of reforms on the development of private schools. The study finds that in the blocks studied, the government school system has been extended, with the reforms, however, not having made a decisive impact on their functioning. The study also finds, based on the field-work that poor quality is a crucial issue even for private schools which are not affected by the reform.

Sarangapani and Vasavi (2003) review the structure, functioning, impact and implications of DPEP in Karnataka. The study acknowledges that enrolment and attendance data in the EMIS are generally inflated, and are not very reliable, and data on special groups such as girls, SC and ST enrolment and attendance are not reported. Their field-level assessments are mixed, with several teachers citing improvements in infrastructure and innovations in teaching-learning methods being major contributions of the

Figure 1: District Map of Madhya Pradesh



Source: Census of India, website <http://www.censusindia.net/>

programme. Further, they find that the state has not paid enough attention to the decline of government schools in the urban poverty-stricken areas. They observe child labour also to be widespread in the state.

In general, primary data and research findings regarding the functioning of DPEP across states are mixed, and need further study. In this study, we make comparisons of DPEP performance using several indicators, social and gender equity in a couple of DPEP districts of MP, using one of them as a control group, based on primary data we collected at school-level, cohort and household-level.

IV Methodology and Sample Design

No detailed examination of the counterfactual has been done here. One advantage of the counterfactual approach is that one can reject the assumption that DPEP is responsible for the performance observed in the districts of study. We have not, however, done a counterfactual examination of DPEP. That is, no cross-sectional or time-series study to assess its impact, has been done. This means that we have not looked at either the pre-DPEP period (for a before-and-after treatment) or the non-DPEP (control group) districts, with which we can compare the findings from our study of post-DPEP period, DPEP districts only. We discussed the counterfactual with MHRD's senior officials at the very beginning of the project, but the MHRD had no more funding to offer to enable study of the counterfactual. The methodology was commonly designed by all the four IIMs that agreed upon

a common set of surveys, given the lack of counterfactual observational units. All our findings should be viewed against this observation.

Given the explicit lack of control groups (with no DPEP intervention), we were able to use a proxy approach. We selected two districts in MP, one with the highest female literacy, Betul and another with the lowest female literacy, Sidhi, as per the census records of 1991. The choice of female literacy as a criterion for selection of districts is consistent with that selected for implementation of DPEP in Phase I by the state. This approach has been adopted as to respond to a more limited objective of whether districts with lower literacy rates being able to perform better than their high literacy counterparts.

Table 1: Sample of Villages Chosen in the Districts of MP

Betul, MP	Sidhi, MP
Ballor	Bahera
Barkhed	Balhaya
Buchanwadi	Bhagothar
Dendu Pura	Chingavah
Dori	Dharmduari
Ghana	Duari
Godu Mandai	Jamuar
Hiradehi	Khamaria Khurd
Jamu	Kundore
Khari (Jetadhana)	Madila Khurd
Khari Gayawani	Panvaar
Majorwani	Pokhara
Pandol	Pondi
Sonaghati	Pujohi
Udhari Rayyat	Raipurva

Stratified circular systematic sampling design is used in each of the selected DPEP districts to select 15 villages. The villages, with a population of less than 100 were omitted in our study before selecting the sample of villages. The villages with a population of greater than or equal to 100 within each DPEP district were arranged in ascending order of their 1991 census population. Then, five villages from each district were selected circular systematically in the form of three independent sub-samples. In this way, 15 villages were selected from each district. Table 1 shows the villages that were selected from each district in the state, through this random sampling method.

The villages so selected have been subjected to an in-depth study of DPEP interventions. All the resident households, each with at least one child in the age group 5 to 13 years (target group of households), were surveyed if the number of households in a village was less than 100 (and population greater than 100, as indicated above). A total of 100 households were surveyed, if the number of households in a village was more than 100.¹ Proportional representation of various caste categories was made in the household surveys. That is, if SCs constituted 40 per cent of the village population, they also constituted 40 per cent of the sample. Further, all government primary schools located within the boundaries of the sample villages at the time of survey, were studied, for data on cohorts starting in various years, their grade completion, attendance and enrolment, consistent with our objectives.

Field Work

We closely worked with the Rajiv Gandhi Siksha Mission (RGSM) at MP. The schedule of visits to specific villages was decided by the study team after reaching the district headquarters. After gathering information from the district project office and interviewing district level officials, three independent teams undertook the in-depth study of villages, cluster, and block level interventions of DPEP. One district or state level official helped us in coordination and collection of data at district and sub-district levels.

Our field visits to Betul and Sidhi, MP, were respectively completed in January and February 2002. As we have explained in the section on methodology and sample design, we followed systematic circular sampling to choose 15 villages in the chosen districts of the various states. While systematic circular sampling helps in arriving at robust estimates, it provided a lot of challenges too to our field work, as our sampled villages were scattered randomly at large distances and varied directions.

The school staff was by and large cooperative, despite the difficulty in finding various records of seven years, over 1994-2001. In a few places, records were damaged or not available on the spot for the study. We could not get data from certain

districts for villages in our sample. In many schools, attendance data were not prepared in the form we required, thus it took enormous time to prepare attendance data.

For household survey, we employed local research assistants who were residents of the sampled villages or from nearby. The recruitment of local assistants helped to cut the costs of transportation for several persons required for the field work. The Community Resource Centres (CRCs) helped us in identifying local research assistants. We explained to the local assistants, the requirements of the survey and explained how to make each response entry in the survey.² On the basis of proportional representation of SC, ST and general population, either all households, or 100 households, if the total number of households was more than 100, were surveyed. In normal circumstances, one local research assistant surveyed 20 to 25 households in a day. Thus, on average, it took 4 to 5 man-days to complete a survey of 100 households in every village we sampled.

Data Collection

In order to respond to the objectives, both primary and secondary data were collected. Secondary data were obtained from National Institute of Educational Planning and Administration (NIEPA), National Council for Educational Research and Training (NCERT), State Project Office (SPOs), State Council for Educational Research and Training (SCERTs), State Institutes for Educational Management and Training (SIEMAT), and District Project Offices (DPOs). Annual reports published by state project offices for various purposes served as important sources of secondary data.

For results reported in this study, primary, cross-sectional and time-series data (from 1994-2001), data were collected from field surveys of households and (government) schools in the villages, cohort surveys from schools, and were aggregated at the village and district levels.

In the household survey, we obtained data on caste, religion, annual income, the number of family members, and their education. We also obtained from the household survey, data for each child in the age group 5-13, regarding their age, gender, schooling status, type of school, grades, completed in past five years, ability status, and reasons for not being in the school, if that was not found to be the case. We collected the following student related data from government school records to examine progress in student-related outcome measures: (i) enrolment by class (classes 1-5), gender and caste for the period 1994-2001; (ii) average attendance by class, gender, and caste for the period 1994-2001; (iii) cohort study of grade completion, repetition and dropout of the students starting class 1 in the years 1995, 1996, and 1997, and followed them till they reached class 5.

Table 2: Summary of Objectives, Required Data and Data Sources

No	Objective	Required Data	Data Source
1	To assess the progress made towards achieving the overall goals of DPEP, namely, providing access to primary education for out-of-school children increasing retention rate and improving the quality of education	School and classroom infrastructure, enrolment, dropout, and tracking of achievement (Grade completion)	Secondary data from DPO, SPO, cohort and household data, attendance details, household survey data on Income, occupation, caste and education of parents
2	To assess extent to which gender disparities and disparities between social groups such as SC/ST and others have been reduced in respect of enrolment, dropout rates and grade completion as envisaged in the programme	Sex-wise profile of enrolment, dropout rates, grade completion, indices of gender and social equity	Attendance details, cohort data, household, secondary data

Figure 2: Gender Differential in Enrolment, Betul, over Study Period

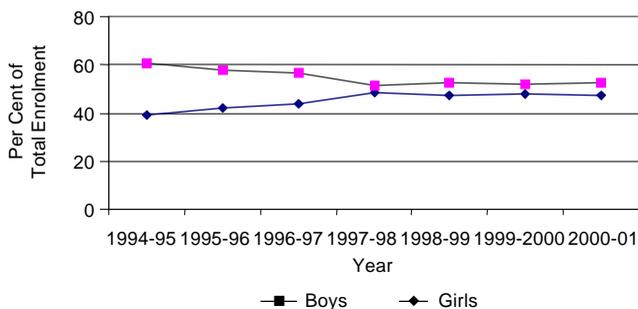


Figure 3: Gender Differential in Enrolment, Sidhi, over Study Period

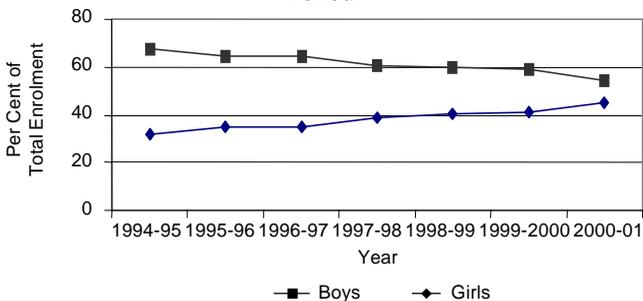


Table 2 summarises objectives of the study, required data to respond to these objectives, and the data sources from where data were obtained.

Profile of the State

In terms of land area and administrative structure, MP (undivided) is one of the largest states of the country, consisting of 45 districts. Figure 1 shows a detailed district map of the state.

Selected relevant socio-economic indicators as of 2001 of this state have been compared with those for the country, in Table 3. MP's female literacy made considerable strides, improving from roughly 30 per cent in 1991 to over 50 per cent in 2001. While all the states appear to have made several educational advances, it is necessary for us to disaggregate various components of their performance to examine implications for further DPEP interventions.

V Primary Data Analysis

In this section we present the findings from our field work pertaining to enrolment, attendance, dropout, gender and social equity, grades completed based on cohort and secondary data.

Enrolment according to Gender and Caste

In this section we present the progress made in the districts of study. The luxury of dealing with a large state like MP provided the liberty of comparison across districts having high (Betul) and low female literacy (Sidhi), enabling us to test whether we can expect lower female literacy districts to 'catch up' with their high female literacy counterparts. Further, taking into account a single state, also controls for a variety of factors such as institutions, structures, political climate, and social structures that can cause

outcome indicators such as enrolment, attendance and dropout, to vary across states.

Primary data regarding total enrolment of all children was collected over a period of 7 years starting from 1994-95 until 2000-01.³

The following assumptions were made in the analysis of available data: (i) the socio-political environment of the country and local environment have similar impact on the overall developmental process of the villages of the selected districts in the state; and (ii) variation in the population density and spatial distribution of villages in the districts will not have any impact on the outcomes of the DPEP programmes in the sample villages, since they are randomly selected.

Effect on Female Enrolment

The evidence we have collected is from all government schools we visited in the villages, and aggregated at the level of districts. Figures 2 and 3 show gender differentials in enrolment in the two districts of study. They show an increase of 8.17 percentage points in the enrolment of girls in the high female literacy district (Betul) over 1994-95 to 2000-01 while the low female literacy rate district shows an increase of 13.13 percentage points in enrolment over the same period. This shows that the rate of gain is better in the low female literacy district with regard to enrolment. The gain is higher in the low female literacy district as the starting enrolment there is lower than that in the high female literacy district. In terms of percentage change, the gain in the female-literacy district is (41 per cent) twice more than that in the high-literacy district which experienced a 8.17 percentage point increase (or a 21 per cent increase).

In the low female literacy district, Sidhi, in 1994-95, the overall enrolment of girls was 32.18 per cent against 67.82 per cent of boys while enrolment of girls increased to 45.31 per cent against 54.69 per cent for boys in 2000-01. This means the gap between the boys and girls that was 35.14 per cent points in 1994-95 has been reduced to a mere 9.38 per cent points in the year 2000-01 (Figures 2 and 3). Note that proportion of schools with no female teachers declined in the low female literacy district from 70 per cent in 1996-97 to a mere 45 per cent in 2000-01, directly as a result of DPEP intervention. This could be part of the explanation for increasing female enrolment.

The above finding is very significant in terms of justifying the relevance of DPEP programme for bringing more girl children to schools. The implications of this finding are that the programme facilities, duration and strategies have been successful in reducing the gender gap and can be used as a model for improving status

Table 3: Selected Socio-Economic Indicators of MP and All-India, 2001

Data	Madhya Pradesh	All-India
Total population	60,385,118	1,027,015,247
Male population	31,456,873	531,277,078
Female population	28,928,245	495,738,169
Density of population	196	324
Females per '000 males	920	933
Rural population in total population (per cent)	73.33	72.22
Total literacy (per cent)	64.08	65.20
Male literacy (per cent)	76.50	75.64
Female literacy (per cent)	50.55	54.03

Source: Official Website of Census of India.

Figure 4: Gender Differential in SC Enrolment, Betul

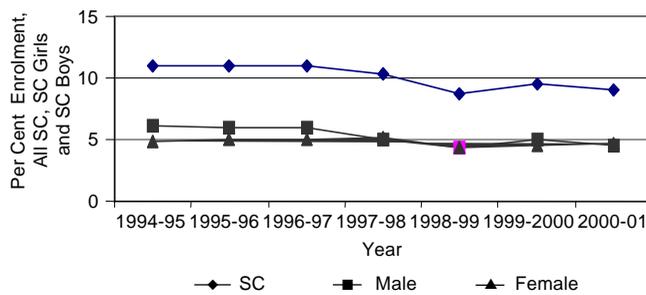


Figure 5: Gender Differential in SC Enrolment, Sidhi

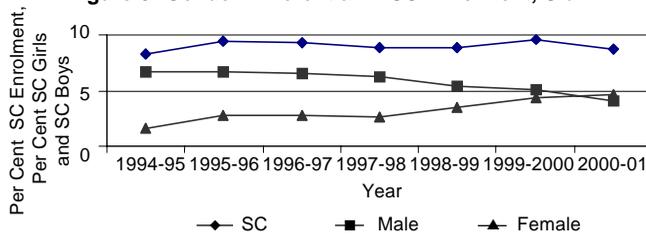


Figure 6: Gender Differential in ST Enrolment, Betul

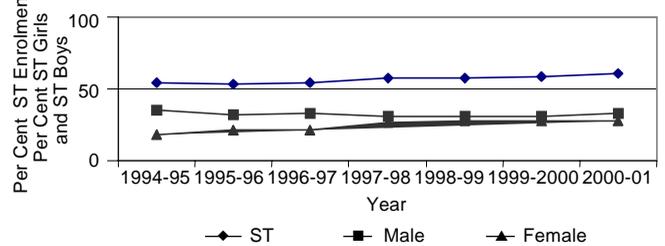
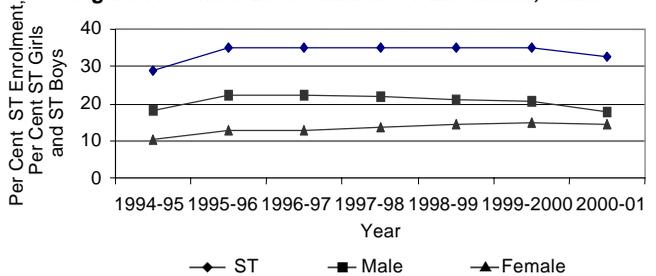


Figure 7: Gender Differential in ST Enrolment, Sidhi



of primary education in socio-educationally backward districts and states.

This finding shows that backward areas can be expected to catch up with others. One reason for this is methodological innovation. Low literacy areas, similar to the developing countries of the world, have some advantages of being latecomers to literacy. This is because they need not ‘reinvent the wheel’ again and can emulate the practices and processes adopted by other, higher literacy areas (e.g. universal literacy campaign) to catch up with them.

We use the index of gender equity (IGE) to assess the extent to which gender disparities in school enrolment have decreased.

IGE is defined as $100 \times \frac{\lambda_e}{\lambda_p}$, where λ_e refers to the share of

girls in enrolment in primary classes, and λ_p refers to share of girls in population in the age group of 6-11 years. A value of 100 for IGE shows perfect gender equity. An IGE value greater than 100 shows gender equity favourable to girls since it indicates that girls’ share in enrolment is greater than their share in the population.

Secondary data shows that the IGE for both the districts in MP is within the accepted limits (Table 4), although it is better for the high female literacy than for the low female literacy district. Again here, the low female literacy district’s increases in the IGE over the 1997-01 period are much steeper than one observes from Table 4 for the high female literacy district. This should be treated as positive sign of the impact of the DPEP programme, with the stated caveats.

Overall, despite the reducing gender gap in enrolment, we note that the proportion of boys continues to be higher than the share of girls in all the villages. This gender imbalance in the population at large is due to inadequate attention paid to female health (see data on females per 1,000 males, Table 3, for instance).

Status of SC Students

The trend of enrolment of SC students is not different from that for other students in the sample (see Figures 4 and 5 for trends in all SC, SC girls and SC boys’ enrolment in the districts).

These data show that the gender differential between SC girls’ enrolment and that of SC boys, is continually narrowing. The low female literacy district that started off in our study period having low female SC enrolment, gradually increased to match that of SC boys (Figure 5). In this low female literacy district, female SC enrolment jumped from 1.65 per cent in 1994-95 to 4.66 per cent in 2000-01. Could this be attributed to the intervention of DPEP, or, is it merely ‘catching up,’ is a question.

Consider this: if DPEP intervention could have ‘caused’ the performance in the low female literacy district, the same performance could not be replicated in the higher female literacy district, where SC girls’ enrolment that was only 4.85 per cent in 1994-95 declined to a further low of 4.64 per cent in 2000-01 (Figure 4). This simply means there was no increase in the proportion of female SC enrolment in seven years in the high female literacy district, Betul! This does lend support to the ‘catching up’ hypothesis rather than DPEP interventions.

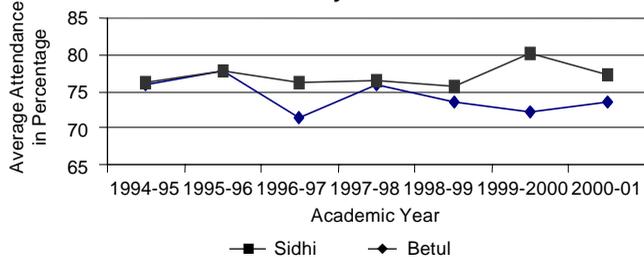
Status of ST Students

Overall, there was an increase in the enrolment of ST students in the two districts over the study period (Figures 6-7). Comparative analysis of the enrolment of ST boys and girls separately for each of the districts show interesting results. There is visible decrease in the enrolment of ST boys in both districts; ST girls’ enrolment has been slowly increasing in both. The increase in the enrolment of ST girls is much (49 per cent increase) higher in Betul in seven years (that is, increased from 18.58 per cent

Table 4: Gender and Social Disparities in MP Districts

Indicator	1997-98	1998-99	1999-2000	2000-01
Betul				
IGE	94.3	94.8	96	96.3
ISE SC	120	114.3	109.7	109.9
ISE ST	95.1	99.7	104.9	105.6
Sidhi				
IGE	77.5	84	88	91.1
ISE SC	108.9	115.7	120.3	120
ISE ST	87.7	93.6	94.3	93.4

Figure 8: Comparison of Female Attendance in MP Districts, over Study Period



in 1994-95 to 27.76 per cent in 2000-01, Figures 6 and 7) than in Sidhi, where it increased by only 39 per cent. Here, Betul appears to enjoy traditional advantages of a high female literacy district (e.g., greater number of female teachers) in attracting increasing ST female students in enrolment, more rapidly than its low female literacy counterpart.

However, the decrease in enrolment of ST boys is greater in Betul in a span of seven years than that in the low female literacy district (Figures 6 and 7). Holding total enrolment constant, a decrease or constant growth in boys' enrolment is indicative of more and more girls joining schools. However, if the goal is to universalise elementary education, then the objective should be to increase total enrolment.

Thus our data show that DPEP programme most likely facilitated (if not 'caused') the enrolment of girl students more than that of boys, which is an important social objective DPEP aims to attain. While it is an important social objective to increase female enrolment, the bottom-line is to increase total enrolment. It appears that so far, DPEP interventions have been one-sided and have focused on increasing female enrolment (all caste categories). If this were to be true, the spirit behind SSA would be lost.

DPEP and Social Development

The Index of Social Equity (ISE) is defined quite similar to IGE. ISE is defined in a similar way, $100 * \frac{\lambda_e}{\lambda_p}$, where λ_e refers

to the share of SC/ST enrolment in enrolment in primary classes, and λ_p refers to share of SC/ST in population in the age group of six to 11 years. This ratio adjusts enrolment data according to the proportion of a particular social group in the population. A score of more than 95 indicates near absence of inequities due to caste/tribal affiliation. A value of 100 for ISE shows perfect social equity. An ISE value greater than 100 shows social equity favourable to SC/ST students since it indicates that their share in enrolment is greater than their share in the population.

Table 4 presents index of gender and social equity for three years for the districts in MP, based on secondary data.⁴ The table suggests that Betul is more socially equitable than Sidhi and has maintained an edge over Sidhi in girl enrolment with a score of 96.3 in 2000-01; Sidhi has shown a better growth rate by reaching to 93.1, suggesting that more girls have joined schools during the project period. Both Betul and Sidhi have ISE favourable to SC students, suggesting that SC students are better represented in enrolment, than their share in the population. Again, Betul has better representation of ST enrolment than Sidhi that needs to bring more girl and ST children to school. Betul enjoys its traditional advantages here.

In understanding these results, remember, however, that ISE/IGE are useful indicators only when the population of SC/ST or girls is more than 5 per cent. A limitation is that the proportion of girls and the population SC/ST is not available from year to year. Therefore, results should be read with that limitation.

In fact, as was found in the cohort analysis, reasons for coming to school or dropping out are many; DPEP has made significant contribution in making socially deprived caste students reach school. Thus, while we believe that catching up in female enrolment by low female literacy areas with that of high literacy counterparts could be a natural, evolving, outcome DPEP interventions however have largely resulted in narrowing the social disparities (SC, ST with others) that existed in the pre-DPEP period.

VI

Trends in Attendance Rate

Attendance is an outcome variable of interest for school administrators. The assumption is that children coming to schools learn. In the present study we have collected attendance data from attendance registers of schools.

The results from comparison of attendance figures across the various districts in our study support the 'catching up' hypothesis. See Figure 8, which compares female attendance in the two districts of MP. It shows that although both started off in our study period with similar average attendance for female students, and continued with identical trends for a year, they diverged after that. While both the districts have a significant proportion of schools reporting a lower average attendance in the year 2000-01 when compared to 1994-95, the low female literacy district reported higher female attendance for all subsequent years in our study period, than the high female literacy district! Even when we look at ST student attendance, the low female literacy district in MP scores (although marginally) over the high female literacy district for both female and all children, as relatively higher proportion of schools reported 80 per cent or more as average attendance.

Non-SC and non-ST children have relatively better attendance rate than SC and ST children in both the districts we have studied.

There is a clear case for watching groups that have reported low average attendance in schools. Mid-day meal is one incentive already in place. For a quick overview of mid-day meal schemes in the various states and some implementation problems, see Sridhar and Singh (2003). School climate, vigil on absenting children by VEC members and community members, and greater parental co-operation, are necessary in increasing retention.

Dropout Rate according to Gender

Children who do not complete primary education in five years, would have either abandoned schooling (dropped out) or may be repeating in one or the other grade. We attempt to understand profile of dropouts – the grade at which they quit and the reasons for quitting, so that we can propose corrective steps, to prevent dropouts. It is obvious that children who quit at classes 3 or 4 may retain some literacy and numeracy when compared to those that quit during classes 1 or 2.

In the present study, we examined the incidence of dropout and variation across gender, if any. The source of our data was the attendance registers of seven years (1994-2001) maintained by government schools, and scholar registers used for maintaining

admission, progress and transfer or termination records. Data were obtained for three different cohorts starting class I from the years, 1995, 1996 and 1997, which were followed until they reached class 5 (see section on methodology), to calculate dropouts. Students who left without transfer certificate or without passing out class 5 were treated as dropout students. The dropout rate has been calculated as follows:

$$\text{Dropout Rate} = \frac{\text{No of dropouts in relevant class}}{\text{No of students starting in class I}} \times 100$$

The dropout rate was examined for three cohorts starting their class I in 1995, 1996 and 1997. We compare dropout rates across the two districts. Interestingly enough, we find that there are no dropouts (either male or female), in any cohort starting class I in 1995, 1996 or 1997, in any of the districts we study. Soon after class one is over, however, problems occur in all cohorts across districts. Dropout rates monotonically increase with class within all cohorts. One strongly suspects problems with curriculum in higher classes or in teacher communication to children.

In the high female literacy district, dropout rates for female students on average, are always higher than they are for male students, whereas in the low female literacy district, dropout rates are lower for female than for male students on average, for all cohorts, except 1996 (Tables 5-7). It is only in the 1996 cohort that Betul exhibits the traditional advantages of high female literacy (e.g., more female teachers) and Sidhi, disadvantages of low female literacy to begin with. In the 1996 cohort (Table 6), female dropout rate is lower than that for males on average in the high female literacy district, whereas in Sidhi, female dropout rate is higher than male dropout rate, on average. It does appear that 'catching up' in terms of reduction of female dropout has been made by the low female literacy district, in the 1995 and 1997 cohorts. Whereas in the 1996 cohort, DPEP may not have made significant impacts in reducing dropout rates of female students in the low female literacy district that continues to be a problem.

Careful examination of Tables 5-7 also reveals that the goal of less than 10 per cent dropout rate is yet to be achieved in the low female literacy district.⁵ One redeeming feature, however, is that more villages have been experiencing zero or close to zero dropout rates in classes 1 and 2, in both the districts.

VECs and parents need to keep a vigil on schooling habits of their children. There is a greater need to bring girls back to government schools, by increasing their attractiveness (e.g., recruitment of more female teachers). Remember that dropout rate calculated here implies dropout from government schools only, and does not refer to children out of school, as these children may have enrolled in private schools, recognised or unrecognised, without getting a transfer certificate, and would be counted as dropout. In any case, the lack of study of the counterfactual has to be borne in mind while interpreting these findings from the study.

The secondary data from Betul, suggested that a dropout rate of 9.34 per cent in 1994 had come down to 3.39 per cent in the year 2000-01, with dropout rate of 3.14 per cent for boys and 3.64 per cent for girls. The low female literacy district reported as low as 3 per cent dropout rate in 2000-01 and 2.6 per cent for boys and 3.5 per cent for girls in primary classes. It seems reasonable to assume that district level secondary

data reflect more or less similar phenomena as are available in the sample data as many villages in our sample showed zero dropout.

Even our household data suggest a low dropout rate when aggregated at the level of the districts. We strongly suspect that more and more children are shifting from government to private schooling. The government schooling systems are not able to retain children despite having trained teachers, good curriculum and a host of educational innovations in place. If so, we suggest that positive processes of private schools may be adopted in government schools, and that private initiative in education be encouraged if they meet certain specified standards.

Grade Completion Rate (GCR) by Gender

Grade Completion Rate (GCR) is an indicator of school efficiency. Grade completion is defined as the proportion of students that complete nth grade in n years, against the number of children

Table 5: Dropout Rates in 1995 Cohort across Districts
(Per cent)

		Betul (MP)	Sidhi (MP)
Dropout at class 1	Male	0.00	0.00
	Female	0.00	0.00
Dropout at class 2	Male	0.70	4.87
	Female	4.14	1.48
Dropout at class 3	Male	1.34	5.93
	Female	6.01	2.94
Dropout at class 4	Male	2.88	10.77
	Female	7.58	13.27
Dropout at class 5	Male	2.60	10.48
	Female	8.44	10.85
Average	Male	1.50	6.41
	Female	5.23	5.71

Table 6: Dropout Rates in 1996 Cohort across Districts
(Per cent)

		Betul	Sidhi
Dropout at class 1	Male	0.00	0.00
	Female	0.00	0.00
Dropout at class 2	Male	1.92	3.22
	Female	0.00	4.66
Dropout at class 3	Male	2.69	7.50
	Female	0.70	15.60
Dropout at class 4	Male	5.14	9.25
	Female	0.70	11.31
Dropout at class 5	Male	3.95	9.14
	Female	7.11	11.62
Average	Male	2.74	5.82%
	Female	1.70	8.64

Table 7: Dropout Rates in 1997 Cohort across Districts
(Per cent)

		Betul	Sidhi
Dropout at class 1	Male	0.00	0.00
	Female	0.00	0.00
Dropout at class 2	Male	0.00	2.63
	Female	1.67	0.00
Dropout at class 3	Male	1.68	8.61
	Female	2.93	9.45
Dropout at class 4	Male	3.01	9.83
	Female	3.36	2.99
Dropout at class 5	Male	3.87	13.00
	Female	4.10	8.22
Average	Male	1.71	6.81
	Female	2.41	4.13

at the beginning of the cohort. For example, grade completion rate for class 5 can be arrived at as follows:

$$\text{GCR} = \frac{\text{Number completing class 5 in a five-year period}}{\text{Total starting at the beginning of the cohort}} \times 100$$

In cohort analysis, we look at grade completion rate at classes 3 and 5, respectively completed in 3 and 5 years only. It is possible that repeating students may complete classes 3 and 5 in more than 3 and 5 years respectively, but such repeating students have been excluded in the GCR we report. Tables 8-10 summarise GCR by gender, for classes 3 and 5, for the three cohorts we have studied – cohorts starting class I in 1995, 1996 and 1997.

We can readily make certain observations regarding GCR based on cohort-level data:

(i) GCR increases monotonically with the cohorts we have studied (that is, on average, GCR is higher for the 1996 cohort than for the 1995 cohort).

(ii) On average, the GCR for male students is almost always higher than that for female students in all cohorts, especially so at class 3.

When we examine individual differences across states, and female students' completion at class 3 as well as class 5, we find that the low female literacy district always performs better than its high female literacy counterpart, supporting the 'catching up' hypothesis again (Tables 8-10). That is, GCR has increased most sharply in districts that had a low GCR to begin with. Could this be attributed to DPEP interventions or more the outcome of natural evolution? As a direct result of DPEP intervention, note that the proportion of students in schools without blackboards in the low female literacy district had declined by half, from 30 in 1996-97 to only 17 per cent in 2000-01. Considerable effort, however, needs to be invested to increase GCR both in Betul and Sidhi as it is well below 70 per cent for both the districts.

Performance and Infrastructure

In order to determine whether there is some relationship between school-level and classroom-level infrastructural inputs and performance, we examined various performance indicators such as enrolment, attendance, dropout, and GCR, by the infrastructure factors regarding which we collected primary data.

We classified school factors into two levels, Classroom Infrastructure (CRI) and School Level Infrastructure (SLI) variables. CRI scores were generated through addition of scores on all infrastructure specific to classrooms – availability of science kit, OBB (Operation Blackboard) kit, audiovisual facilities and TLM (Teaching and Learning Material) under DPEP. Similarly, SLI scores were generated through addition of scores on school-level infrastructure – type of building, total number of classrooms, rooms with furniture for teachers and blackboard, rooms with students blackboard, availability of drinking water, toilet in working condition, separate toilet for girls, water in toilet, electricity, boundary wall, playground, number of books per child in the library, first aid kit, sports equipment, and musical instruments. Correlations were computed between various outcome variables, CRI and SLI for both districts. We did not perform regressions as we did not have an access to all data on exogenous variables that explain enrolments. Further, econometric identification could be a problem if one were to estimate all performance measures.⁶ Regressions of performance-based measures such as enrolment, that explain the demand for schooling are not really new, and are found in Sridhar and Singh, 2002.

In Betul (MP) (Table 11), SLI is positively related with enrolment in all categories, i.e., SC, ST, boys', girls' and total enrolment, implying that schools with better infrastructure had higher enrolment. It is not clear, however, if this can be attributed to DPEP interventions. This is because, data from the RGSM on DPEP's contribution to infrastructure facilities show that it contributed to 42 per cent of the total number of primary school buildings in Betul district, with the remaining being contributed by EGS schools. The relationship between enrolment and CRI, however, revealed a surprising and negative correlation. Better CRI is correlated with reduced attendance of children in general (all categories). The possible explanation for this negative correlation is that schools with more enrolment did not care to maintain classroom teaching aids while newer schools had these facilities but fewer children were coming to these schools.

Table 8: Grade Completion in 1995 Cohort
(Per cent)

	Completion at Class 3		Completion at Class 5	
	Male	Female	Male	Female
Betul	61.06	56.64	42.82	39.38
Sidhi	73.23	56.63	51.05	39.19
Average	67.15	56.64	46.94	39.29

Table 9: Grade Completion in 1996 Cohort
(Per cent)

	Completion at Class 3		Completion at Class 5	
	Male	Female	Male	Female
Betul	66.74	60.98	42.82	45.71
Sidhi	70.32	67.04	55.93	56.18
Average	68.53	64.01	49.38	50.95

Table 10: Grade Completion in 1997 Cohort
(Per cent)

	Completion at Class 3		Completion at Class 5	
	Male	Female	Male	Female
Betul	69.18	59.47	38.93	38.28
Sidhi	70.19	67.04	52.44	52.48
Average	69.69	63.26	45.69	45.38

Table 11: Correlation of Outcome Variables with Classroom and School Level Infrastructure in Betul and Sidhi Districts

Variables	Betul		Sidhi	
	CRI	SLI	CRI	SLI
	r	r	r	r
Enrolment SC male	-0.06	0.66*	0.10	0.16
Enrolment SC female	0.03	0.69*	-0.35	0.43
Enrolment ST male	-0.16	0.66*	-0.03	0.44
Enrolment ST female	-0.18	0.64*	0.18	0.55*
Enrolment others male	0.14	0.62*	-0.12	0.36
Enrolment others female	0.01	0.50#	0.21	0.25
Attendance SC male	-0.45	0.26	-0.13	-0.06
Attendance SC female	-0.38	0.23	-0.16	0.39
Attendance ST male	-0.06	-0.17	-0.05	0.38
Attendance ST female	-0.27	0.08	-0.03	0.22
Attendance others male	-0.67**	0.11	-0.50#	0.06
Attendance others female	-0.63*	0.21	-0.39	-0.02
GCR male	0.22	0.02	0.78**	0.31
GCR female	-0.28	-0.17	0.10	-0.03
Dropout male	-0.04	0.13	-0.48	0.45
Dropout female	-0.22	-0.29	-0.27	0.29
Total enrolment	-0.04	0.84**	0.05	0.69**
Total male enrolment	-0.01	0.87**	-0.13	0.68**
Total female enrolment	-0.07	0.79**	0.25	0.62
Classroom infrastructure	1.00	0.06	1.00	-0.01
School infrastructure	0.06	1.00	-0.01	1.00

Note: #p<.10, *p<.05, **p<.01.

In the lower female literacy district of MP, total enrolment (Table 11), that of boys and girls, were positively related with SLI suggesting that better school infrastructure was associated with increase in enrolment. In Sidhi, DPEP may have contributed to better infrastructure, since it contributed to 77 per cent of all primary schools, according to data from the RGSM. CRI revealed a similar trend as in Betul although it was not statistically significant. Remember, however, that in correlation analysis, we are not trying to predict enrolment, given information on SLI and CRI, but are only interested in studying the strength or the degree of the linear association between SLI/CRI and various performance variables.

The results nevertheless suggested classroom and school level infrastructure might be important in creating an environment conducive for learning, but their pattern of relationship might be other than a simple linear one.

VII Access and Enrolment

Gross Access Ratio (GAR)

We examine if DPEP enabled better access to primary education among the districts we studied, in terms of the stipulated norms, set by the World Bank, based on secondary data available.

At the state level, prior to the intervention of DPEP, MP had a backlog of 30,000 accessless habitations. In predominantly tribal Betul, prior to commencement of DPEP in the year 1994-95, district educational officials had identified 758 access-less habitations having no primary educational institution within the stipulated one km radius. Within two years time the backlog has been cleared. By August 1998, MP had declared 100 per cent access to primary education through its innovative intervention of EGS, with its 22,141 primary schools and 11,686 EGS schools.⁷ The new institutions are so located that they cater to the schooling needs of unserved habitations. Thus 100 per cent GAR has been attained in Betul and Sidhi in the year 2000-2001, which is directly an outcome of EGS intervention. Table 12 shows that the contribution of DPEP to access is minimal in both the districts, when compared to that of EGS. Specifically, EGS may have had a larger impact in terms of access in the low female literacy district. Conscious interventions such as these in the districts we studied have helped enhancing quality of schooling and GAR.

GER and NER

Gross and net enrolment rates are the two most popular indicators for measuring progress toward universal enrolment. Both the indicators relate enrolment to age specific population. While GER uses the ratio of total enrolment (including all age groups) to population size in the school going age group (6-11 in the case of primary schooling), NER uses the ratio of enrolment in the age group 6-11 to population size in the school-going age group. GER is always higher or at most equal to the value of

NER, as is clear. The highest value of NER can be 100, whereas GER does not have an upper limit.⁸

District Information System for Education (DISE) data on Betul, MP, suggest that GER had always been more than 100 (except in 1999-2000), suggesting that a greater share of people outside the school-going age group were enrolled in school. NER data for 2000-01 available suggests that approximately 4.5 per cent children in the school-going age group are not in the school system in Betul.

In Sidhi, GER as per DISE data is quite low. Starting with 64 per cent in 1997-98, the district attained GER of 75 per cent in 1999-2000, which decreased to 51.4 per cent in the following year. However, Lok Sampark Abhiyan (LSA) 2000 data reveal a GER of 96.6, considering LSA uses data of NER, alternative schools, private and unrecognised schools in arriving at enrolment. Overall state level data also suggest increases in GER and NER.

This has implications for school recognition. If the objective of schools is to educate children, and more children are getting attracted towards private schools, it is better to recognise those schools, as long as they meet certain quality standards specified by the government (e.g., physical infrastructure and teachers). Further, we need to examine what factors attract children to private schools, and as far as possible introduce those factors in government schools to attract children (Sridhar and Singh, 2002, for instance).

Summary and Implications

Based on our field work and secondary data, we find that 'catching up' has indeed occurred across low and high female literacy districts of MP. In other instances, interventions such as EGS have played an important role in improving access to schooling. However, where social development and SC/ST enrolment/attendance is concerned, DPEP interventions appeared to have facilitated a positive role.

We note that MP started with an overall disadvantage on educational outcomes, but due to its proper planning and follow-up, DPEP has facilitated positively, enrolment, retention, and reduced dropout, especially of female, SC and ST students, with the stated caveats. However, there is an urgent need to bring out-of-school children to school and work on improving achievement and grade completion rate. Given that poverty and lack of motivation are some major causes of non-enrolment, unless the overall economic scenario improves, DPEP itself cannot be of much help. So DPEP and other similar programmes have to be viewed in the context of the overall economic and social development of the states. 

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Notes

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Table 12: DPEP's Contribution to Access in Phase-I Districts

District/State	New Primary Schools (DPEP's Contribution)	EGS (Including Alternative Schools)
Betul	111	408
Sidhi	210	1141
DPEP-I total (MP)	2020	11,686

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- 1 If the number of households in the target group was greater than 100 (and obviously population of village greater than 100), the following sampling method was followed to select 100 households belonging to the target group. Let V be the number of households belonging to target group in a particular village and it is > 100 . Then classify the target group households into the three social categories namely SC, ST and others. Let $V(1)$, $V(2)$ and $V(3)$ be the number of households belonging to SC, ST and other social categories respectively. The sample size allocated to SC category is 100 times $(V(1)/V)$. Similarly, the samples sizes to ST and others social categories are allocated. The required number of sample households from each social category is selected using simple random sampling without replacement. We ended with a total sample size of 1,200 to 1,500 households (in 12-15 villages) in each of the two DPEP districts we studied.
- 2 A token payment was made to each local assistant per survey completed.
- 3 In some villages schools were not in existence since 1994-95 and therefore data could not be produced in the tables.
- 4 In the primary data we collect for households, information on SC/ST and their proportion in population and that in school-going age for the sampled village, are not collected. We depend on secondary data to examine trend in ISE.
- 5 Remember that Tables 5-7 summarise only average dropout rates for districts.
- 6 Here we are faced with difficult choices such as: what are the factors that explain enrolment that do not affect attendance? Are there any factors that influence dropouts that do not explain enrolment?
- 7 Educational Guarantee Scheme (EGS) was launched in MP in 1997 acknowledging the child's right to primary education. Under EGS, the government gives a guarantee to provide primary schooling facility to children in a habitation where there is no such facility within a kilometer

within a period of 90 days of receiving a demand for such facility by the local community. The government guarantee includes the basic constituent of an EGS school: the teacher called Guruji in 1:40 teacher-pupil ratio, teacher training, free teaching learning material and an operational contingency grant. The EGS builds a three-way partnership on a decentralised basis through collaboration of the state government, local body/panchayat and the community. This is a cost effective, time-bound and community-centred model of primary education.

- 8 Since we do not have complete information regarding population of school-going children for the sample villages, we cannot discuss GER and NER at the village level, based on primary data we collect. Also note that GER and NER reflect data pertaining to enrolment in government and recognised schools only.

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