

# **Students' Achievement under MAS**

## **Appraisal in Phase-II States**

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Reader in Mathematics

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Reader in Education



**DPEP Core Resource Group**  
**National Council of Educational Research and Training**  
**New Delhi**  
**October 1999**

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**DPEP Core Resource Group**  
**National Council of Educational Research and Training**  
New Delhi  
October 1999

## FOREWORD

One of the concerns that does remain very dominant in the minds of the people in this country is the target of universalizing the elementary education. A target which was expected to be realised by the year 1960 still remains a distant dream. We are now pushing the 52nd year of our independence and we are still struggling to be able to make positive statement that we have achieved the goal which was expected to have been achieved thirty nine years ago. So many things have happened during this period of time. There is a new challenge and there is a new concern and a new dynamism which is being expressed that by 2006, the goal of the universalization of elementary education could probably be realised. Indeed, this requires considerable introspection, once again, as to what has not helped us to achieve this goal earlier and what is the new area of confidence that comes to us that we are so sure now that this goal would be achieved. These are some of the vital questions which need to be continuously staring us in the face.

In the recent past the Government of India have accorded unqualified priority to universalization of elementary education. The policy shifted its emphasis from enrolment per se to retention and achievement. With this thrust the educational planning is made contextual and local specific. Having realized the significance of contextuality for imparting education at the primary stage it was felt that the planning process needs to be based on disaggregated targets. To begin with it was decided that the district may be considered as a unit for planning and management. This 'home grown' idea was actually the basis of the emergence of the District Primary Education Programme (DPEP) in the year 1994. Until now the programme has covered over 176 districts spanning 15 states under its various phases. Prior to launching the programme in each state, the Baseline Assessment Studies (BAS) were conducted in all the project districts to generate the benchmark data on learning achievement. Such an exercise was carried out in the states of Andhra Pradesh, Himachal Pradesh, Gujarat and Orissa in the year 1996. The data collected under this exercise were subjected to in-depth analysis for the purposes of designing research based interventions. After a gap of three years another survey was mounted during the

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middle of 1999. The purpose of this Mid-Term Assessment Survey (MAS) was not only to ascertain both the adequacies and the inadequacies of the programme but also to apply mid course corrections so as to realise the desired results.

The present report brought out by the National Council of Educational Research and Training (NCERT), New Delhi is an outcome of the findings captured through the Mid-Term Assessment Survey. This document gives a detailed account of the status of students' achievement both in language and mathematics at the end of the initial and the penultimate stage of primary schooling. The study also gives a detailed description of a comparative assessment of students' achievement captured in 1996 with that of the one obtained during the recent survey. Besides, it also makes an attempt to highlight the differences in achievement in regard to gender and different social groups.

With the belief that research activities geared towards providing appropriate responses to practical problems that are being faced by the society are the need of the hour, I trust that the present volume will be of great value to all those who are engaged in accelerating the pace of primary education in the country. I would like to congratulate Prof. Ved Prakash and his colleagues for bringing out this volume in its present form.

Prof. J.S. Rajput  
Director, NCERT

October 30, 1999  
New Delhi

## PREFACE

Ever since independence, universalisation of primary education has been one of the top priority programmes of the Government of India. The nation is committed to increase allocation on the subject that might be compared favourably with those of the developing and even with the developed nations. Concerted efforts in the recent past have resulted in making our elementary education system one of the largest in the world. In this direction, a variety of centrally sponsored schemes have been under implementation and are at various stages. District Primary Education Programme (DPEP) that is in vogue since 1994, is a holistic programme to provide special thrust to universalization of primary education.

The DPEP is a pioneering approach that provides for contextuality coupled with decentralized planning and management. In the last five years the programme has covered over half of the student population across fifteen states in the country. Prior to anchoring the programme, Baseline Assessment Studies (BAS) were carried out in each project district. Such studies were conducted in the states of Andhra Pradesh, Gujarat, Himachal Pradesh and Orissa in the year 1996 when these states were covered under Phase II. Findings of these studies were utilized for designing and implementing research based interventions in these states. After a gap of three years, it was decided to conduct another survey so as to know the level of success in achieving the DPEP objectives. Consequently, the Mid-Term Assessment Survey (MAS) was conducted in the aforesaid states in the middle of the year 1999. Though the survey work was started concurrently in all the four states indicated above, results from the state of Himachal Pradesh could not be included in the present report as they were not available until the time the report was sent to the press.

The present volume is based on the findings of the MAS carried out in 13 districts spanning three of the four states covered under Phase II. The present document runs into seven chapters. Chapter I gives an overview on BAS and MAS and the design of the survey. Chapter II highlights the level of learners' achievement both in language and mathematics of classes I, II

and IV on the newly generated competency based achievement tests administered under MAS 1999. Chapter III provides for a comparative assessment of students' achievement on BAS tests conducted in the year 1996 as against the same test re-administered in the year 1999, subsequent to the MAS tests. Differences in achievement between boys and girls on MAS 1999 tests are captured in Chapter IV. Achievement gaps between urban and rural students on MAS tests are recorded in Chapter V. Chapter VI portrays differences in achievement between different social groups. The last chapter of the document highlights on intervention implications.

The present volume is the outcome of the collective leadership of several people. The research team is highly indebted to Prof. J.S. Rajput, Director, NCERT for the understanding and generous manner in which he allowed them to work singularly on this project for the last three months. The team gratefully acknowledges the support and guidance of Professor A.N. Maheshwari, Joint Director, NCERT throughout this project.

The team expresses its gratitude to Shri R.S. Pandey, Joint Secretary, Elementary Education, Department of Education, MHRD, Government of India for his continued support, guidance and encouragement. But for his unstinted support and guidance this massive task would not have been accomplished in the record time.

The State Project Directors and the Principal Investigators from the states who handled this massive operation rightfully deserve the highest level of appreciation

Thanks are due to the members of the administrative staff, Mrs. Vipin Basrar, Mr. N. Panicker, Mr. A.P. Kumra, Mr. Parash Ram Kaushik, Mrs. Kalika Sundriyal, Mr. Keshwa Nand and Mr. Ajay Singh for their tireless efforts in processing and handling of the text.

It is hoped that the present volume will be found more useful and acceptable to educational administrators, curriculum planners, researchers and importantly to field functionaires

Ved Prakash  
Professor and Head  
DPEPCRG, NCERT

October 30, 1999  
New Delhi

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## EXECUTIVE SUMMARY

India has made remarkable strides in the expansion of primary education during the post independence period. Spectacular hike has been witnessed in terms of expansion of schools and increase in student enrolment. Ironically, the country has the world's largest number of illiterates. Besides, inter-regional disparities, wide gaps between enrolment of boys and girls, urban-rural divide, pressing demands of the weaker sections of the society alongwith the spin-off of problems of ever growing population continue to plague the system and have been a constant cause of concern for policy planners. Though the nation has made concerted effort in the direction of realising the goal of universalizing primary education, it still remains a distant dream.

The National Policy on Education (NPE), 1986 and its Programme of Action (POA), 1992 accorded an unqualified priority to universalization of elementary education. This policy shifts the emphasis from enrolment per se to enrolment as well as retention and achievement. The policy received a further impetus as a consequence of the declaration of the Jometin World Conference which called upon the countries to take effective steps for achieving "Education for All" by the year 2000 A.D.

A number of programmes were launched by the countries that were languishing in attaining the goal of education for all. India took up the challenge of universalizing primary education with greater focus on contextuality and disaggregated targets and decentralized planning and management. This gave birth to the District Primary Education Programme (DPEP) in the year 1994. To begin with, the DPEP was launched in 42 districts spanning 7 states under Phase-I. Since then the programme has been extended to several other states under different phases.

Prior to the commencement of the DPEP in Phase-II states, Baseline Assessment Studies (BAS) were carried out in 1996 in all the project districts with a view to ascertaining the benchmark of the existing level of students' achievement in language and mathematics at the end of initial stage and penultimate stage of primary schooling. Findings of the BAS were used to designing various intervention strategies. In order to study the influence of these interventions

on students' achievement, another survey by the name Mid-Term Assessment Survey (MAS) was mounted concurrently in the middle of the year 1999 in all the project districts belonging to the states of Andhra Pradesh, Gujarat, Himachal Pradesh and Orissa. However, the present report is based on the findings of the MAS carried out in 13 districts spread over three states, for the results from the state of Himachal Pradesh were not available until the report was sent to the press.

The MAS was conducted in the year 1999 by using a multistage stratified random sampling technique. The tests used under MAS were different from those used under BAS in 1996 and were developed by the Ed.CIL.

The purpose of the current achievement survey was to measure the average performance of students' achievement on the newly developed MAS tests in language and mathematics at the end of class I and classes III and IV. The study also made an attempt to make a comparative assessment of students' achievement on BAS tests administered during the initial survey in 1996 with that of students' achievement on the same set of tests re-administered to the students of 10 schools that were randomly selected from amongst the sampled schools of MAS 1999. Besides, the study also attempted to compare the differences in students' achievement on the MAS tests in regard to gender and social groups.

The present study is based on the findings gathered from the data of three DPEP Phase-II states. The MAS data covered 17,320 students, 1,931 teachers and 640 schools spread over 13 districts across three DPEP Phase-II states. A cursory glance on the results of average performance confirms the predominant influence of the element of contextuality that prevails across the states.

In the state of Andhra Pradesh, the average achievement of class I students has ranged from 69.67 percent to 82.45 percent in language and 74.74 to 85.87 percent in mathematics. Warangal district has taken the lead by crossing 82 percent in language and 85 percent in mathematics. In Gujarat, the average performance has ranged from 65.10 percent to 75.94 percent in language and 63.15 percent to 75 percent in mathematics. In Gujarat, Panchmahal's

has captured the top position by touching 75 percent mark in both the subjects. In Orissa, the achievement in language has ranged from 65.19 percent to 88.80 percent while in mathematics it has varied from 46.59 percent to 85.06 percent. Dhenkanal district has taken the lead in both the subjects by crossing 88 percent and 85 percent levels in language and mathematics respectively. The analysis has revealed that the pattern of growth in language and mathematics is quite sequential in all the three states. The distribution of scores for class I achievement has covered all the ranges between 0 and 100 in both the subjects. However, the concentration of scores has been less in the lower ranges and more in the top ranges, which has produced negatively skewed distributions in both the subjects across the states.

The average achievement of class III students in the state of Gujarat has not been so encouraging both in language and mathematics. In language the average performance has ranged from 38.5 percent to 53.74 percent and in mathematics from 31.97 percent to 47.32 percent. While the district Panchmahals has crossed 50 percent mark in language, none has crossed this mark in mathematics. Dangs has occupied the top position in mathematics achievement. The distribution of scores for class III achievement has also covered all the ranges between 0 to 100. Unlike in class I, in class III the concentration of scores has been found to be in the middle ranges both in language and mathematics.

The average performance of the students of class IV in language has been found to be better than the performance of students of class III. While in Andhra Pradesh the achievement range has varied from 53.13 percent to 61.67 percent, in Orissa it varied from 44 percent to 63.80 percent. As against this, the performance in mathematics has not been so good, more so in the state of Orissa. In Andhra Pradesh, the average performance has varied from 40.06 percent to 52.34 percent and in Orissa from 19.15 percent to 22.58 percent. In Andhra Pradesh, Vizianagaram has captured the ace position in both the subjects. The distribution of scores has corroborated the above analysis. None of the students in the state of Orissa has touched 50 percent mark in class IV mathematics.

It is evident from the analysis of results that students have displayed better performance at the end of the initial stage than the penultimate stage of primary schooling. It signifies that the pedagogical renewal process which under DPEP envisages improving teaching learning process from the beginning classes has produced better results and that it will perhaps take some more time before such results are noticeable at the penultimate stage.

The spread of achievement scores covering all the ranges both in language and mathematics at class I and IV and in language at class III signifies that organisation of remedial programmes for low achievers and enrichment programmes for average achievers may increase the levels of learning.

A comparison of students' achievement on the BAS tests administered during 1996 and in 1999 has revealed that in class I language, 10 out of the 13 districts have exhibited significant hike in students' achievement. While in one district the hike in achievement has been more than 25 percent, in 7 districts it has ranged from 10 to 25 percent. In class I mathematics, 11 out of the 13 districts have displayed significant hike in students' achievement. Of them, in 4 districts the hike has crossed 25 percent mark and in 5 districts it has ranged from 10 to 25 percent.

A comparison of achievement of class III students on the BAS tests administered in 1996 in Gujarat with that of the same test re-administered in 1999 has not revealed any significant improvement in both the subjects. Instead, significant decline has been observed in Banaskantha district in language and in all the three districts in mathematics. This requires an in-depth analysis of the students' achievement both in terms of the competencies being taught at class III level and the factors attributing to declining performance of students.

A comparison of students' achievement on BAS tests administered in 1996 and in 1999 has revealed that all the districts in Andhra Pradesh have shown positive trends in class IV language, of them, three have shown significant improvement ranging from 9 to 16 percent. In Orissa, three districts have shown positive trends, of them, two districts have displayed significant improvement in language achievement that ranged from 15 to 17 percent. In mathematics, all the districts of Andhra Pradesh have portrayed significant improvement in

students' achievement in class IV that ranged from 9 to 17 percent. In Orissa, all but one districts have shown positive trends, of them three have displayed significant improvement ranging from 5 to 16 percent.

It may be worthwhile mentioning here that the trends of improvement in students' achievement in Phase-II states are almost similar to that of the trends obtained in DPEP Phase-I states during MAS 1997.

An analysis of results reveals that the DPEP goal of reducing the differences in achievement between boys and girls in class I on MAS tests in both the subjects to less than 5 percent has been achieved in 11 out of 13 districts in three states. In class III, genderwise differences in achievement have been overcome in all the districts of Gujarat both in language and mathematics. Differences in achievement between boys and girls in class IV have been reduced to less than 5 percent in all the districts in language and all but one district in mathematics. The existing differences in achievement have found favour with girl students in a number of cases, more so in language.

While comparing the differences in achievement between urban and rural students, it may be pertinent to mention that in Gujarat areawise dichotomy existed only in two out three districts, namely, Banaskantha and Panchmahals. The DPEP goal of reducing the differences to less than five percent between urban and rural students in class I has been attained in 6 out of 12 districts in both the subjects. In class III both the districts have laid claim to realising the DPEP goal in language and one of the two districts in mathematics. In class IV, the differences in achievement between urban and rural students have been reduced to less than five percent in 6 out of 10 districts in language and in 8 out of 10 districts in mathematics. Some of the existing differences find favour with the rural students.

A close examination of differences in achievement between SC and Others in class III reveals that 8 out of 12 districts in language and 9 out of 12 in mathematics have realised the DPEP goal. Differences in achievement between SC and Others in class III have been reduced to less than five percent in two out of three districts both the subjects. In class IV, the differences

in achievement between SC and Others have been reduced to less than five percent in all the ten districts in language and in all but one district in mathematics.

The DPEP goal of reducing the differences to less than five percent between ST and Others has been realised in 8 out of 12 districts in language and 6 out of 12 districts in mathematics in class I. In class III, this goal has been attained in both the districts in language and in one of the two districts in mathematics. In class IV, the goal of reducing the differences in achievement between ST and Others has been achieved in 8 out of 10 districts in language and in 7 out of 10 districts in mathematics.

In those districts where students' performance is found to be exceptionally good, sustained efforts are required to maintain the tempo of progress. Vigorous intervention efforts may be made to boost the performance of students in those districts that have displayed average performance. Districts displaying poor performance warrants district specific research based interventions.



# CHAPTER - I

## INTRODUCTION

The District Primary Education Programme has evolved into a major initiative to realising the goal of universal primary education in the country. A humble beginning was made in the year 1994 by launching the programme in 42 districts spanning over seven states under phase-I. Since then the programme has covered over 176 districts spread over 15 states under different phases. One of the significant purposes of this programme has been to accelerate the pace of universalization of primary education by invigorating the primary education system in the country. The essence of the programme is that it provides for contextuality. It also emphasises on capacity building right from top to grassroots level functionaries. The basic premise in it is to create an edifice that is replicable, sustainable and cost effective. The programme aims at fulfilling the objectives that are listed as under:

- to reduce differences in enrolment, dropout and learning achievement among gender and social groups to less than five percent,
- to reduce overall primary dropout rate for all students to less than ten percent,
- to raise average achievement levels by at least 25 percent over measured baseline levels and ensuring achievement of basic literacy and numeracy competencies and a minimum of 40 percent achievement levels in other competencies by all primary school children,
- to provide, according to national norms, access for all children to primary education classes (I-V), i.e. primary schooling wherever possible, or its equivalent non formal education

The DPEP has traversed a long distance within a span of five years. It has given fresh impetus to the process of universalising primary education be it related to enrollment and retention of children, development of instructional material, training of teachers, assessment of learners or be it related to creation of infrastructure. Interestingly, issues related to these aspects

have received local specific treatment under DPEP. As a consequence of that one can notice some perceptible changes in the system.

During the second phase of the DPEP, the programme was extended to seventeen districts in the states of Orissa, Gujarat, Andhra Pradesh and Himachal Pradesh. Prior to launching the programme in these states, Baseline Assessment Studies (BAS) were carried out in all the seventeen districts. The purpose of this study was to ascertain the level of students' achievement in language and mathematics both at the end of initial stage and penultimate stage of primary schooling. This was fairly a giant exercise covering over 17,249 students, 1863 teachers and 688 schools. The BAS was by itself a unique proposition after the earlier national studies on students' achievement carried out in 1965-66 in mathematics (Kulkarni, 1970), in 1990 both in language and mathematics by the NCERT (Shukla et al 1994), again in 1994 in the same subjects by the NCERT for Phase-I states (Jangira et al, 1995). These studies generated a wealth of data and the results of that were used for planning intervention strategies.

### **Mid-Term Assessment Survey**

The programme implementation in these states has been in motion for the last three years. As per the stipulation of the World Bank Report No. 13072-page 42, para 3.23 (1), November, 1994, the assessment studies in all these states are to be carried out in all project districts during the third and the sixth year of the project. Second round of assessment surveys carried out under DPEP are more commonly known as Mid-Term Assessment Survey. A detailed account of the Mid-Term Assessment Survey conducted in the aforesaid states is given as under:

The exercise of conducting the Mid-Term Assessment Survey (MAS) was undertaken with a view to identifying the adequacies and inadequacies of the DPEP interventions. It was hoped that the findings of the MAS would also highlight the weak links, if any, and suggest corrective measures. The Mid-Term Assessment Survey was undertaken with the following objectives:

1. To measure the average performance of students' achievement on the newly generated competency based achievement tests in language and mathematics at the end of class I and at the end of penultimate class of primary schooling.

2. To compare the average performance of students' achievement on the BAS tests administered during the initial survey in 1996 with that of students' performance on the same tests readministered during MAS in 1999.
3. To compare the achievement differences in regard to gender and social groups on MAS tests.
4. To study the effect of variables like home, school and teacher.

The scope of the study report encompasses the first three general objectives in entirety and the fourth one partially.

### **Design of the Survey**

Normative correlational survey design was employed for conducting the Mid-Term Assessment Survey.

### **Population**

The MAS was targeted to cover 17 districts covered under DPEP Phase II in the states of Andhra Pradesh, Himachal Pradesh, Gujarat and Orissa.

### **Time**

The survey work in all the aforesaid states began in early September and continued until middle of October, 1999.

### **Tools**

Following tools were employed for conducting the mid-term survey:

1. Achievement tests both in literacy and numeracy for class I students
2. Achievement tests both in language and mathematics for classes III/IV students
3. School Record Schedule
4. Teachers' Schedule
5. Student Present Schedule
6. Field Notes
7. Training Manual
8. Field Handbook

It is pertinent to mention here that the achievement tests based on the competencies of classes I and IV were administered at the beginning of the session on to the students of Classes II and V respectively in the states of Himachal Pradesh, Andhra Pradesh and Orissa. In the state of Gujarat the tests based on the competencies of classes I and III were administered at the beginning of the session on to the students of classes II and IV respectively. Instead of providing monumental data on item parameters and reliability of all the conjugations of tests for all the states, an exemplar information districtwise in respect of the states of Andhra Pradesh and Orissa are given in Annexure A1 & A2 respectively.

### **Sampling Design**

Multistage stratified random sampling technique was employed for the selection of various constituents of the MAS.

### **Target Population**

The target population used in the MAS is given as under.

#### **Schools**

All Govt. and Govt. Aided Primary Schools including primary sections (I-IV/V) attached to upper primary/secondary/senior secondary schools.

#### **Teachers**

All teachers including the Head teacher.

#### **Students**

- i. All students at the end of the initial stage of primary schooling
- ii. All students at the end of the penultimate stage of primary schooling (III/IV).

Various steps involved in the selection of total number of schools, selection of number of urban and rural schools, selection of blocks, selection of urban areas, selection of schools from rural and urban areas, selection of students and teachers are given as under

## **Step I**

### **Total number of schools selected for the survey**

10% of the total number of government and government aided primary schools including primary sections attached to upper primary/secondary/senior secondary schools having classes I to IV/V were selected in each project district, subject to a maximum of 50 schools.

## **Step II**

### **Number of Schools selected from the Urban and Rural Sectors**

The schools decided for the survey under step I were divided proportionately on the basis of the total number of urban and rural schools in the district subject to a minimum of 10 schools from the urban area.

## **Step III**

### **Selection of Blocks**

While selecting the blocks, the urban areas, if any, were excluded from the blocks. All blocks were selected if the total number of blocks was upto 4. If the total number of blocks was more than four, two separate lists of tribal and non tribal blocks (arranged alphabetically) were prepared. Subsequently, from these two lists, four blocks were selected proportionately and randomly with a minimum of one block from the tribal list.

### **Selection of Urban Areas**

Prior to selecting the urban areas, all the urban areas were arranged alphabetically. All the urban areas were selected if the total number of urban areas was upto 3. If the number of urban areas was more than 3 then only 3 areas were randomly selected

## **Step IV**

### **Selection of Schools**

#### **Rural Schools**

Schools were proportionately selected from each sampled block using the table of random numbers after preparing a list of government and government aided schools.

## **Urban Schools**

Schools were proportionately selected from each sampled urban area using the table of random numbers after preparing a list of government and government aided schools.

Besides, a replacement list of 10 schools in the proportion of rural and urban number of sampled schools was also prepared for meeting out any exigencies.

## **Step V**

### **Selection of Students**

#### **Class I**

One section was randomly selected wherever the number of sections was more than one. All the students of this section were selected if the number of students was 20 or less than 20. If the number of students was more than 20, the boys and girls were alternately arranged using the class register and then 20 students were finally selected using random start.

#### **Classes III/IV**

One section was randomly selected wherever the number of section was more than one. All the students of this section were selected if the number of students was 30 or less than 30. In those cases where the number of students was more than 30, the boys and girls were alternately arranged using the class register and then 30 students were finally selected using random start.

## **Step VI**

### **Selection of Teachers**

Five teachers including the Head Master/Head Teacher were selected for the study. Of them, one was the head teacher. The second teacher was the one who taught the sampled students of class I. Third teacher was the one who taught the sampled students of Class III/ IV. If there were separate teachers teaching language and mathematics to the students then both were included in the sample and the fifth teacher was randomly selected from amongst the remaining teachers, preference was given to the lady teacher. In those schools where the language and the mathematics teacher happens to be the same person both the fourth and the fifth teachers were randomly selected from amongst the remaining teachers.

## **Overview of the Tests Used in BAS & MAS**

It may be pertinent to mention here that the tests employed under MAS 1999 were different from those used under BAS 1996 and that these new tests employed under MAS were developed by the Ed.CIL. A broad classwise outline of the tests used under both the BAS and the MAS is given as under and their analyses are provided in Annexure B.

### **Class I Language Tests BAS & MAS**

The test in language used under BAS comprised a set of twenty items. Of them, the first set of ten items were devoted to the recognition of alphabets and the second set of ten items to recognition of words. Out of these ten words only one word involved the recognition of more than one Matra. The test required the reading of the alphabet and the words.

The MAS test in language also contained twenty items, but all these items were devoted only to the recognition of words. Out of these twenty words, there were as many as ten words having more than one Matra. The test warranted the recognition of the picture and reading of a set of four given words and recognising the word that would associate with the picture.

### **Class I Mathematics Tests BAS & MAS**

The mathematics test under BAS consisted of fourteen items based on four competencies. The mode of its conduct was individual administration where the examinee indicated the answer.

The MAS test in mathematics contained twenty items which measured as many as ten competencies inclusive of the four competencies that were covered under BAS test. The mode of its conduct was also individual administration both oral and written.

### **Class III Language Tests BAS & MAS**

The language test under BAS had forty four items divided into part one and part two. Under part one there were twenty items of word knowledge while in part two, there were twenty four items on reading comprehension. It was a group test.

The test under MAS covered sixty five items in language divided into two parts namely part one and part two. Part one had thirty items under word knowledge and part two had thirty five items under reading comprehension.

It may be mentioned here that the words and the passages used under BAS & MAS tests were different.

### **Class III Mathematics Tests BAS & MAS**

The BAS test in mathematics consisted of forty items measuring thirty four competencies while the MAS test with equal number of items measured only thirty competencies. In the MAS test, of thirty competencies, there were thirteen competencies that were common with the BAS test and the rest were different. The MAS test had items based on four digit numbers.

### **Class IV Language Tests BAS & MAS**

The language test under BAS comprised eighty four items broken down into part one and part two. Part one had forty items on word knowledge while part two had forty four items on reading comprehension.

The MAS test had seventy items split into part one and part two. Part one had thirty five items under word knowledge and part two had thirty five items under reading comprehension. The MAS test had a different set of words and comprehension passages from that of the BAS tests.

### **Class IV Mathematics Tests BAS & MAS**

The mathematics test under BAS had forty items measuring twenty six competencies. The MAS test also had forty items but measuring twenty five competencies. In the newly constructed MAS test, eighteen competencies were common with that of the BAS test and the rest were different.

### **Strategy for the conduct of MAS**

The conduct of the MAS was a shared responsibility between the NCERT and the state. The NCERT in its role of the nodal agency developed the design, instruments, framework of data



analysis and other complementary material. Besides, the NCERT took upon itself the responsibility of conducting the training of Master Trainers of all the seventeen districts across the four states. Master Trainers were identified from amongst the faculty of the DIETs and the SCERTs. By and large these Master Trainers were selected from the project districts and they were entrusted with the entire responsibility of conducting the training of the Field Investigators besides the collection and scrutiny & batching of the data under the overall supervision of the Principal Investigator. All these steps were meticulously planned and executed with a view to ensuring both the authenticity and the quality of the data. The NCERT also extended academic assistance to the states on demand. All the documents employed in the conduct of the MAS except the achievement tests were developed by the NCERT and presented for clearance before the National Advisory Committee on Surveys constituted by the Department of Education, Govt of India.

### **Test Administration**

As mentioned earlier a set of newly generated competency based achievement tests was employed for assessing students' performance under the MAS. Since these tests were different from the earlier tests used in the initial survey (BAS), they were used only for assessing the average performance of students and also for finding achievement gaps between gender and social groups in the present context in all schools sampled under MAS. However, in order to ascertaining the hike in students' performance after a period of three year of DPEP interventions, the same set of tests that were used during the initial survey in the year 1996 were readministered subsequent to the MAS tests to the students of ten randomly selected schools out of the total number of sampled schools in each project district. The initial tests were administered to the same set of students of the ten selected schools who had already attempted new tests under MAS.

### **Data Collection**

The data under MAS were collected by the Field Investigators under the direct monitoring of the Master Trainers and overall guidance of the Principal Investigator in each state

The batching and the scrutiny of the data were carried out at two levels, one, at the district level and two, at the state level before it were subjected to statistical analyses.

The present report is based on the analyses of data comprising 17,320 students, 1,931 teachers and 640 schools spanning over 13 districts across three DPEP Phase-II states. The data from the state of Himachal Pradesh could not be included in the report because of the non-availability of the complete data from the state at the time of going this volume to the press. A detailed account of statewise sample is presented in Table 1.1.

Table 1.1: Statewise Distribution of Total Sample

S.No.	State	No. of Districts	No. of Schools	No. of Students		No. of Teachers
				Class I/II	Class III/IV/V	
1	Andhra Pradesh	5	250	3650	3868	822
2	Gujarat	3	140	2107	2153	381
3	Orissa	5	250	2739	2803	728
Total		13	640	8496	8824	1931

### Data Analysis

The data were analysed with a view to assessing the current status of students' achievement on newly generated competency based achievement tests in language and mathematics administered at two levels namely, at the end of the initial stage and the penultimate stage of primary schooling. The achievement scores obtained on these tests were also used for preparing the ogives.

The data were also subjected to making a comparison of BAS 1996 results with that of the results obtained on the same tests readministered in the year 1999. Besides, the data were also analysed to finding out the achievement gaps on MAS tests in respect of gender and social groups.

Keeping in view the analysis plan and in order to ensure the uniformity and compatibility across the states a "Framework of Analysis of the Data of Assessment Surveys" was developed by the DPEP Core Resource Group of the NCERT and distributed amongst the states. The Framework provided for not only the detailed analysis of the study report but also guidelines for the chapterisation of the report.

## CHAPTER - 2

# STUDENTS' ACHIEVEMENT ON MAS

This chapter provides for students' achievement in classes I and III/IV on the newly generated competency based achievement tests both in language and mathematics administered under the Mid-Term Assessment Survey. It gives a detailed account of students' performance in terms of mean percentage and standard deviations besides distribution of frequencies and cumulative frequency against different intervals ranging from 0 to 100.

### 2.1 Mean Percent of Achievement of Class I Students

Table 2.1 portrays the performance of class I students displayed during MAS 1999.

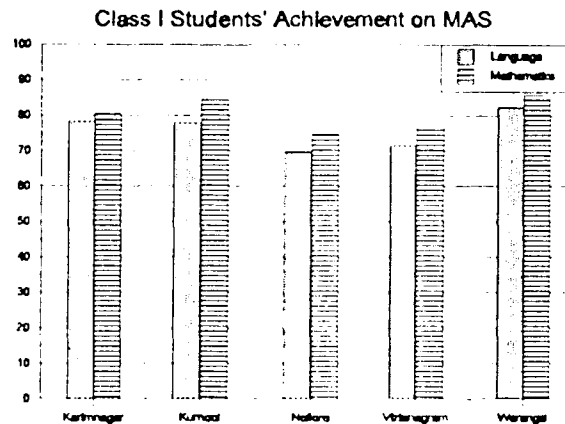
Table 2.1. Mean percent of achievement of class I students in language and mathematics on MAS

State	District	Language			Mathematics		
		N	M%	SD	N	M%	SD
Andhra Pradesh	Karimnagar	763	78.28	21.84	761	80.61	19.25
	Kurnool	814	78.03	24.46	817	84.52	19.82
	Nellore	660	69.67	30.43	663	74.74	26.26
	Vizianagaram	669	71.52	26.54	670	76.51	24.38
	Warangal	744	82.45	18.97	758	85.87	20.41
Gujarat	Banaskantha	806	65.10	27.90	803	63.15	29.80
	Dangs	499	68.10	24.75	500	71.05	27.70
	Panchmahals	800	75.90	21.55	796	75.00	23.45
Orissa	Bolangir	587	72.07	23.85	587	59.52	27.75
	Dhenkanal	705	88.80	17.00	705	85.06	18.25
	Gajapati	555	77.91	20.95	555	46.59	41.70
	Kalahandi	481	74.81	25.25	481	64.90	26.90
	Rayagada	411	65.19	32.45	411	66.22	32.45

The performance exhibited by class I students both in language and mathematics across the three states is shown statewise in the following paragraphs

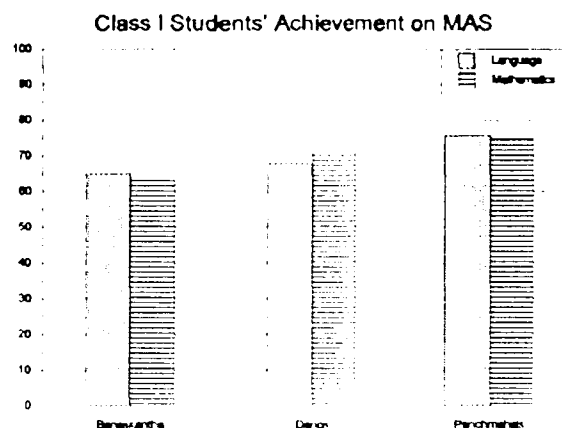
### 2.1.1 Andhra Pradesh

Students' achievement in language in class I in the five districts of Andhra Pradesh varied from 69.67 percent in Nellore to 82.45 percent in Warangal. In mathematics, the students' performance ranged from 74.74 percent in Nellore to 85.87 percent in Warangal. Overall results indicated identical pattern of growth and sequence in students' achievement in both the subjects across the districts.



- Performance in language crosses 69 percent mark in language and 74 percent mark in mathematics.
- Warangal captures the ace position by crossing 80 percent mark in both subjects.
- Identical pattern of growth and sequence surface in both subjects across the districts.

### 2.1.2 Gujarat



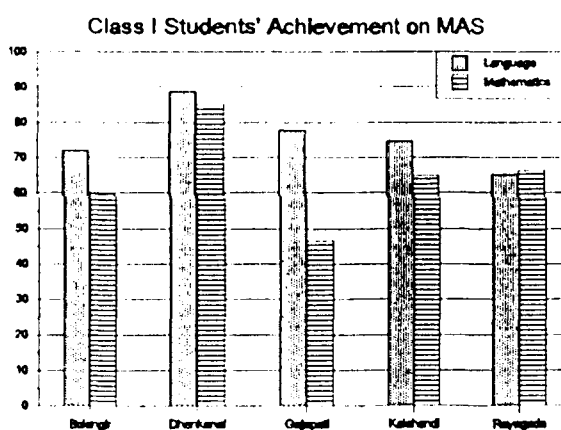
In three districts of Gujarat the performance of Class I students in language ranged from 65.10 percent in Banskantha to 75.90 percent in Panchmahals. In mathematics the achievement

of class I students varied from 63.15 percent in Banaskantha to 75.00 percent in Panchmahals. Analysis of results revealed identical pattern of growth and sequence in students' achievement in both the subjects across the districts.

- Students' achievement surpasses 65 percent mark in language and 63 percent in mathematics.
- Identical pattern of growth and sequence emanates in both the subjects across the districts.
- Panchmahals captures the top position in both the subjects.

### 2.1.3 Orissa

In class I, students performance in language varied from 65.19 percent in Rayagada to 88.80 percent in Dhenkanal. In Mathematics, the students performance ranged from 46.59 percent in Gajapati to 85.06 percent in Dhenkanal. Of all the districts, students of Dhenkanal demonstrated splendid performance in both the subjects.



- Achievement crosses 65 percent mark in language.
- Achievement in mathematics crosses 59 percent mark except in Gajapati.
- Dhenkanal displays splendid performance in both the subjects.

The figures shown in Table 2.1 reveal that the measure of variability in class I in language shown in the form of standard deviation ranged from 18.97 to 30.43 in the state of Andhra Pradesh, 21.55 to 27.90 in the state of Gujarat and 17.00 to 32.45 in the state of Orissa.

The measure of variability in language achievement across the states seemed to be slightly on a higher side that may be attributed to the length of the test. It may be mentioned here that

the number of items in the test was restricted to 20 items for the simple reason that the test was to be administered individually to all the students of class I.

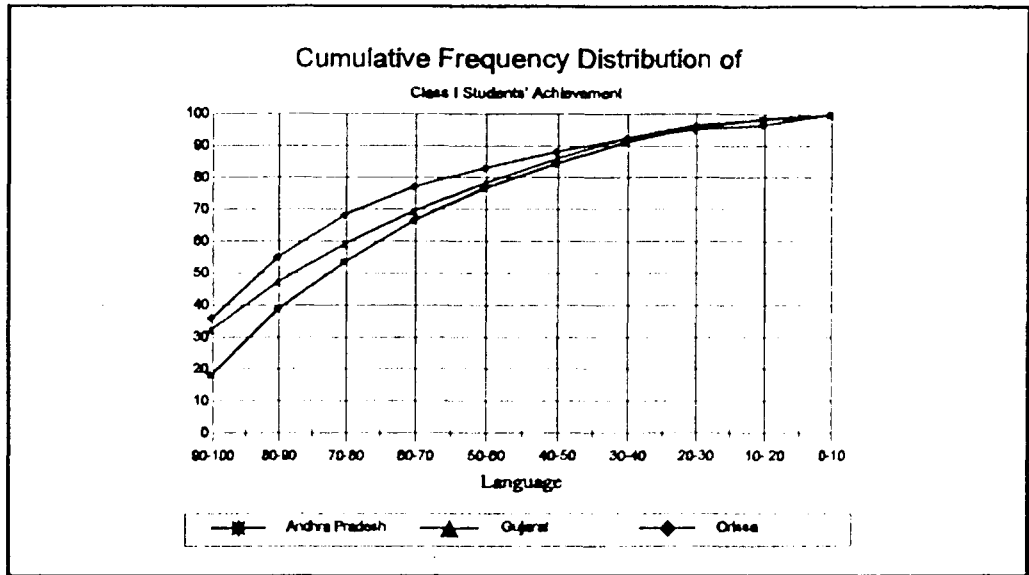
The measure of variability in class I mathematics shown in the form of standard deviation varied from 19.25 to 26.26 in the state of Andhra Pradesh, 23.45 to 29.80 in the state of Gujarat and 18.25 to 41.70 in the state of Orissa. The measure of variability in mathematics also appeared to be slightly on the higher side for the reasons applicable in language.

#### 2.1.4 Dispersion of Scores

The figures shown in Table 2.2 revealed that in Andhra Pradesh, the distribution of achievement scores in language covered the entire range. Least number of cases (57) were posted in the range from 0 to 10 percent and the maximum number of cases (807) were in the range from 80 to 90 percent. In mathematics, the least number of cases (46) were found in the range from 10 to 20 percent and the maximum number of cases (893) were in the range from 80 to 90 percent.

Table 2.2. Distribution of students of class I on the basis of their achievement level in language and mathematics

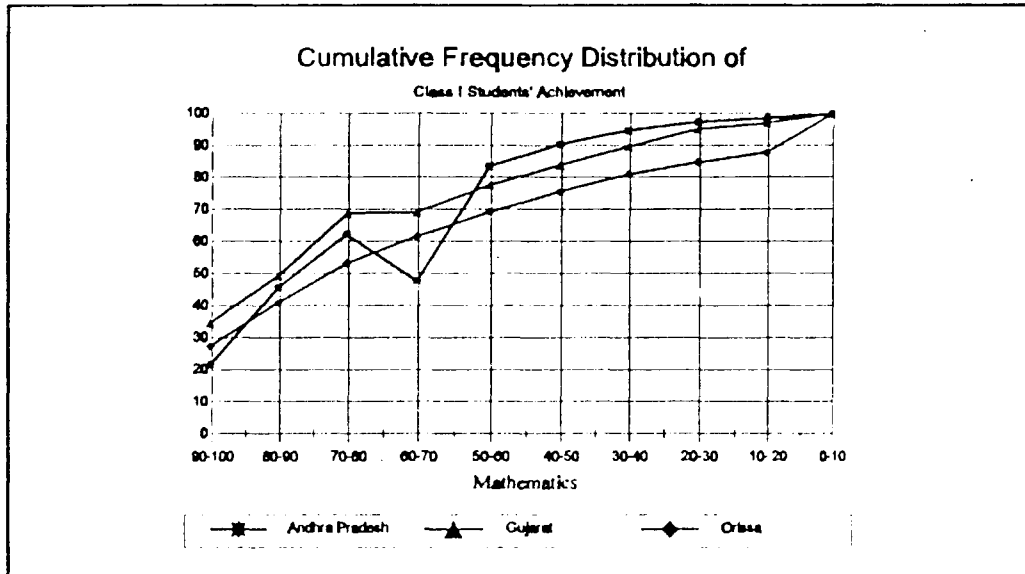
State	Achievement Level (Percent)											
		90-100	80-90	70-80	60-70	50-60	40-50	30-40	20-30	10-20	0-10	
Andhra Pradesh	L.	f	728	807	582	504	402	304	260	192	98	57
		cf(%)	18.49	38.99	53.77	66.67	76.86	84.58	91.19	96.06	98.55	100
	M	f	812	893	612	463	328	249	160	99	46	50
		cf(%)	21.88	45.93	62.42	74.89	83.73	90.44	94.75	97.41	98.65	100
Gujarat	L.	f	688	313	250	216	188	159	140	86	32	35
		cf(%)	32.65	47.51	59.37	69.63	78.55	86.1	92.74	96.82	98.34	100
	M	f	731	310	214	200	180	132	121	114	38	62
		cf(%)	34.78	49.53	68.89	69.22	77.78	84.06	89.82	95.24	97.05	100
Orissa	L.	f	994	517	363	244	162	140	113	74	40	92
		cf(%)	36.29	55.17	68.42	77.33	83.24	88.35	92.48	95.18	96.64	100
	M	f	753	372	333	231	211	174	148	101	84	332
		cf(%)	27.49	41.07	53.33	61.66	69.37	75.72	81.12	84.81	87.88	100



In the state of Gujarat, the language achievement covered the entire range of distribution. The least number of cases (32) were observed in the range 10 - 20 percent and maximum number of cases (688) in the range 90-100 percent. The trend was almost the same in mathematics achievement, where the number of cases in the range 10-20 percent was 38 and in the range 90-100 percent was 731.

In the state of Orissa, the distribution of achievement scores both in language and mathematics resembled with that of Gujarat. Least number of cases, 40 in language and 84 in mathematics were found to be in the range from 10 to 20 percent. As against this, the maximum number of cases, 994 in language and 753 in mathematics were in the range from 90 to 100 percent.





The general trend pertaining to distribution of scores indicates positive upward progression tending to producing negatively skewed curve in both the subjects across the states. It may be pertinent to mention here that more than 76 percent students in language and more than 69 percent students in mathematics have scored above 50 percent mark in all the three states.

- Achievement scores both in language and mathematics utilize the entire range.
- Higher ranges claim maximum number of cases and lower ranges claim least number of cases.
- Positive upward progression of frequencies produce negatively skewed distribution across the states in both subjects.

### 2.1.5 Levels of achievement of class I students

Table 2.3 portrays the number of districts showing average levels of achievement of class I students both in language and mathematics.

Table 2.3. Number of districts showing levels of achievement of class I students

Range %	Language	Mathematics
80 and up	2	4
70-80	7	4
60-70	4	3
50-60	--	1
40-50	--	1
Below 40	--	--
Total	13	13

Statistics shown in Table 2.3 revealed that average performance in 2 out of 13 districts in language and 4 out of 13 in mathematics had crossed 80 percent mark. All the remaining 11 districts in language and 7 out of the remaining 9 districts in mathematics displayed the achievement levels in the range from 60 percent to 80 percent. The remaining 2 districts in mathematics portrayed students' achievement in the range from 40 - 60 percent.

- All 13 districts in language and 11 out of 13 in mathematics display achievement level above 60 percent.

### Summing up

Analysis of results presented in the preceding paragraphs revealed that Warangal in Andhra Pradesh, Panchmahals in Gujarat and Dhenkanal in Orissa displayed better performance than their counterpart in both the subjects. As against this, Nellore in Andhra Pradesh and Banaskantha in Gujarat turned out to be two such districts which exhibited lower performance in both the subjects than their counterpart. In the state of Orissa, Rayagada and Gajapati demonstrated lower performance than their counterpart in language and mathematics respectively. Analyses of results signify that concerted efforts need to be made to identify reasons for dismal performance in mathematics in the districts of Gajapati

### 2.2 Mean percent of achievement of class III students

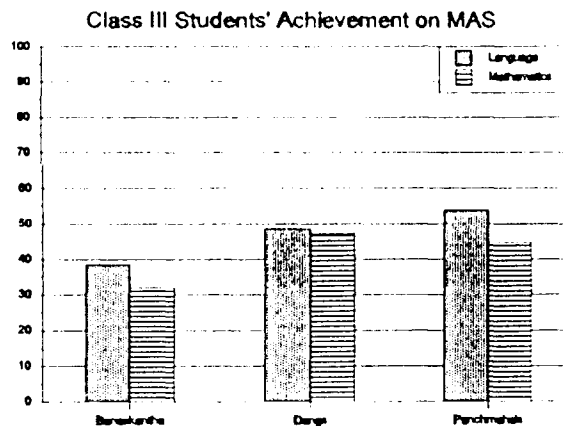
Table 2.4 indicates the performance of Class III students in language and mathematics in the state of Gujarat

Table 2.4. Mean achievement of class III students in language and mathematics on MAS

State	District	Language			Mathematics		
		N	M%	SD	N	M%	SD
Gujarat	Banaskantha	849	38.52	14.57	836	31.97	16.85
	Dangs	394	48.66	19.69	390	47.32	21.53
	Panchmahals	902	53.74	16.15	910	44.82	20.33

### 2.2.1 Gujarat

The student performance in language ranged from 38.52 percent in Banaskantha to 53.74 percent in Panchmahals. In mathematics, mean achievement varied from 31.97 percent in Banaskantha to 47.32 percent in Dangs. The overall performance of students belonging to Banaskantha turned out to be lower both in language and mathematics than the other two districts. While the students of Panchmahals crossed 53 percent mark in language, the students of Dangs crossed 47 percent mark in mathematics.



- The top position is shared by Panchmahals and Dangs in language and mathematics respectively.
- Banaskantha squats at less than 40 percent in both the subjects

The statistics posted in Table 2.4 indicate that the measure of variability in class III in language varied from 14.57 to 19.69 and in mathematics from 16.85 to 21.53 in the state of Gujarat. The measure of variability turned out to be within the acceptable range. It may be mentioned here that number of items in class III language test was 65 and in mathematics 40 and that they were group tests

### 2.2.2 Dispersion of Scores

Table 2.5 : Distribution of students of class III on the basis of their achievement level in language and mathematics

State	Achievement Level (Percent)											
		90-100	80-90	70-80	60-70	50-60	40-50	30-40	20-30	10-20	0-10	
Gujarat	L	f	29	89	111	257	330	555	472	202	70	30
		cf(%)	1.35	5.5	10.68	22.66	38.04	63.92	85.92	95.34	98.60	100
	M	f	28	51	116	215	251	319	455	444	159	89
		cf(%)	1.81	4.19	9.61	19.61	31.41	46.33	67.61	88.38	95.82	100

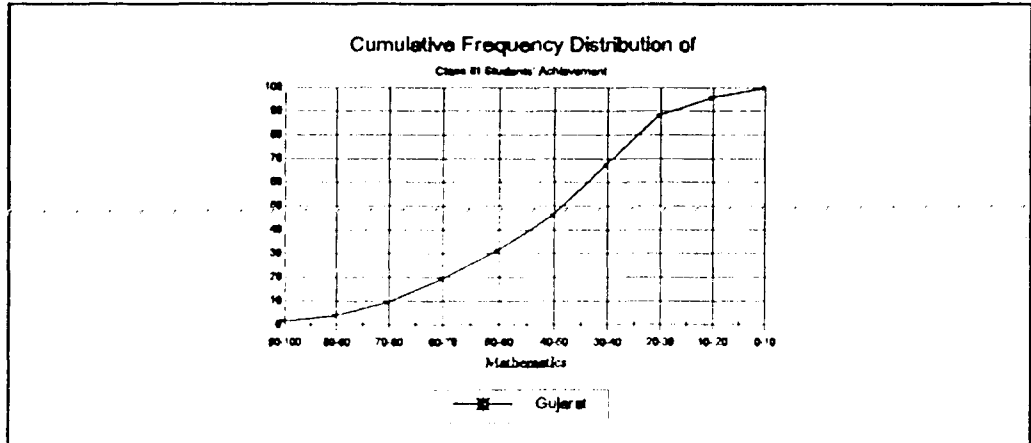
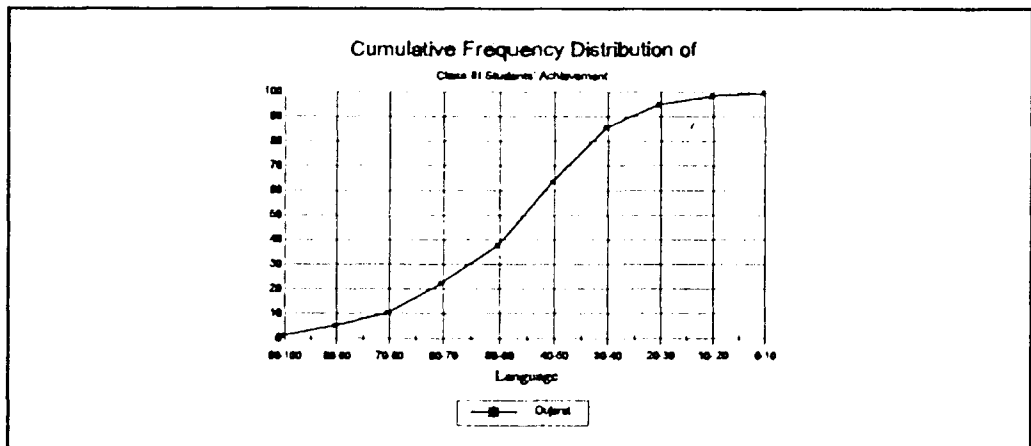


Table 2.5 provides for a detailed account of the cumulative frequency distribution of class III students' achievement both in language and mathematics.

The entries made in Table 2.5 revealed that the distribution of scores in both the subjects had utilized the entire range. The least number of cases, 29 in language and 28 in mathematics were in the range from 90 percent to 100 percent. The maximum number of cases, 555 in language, were in the range from 40 percent to 50 percent and 455 in mathematics were in the range from 30 percent to 40 percent. The number of frequencies against the rest of the intervals tended to produce slightly a positively skewed distribution, more pronounced in mathematics.

- The entire range stands occupied by achievement scores in both subjects.
- Least number of cases scatter around both ends.
- Spread of scores tends to produce slightly positively skewed distributions.

### 2.3 Mean percent of achievement of class IV students

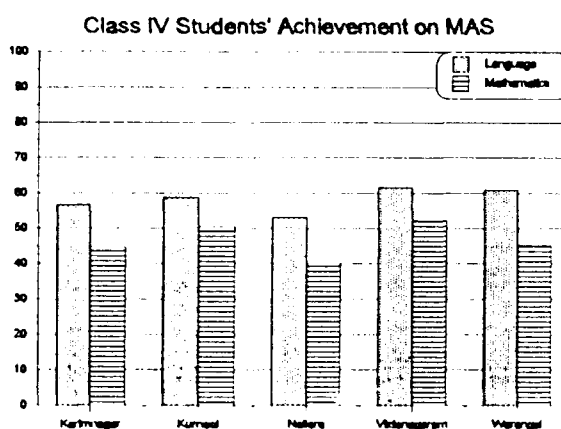
Table 2.6 illustrates the performance of class IV students portrayed during MAS 1999. The performance displayed by class IV students both in language and mathematics in the states of Andhra Pradesh and Orissa is discussed in the following paragraphs.

Table 2.6: Mean percent of achievement of class IV students in language and mathematics on MAS

State	District	Language			Mathematics		
		N	M%	SD	N	M%	SD
Andhra Pradesh	Karimnagar	861	56.74	17.78	867	44.62	20.87
	Kurnool	866	58.84	18.37	836	50.57	19.71
	Nellore	615	53.13	17.48	624	40.06	19.06
	Vizianagaram	728	61.67	14.86	745	52.34	17.64
	Warangal	798	60.97	17.62	830	45.45	21.45
Orissa	Bolangir	542	44.00	19.07	542	20.70	8.08
	Dhenkanal	808	63.80	13.26	808	22.23	6.35
	Gajapati	450	62.25	17.51	450	22.58	6.30
	Kalahandi	441	45.30	17.51	441	19.15	8.70
	Rayagada	562	52.71	17.61	562	20.90	7.95

### 2.3.1 Andhra Pradesh

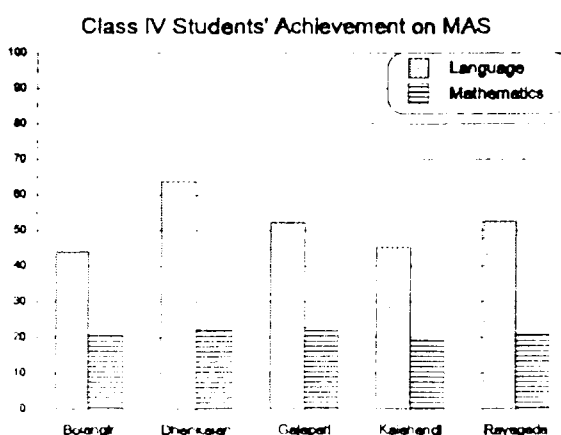
In all the five districts of Andhra Pradesh the students' performance in language ranged from 53.13 percent in Nellore to 61.67 percent in Vizianagram. In mathematics the performance ranged from 40.06 percent in Nellore to 52.34 percent in Vizianagram.



- Performance crosses 53 percent mark in language and 40 percent mark in mathematics
- Vizianagram tops in both subjects.
- As against other districts Nellore displayed low level performance in both subjects.

### 2.3.2 Orissa

The performance of class IV students in language varied from 44 percent in Bolangir to 63.8 percent in Dhenkanal. In mathematics the students' performance ranged from 19.15 percent in Kalahandi to 22.58 percent in Gajapati. Of all the districts, Dhenkanal and Gajapati demonstrated relatively better performance than their counterpart in both the subjects.



- Students' achievement crosses 44 percent mark in language and only 19 percent in mathematics.
- Dhenkanal and Gajapati surpass 60 percent mark in language
- All districts display abysmally poor performance in mathematics.

The measure of variability shown in the form of standard deviation in the aforesaid table in language varied from 14.86 to 18.37 in the state of Andhra Pradesh and 13.26 to 19.07 in Orissa. In mathematics the measure of variability ranged from 17.64 to 21.45 in the state of Andhra Pradesh and 6.3 to 8.7 in the state of Orissa. The low estimates of variability in mathematics in the state Orissa may be attributed to dismal performance of students across the districts.

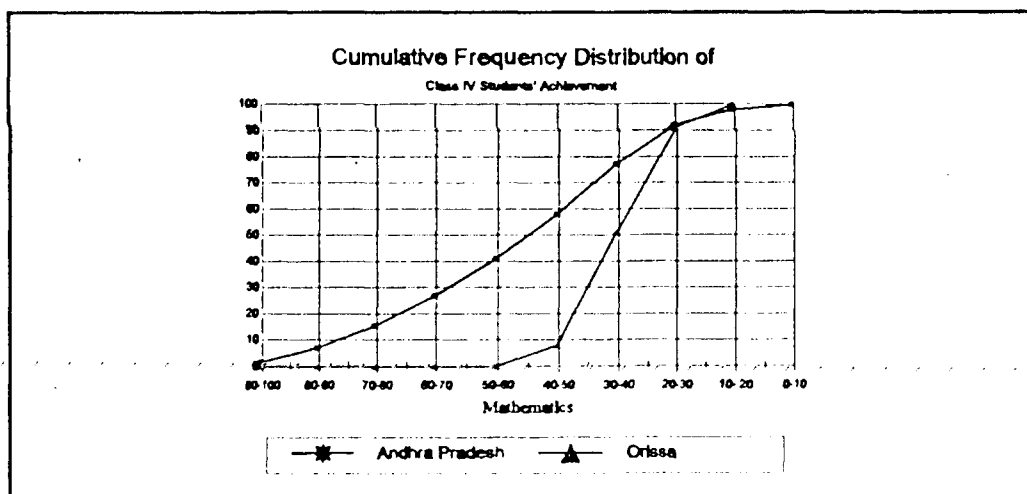
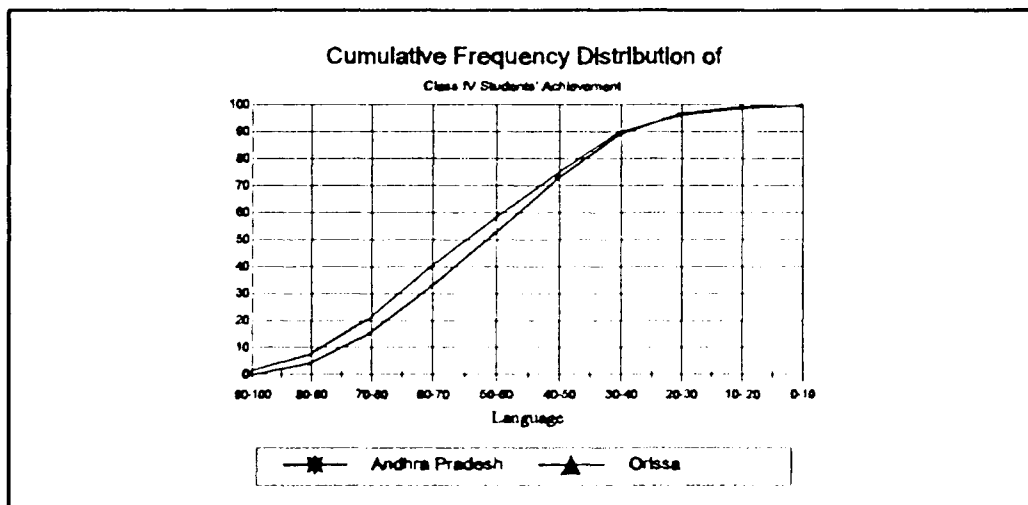
### 2.3.3 Dispersion of scores

This section highlights the dispersion of scores classified into ten categories shown in descending order with a view to ascertaining the percentage of students crossing a particular level of achievement.

Table 2.7 : Distribution of students of class IV on the basis of their achievement level in language and mathematics

State	Achievement Level (Percent)											
		90-100	80-90	70-80	60-70	50-60	40-50	30-40	20-30	10-20	0-10	
Andhra Pradesh	L.	f	6	177	458	718	817	839	678	322	96	31
		cf(%)	0.14	4.42	15.48	32.81	52.54	72.79	89.16	96.93	99.25	100
	M	f	79	266	411	555	687	829	933	724	281	92
		cf(%)	1.63	7.10	15.57	26.99	41.14	58.20	77.41	92.32	98.11	100
Orissa	L.	f	50	168	377	527	509	465	433	172	72	30
		cf(%)	1.78	7.78	21.23	40.03	58.19	74.78	90.22	96.36	98.93	100
	M	f	0	0	0	0	0	6	224	1212	1108	253
		cf(%)	0	0	0	0	0	0.21	8.21	51.44	90.97	100

The data shown in Table 2.7 revealed that the distribution of achievement scores in language had covered the entire range in both the states. Least number of cases, 6 in Andhra Pradesh and 30 in Orissa were found to be within the ranges from 90 percent to 100 percent and from 0 to 10 percent respectively. The frequencies against the class intervals tended to rise upto



the range 40-50 in Andhra Pradesh and 60-70 in Orissa and fell gradually thereafter, thereby tending to produce almost normal distributions. In case of mathematics, the entire range was utilized only in the state of Andhra Pradesh and in Orissa it halted at 50 percent level. In Andhra Pradesh least number of cases, 79 were in the range from 90-100 and maximum number of cases- 933 were in the range from 30-40, thereby producing slightly a positively skewed distribution.



In Orissa, all the scores were confined within the range from 0-50 percent with maximum number of cases, 1212 being in the range from 20-30 percent. As a result of this, it produced a positively skewed distribution.

- Distribution of scores utilize the entire range in both the states in language and in mathematics in Andhra Pradesh.
- Achievement scores in mathematics in Orissa cover only the lower half of the range.
- Scores in language tend to produce normal distribution both in Andhra Pradesh and Orissa.
- Mathematics achievement scores in Andhra Pradesh produce slightly positively skewed distribution. Orissa produces highly positively skewed distribution.

### 2.3.4 Levels of achievement of classes III/IV students

Table 2.8 illustrates the number of districts showing average levels of achievement of classes III/IV students in both subjects.

Table 2.8: Number of districts showing levels of achievement of class III & IV students

Range %	Language	Mathematics
80 and up	--	--
70-80	--	--
60-70	4	--
50-60	5	2
40-50	3	5
Below 40	1	6
Total	13	13

The figures posted in Table 2.8 revealed that there were 4 districts wherein the average performance in language had crossed 60 percent level. Of the remaining districts, there were 8 districts in language and 7 in mathematics wherein the average performance was found to be between 40 - 60 percent. Besides, there was one district in language and six in mathematics where the average performance stood below 40 percent.

## **Summing up**

The analyses of results in the preceding paragraphs revealed that students performance in language crossed 50 percent mark in all the five districts of Andhra Pradesh, one out of three districts of Gujarat and three out of five districts of Orissa. Students' performance in the district of Banaskantha in Gujarat turned out to be 38.52 percent. Besides, Dangs in Gujarat, Bolangir and Kalahandi in Orissa were the districts that projected students achievement in the range of 40-50 percent. These four districts require focussed attention to improve the language proficiency of their students at the end of the penultimate stage of schooling.

In mathematics, the performance of students turned out to be almost similar to that of language in the states of Andhra Pradesh and Gujarat. However, in Orissa the students' performance in mathematics turned out to be abysmally low. None of the districts in the state of Orissa touched the 30 percent mark. The spread of scores in mathematics in the state of Orissa halted at 50 percent level, thereby producing a positively skewed distribution. It warrants immediate measures to improve the teaching of mathematics in the state of Orissa.

CHAPTER-3  
**A COMPARISON OF STUDENTS' ACHIEVEMENT  
 ON BAS TESTS 1996 VS 1999**

This chapter deals with the comparison of students' achievement on BAS tests administered during the initial survey of 1996 with that of the same sets of tests readministered in 1999, conducted as a subsequent to the MAS tests. This exercise was undertaken with a view to ascertaining the gains or losses or status quo in regard to students' achievement both in language and mathematics. Besides, the comparison so made will also highlight both the adequacies and inadequacies of the DPEP interventions. It may be worth mentioning here that during BAS 1996 and MAS 1999 there was a slight variation in the criteria for the sampling of the schools. The criteria employed in both the surveys are given as under:

BAS - 1996	MAS - 1999
<ul style="list-style-type: none"> <li>■ 10 percent of the total number of government and government_ aided primary schools including primary sections attached to middle, secondary and senior secondary institutions located in the district with a maximum of 45 schools, of them, a minimum of five schools from the urban area.</li> </ul>	<ul style="list-style-type: none"> <li>■ 10 percent of the total number of government and government aided primary schools including primary sections attached to middle, secondary and senior secondary institutions located in the district with a maximum of 50, of them, a minimum of 10 from the urban area.</li> <li>■ For 1996 tests readministered under MAS 1999, 10 schools were randomly selected from amongst the sampled 50 schools.</li> </ul>

**3.1 Comparative profile of class I students on BAS 1996 with 1999**

A comparative profile of class I students' achievement on BAS tests readministered in 1999 is given in the subsequent paragraphs. While making these comparisons, one should not lose sight of the fact that sample size of BAS 1999 differed from BAS 1996.

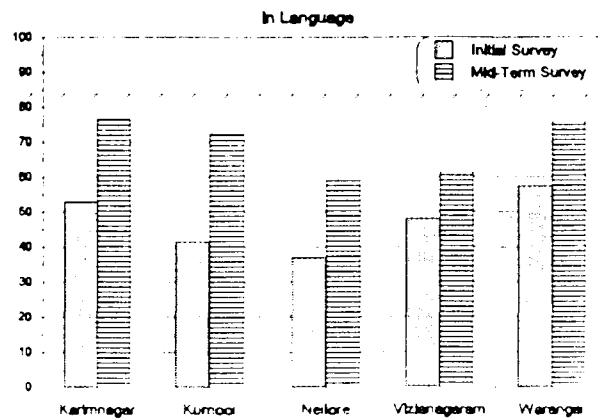
### 3.1.1 Comparative profile of class I students in language

Table 3.1 : Comparison of achievement of class I students in language on the BAS test administered during the Initial Survey and Mid-term Survey

State	District	BAS test administered during						Difference (2-1)	CR Value
		Initial Survey (1996)			Mid-term Survey (1999)				
		(1)			(2)				
		N	M%	SD	N	M%	SD		
Andhra Pradesh	Karimnagar	661	53.00	30.00	161	76.68	31.13	23.68	8.72*
	Kurnool	621	41.50	31.00	149	72.48	24.83	30.98	12.99*
	Nellore	494	37.00	32.50	121	59.05	31.03	22.05	6.94*
	Vizianagaram	442	48.00	34.50	124	61.21	32.05	13.21	3.99*
	Warangal	626	57.50	30.00	153	75.72	22.56	18.22	8.35*
Gujarat	Banaskantha	646	57.55	48.05	142	67.50	34.80	9.95	2.33*
	Dangs	436	53.45	35.95	97	53.75	31.70	0.30	0.08
	Panchmahals	614	62.25	36.45	164	79.90	20.00	17.65	5.96*
Orissa	Bolangir	431	50.35	18.60	130	70.31	30.45	19.96	9.08*
	Dhenkanal	523	68.85	17.65	151	78.77	25.15	9.92	5.48*
	Gajapati	332	72.50	16.65	111	72.12	30.85	-0.38	0.16
	Kalahandi	398	44.55	20.80	104	61.15	34.80	16.60	6.17*
	Rayagada	441	67.15	18.75	130	62.58	31.40	-4.57	2.05*

#### Andhra Pradesh

Comparative Profile of Class I Students



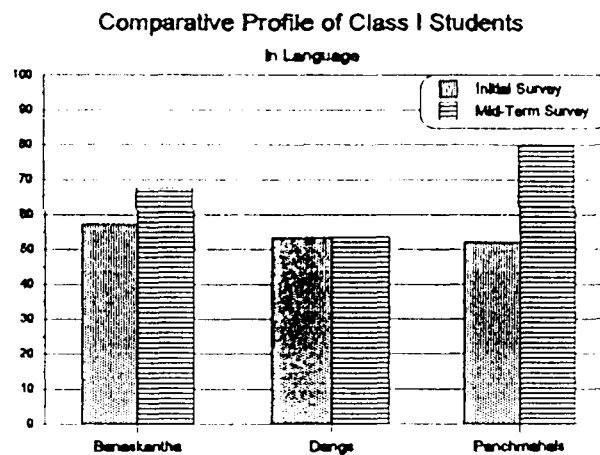
All the five districts in the state of Andhra Pradesh registered significant improvement in language achievement. The hike in achievement varied from 13.21 percent in Vizianagaram

to 30.98 percent in Kurnool. Analysis of results reveal that the goal of 25 percent increase in language achievement has almost been achieved in three out of five districts.

- All five districts portray significant improvement in language achievement.
- Three out of five districts approaches the goal of 25 percent increase in achievement.
- Kurnool demonstrates an improvement of 31 percent.

## Gujarat

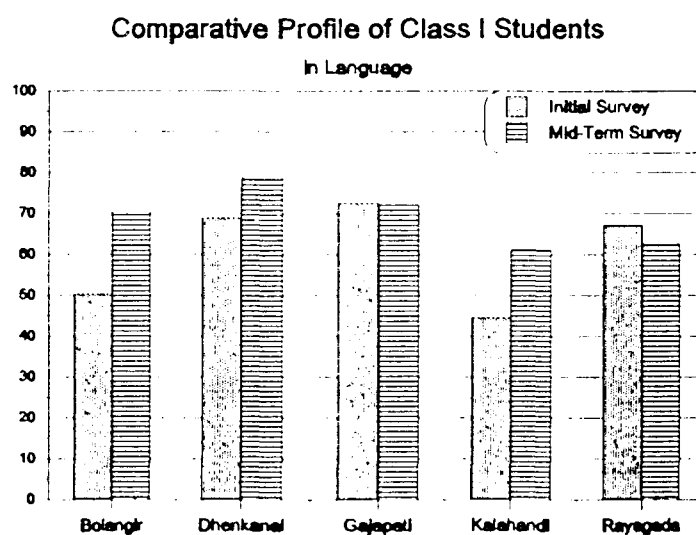
Students' performance showed positive trends in all the three districts, of them two districts namely Banaskantha and Panchmahals clearly showing significant improvement in language achievement. The hike in achievement varied from 0.30 percent in Dangs to 17.65 percent in Panchmahals.



- All districts display positive trends in achievement.
- Banaskantha and Panchmahals register significant hike of 9.95 percent and 17.65 percent respectively.

## Orissa

Three out of five districts in the state of Orissa exhibited significant improvement in language achievement. The hike in achievement ranged from 9.92 percent in Dhenkanal to 19.96 percent in Bolangir. Of the remaining two districts, one district maintained the status quo whilst another district registered a significant decline to the extent of 4.57 percent.



- Three districts display significant hike in language achievement.
- Gajapati district maintain status quo.
- Achievement in Rayagada takes a dip.

## Summing up

Analysis of results shown in the preceding paragraphs revealed that performance of class-I students in language showed positive trends in 11 out of 13 districts across the states. Of them 10 districts showed significant improvement in achievement. All the districts of Andhra Pradesh portrayed significant hike in language achievement. Of them, Kurnool district displayed more than 25 percent hike. The remaining four districts of Andhra Pradesh, one district of Gujarat and two out of five districts of Orissa exhibited an improvement in the range of 10 to 25 percent. While Dangs in Gujarat and Gajapati in Orissa maintained a status quo, Rayagada in Orissa registered a decline in students' achievement. These three districts that have failed to

register significant improvement in students' achievement need special attention in terms of identifying the bottlenecks and providing appropriate remedial measures.

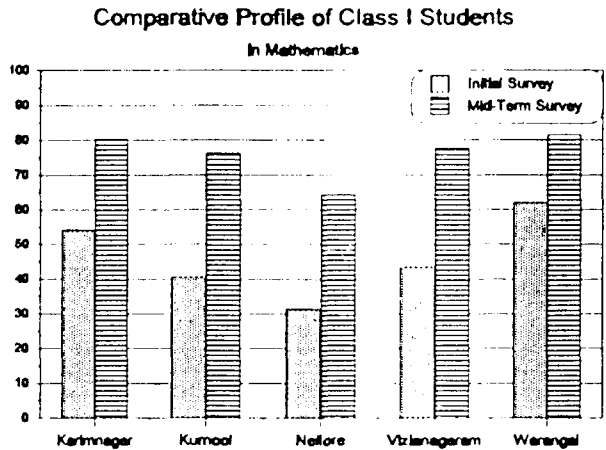
### 3.1.2 Comparative profile of class I students in mathematics

Table 3.2 : Comparison of achievement of class I students in mathematics on the BAS test administered during the Initial Survey and Mid-term Survey

State	District	BAS test administered during						Difference (2-1)	CR Value
		Initial Survey (1996)			Mid-term Survey (1999)				
		(1)			(2)				
		N	M%	SD	N	M%	SD		
Andhra Pradesh	Karimnagar	661	54.29	32.14	181	80.43	30.06	26.14	10.20*
	Kurnool	621	40.71	28.57	150	76.19	30.13	35.48	13.10*
	Nellore	494	31.43	32.86	118	64.29	31.22	32.86	10.20*
	Vizianagaram	442	43.57	33.57	124	77.65	32.38	34.08	10.30*
	Warangal	626	62.14	26.43	150	81.52	20.84	19.38	9.68*
Gujarat	Banaskantha	646	54.42	45.57	185	68.07	25.20	13.65	3.90*
	Dangs	436	58.29	28.50	97	60.43	22.15	2.14	0.69
	Pauchmahals	616	61.92	32.93	164	76.14	17.70	14.22	5.32*
Orissa	Bolangir	431	49.36	28.29	130	62.08	18.95	12.72	4.80*
	Dhenkanal	523	67.50	29.86	151	75.87	19.60	8.37	3.24*
	Gajapati	332	65.93	33.00	111	67.05	21.00	1.12	0.33
	Kalahandi	398	42.36	36.00	104	51.30	22.45	8.94	2.41*
	Rayagada	441	58.64	35.00	130	69.17	19.35	10.53	3.28*

#### Andhra Pradesh

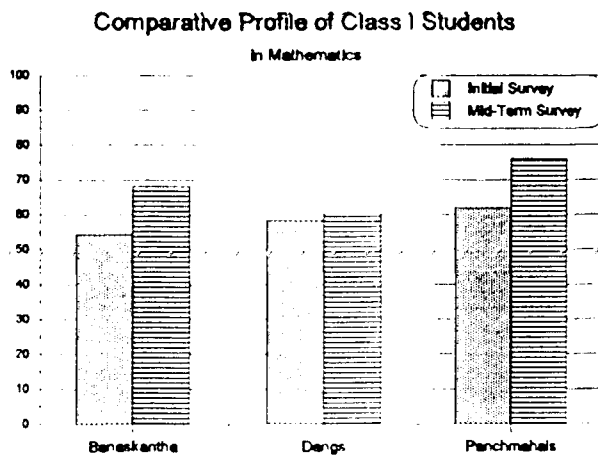
All the five districts in Andhra Pradesh displayed significant improvement in mathematics achievement. The hike in achievement ranged from 19.38 percent in Warangal to 35.48 percent in Kurnool. The goal of 25 percent increase in mathematics achievement has already been achieved in four of the five districts.



- All the five districts register significant hike in mathematics achievement.
- Four of the five districts realise the goal of 25 percent hike in achievement.

### Gujarat

All the three districts in the state of Gujarat registered positive trends in mathematics achievement. The hike in achievement which is significant in two out of three districts varied from 2.14 percent in Dangs to 14.22 percent in Panchmahals.

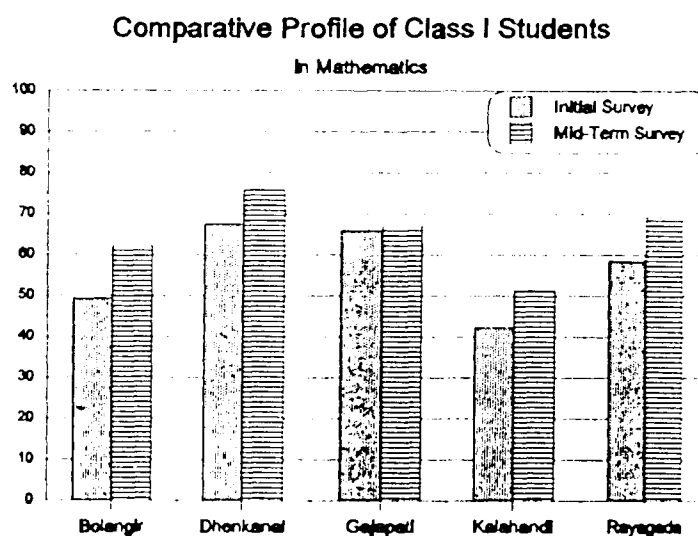


- All districts display positive trends in achievement
- Hike in mathematics achievement corresponds with hike in language achievement across the districts
- Banaskantha and Panchmahals portrays significant improvement in mathematics.



## Orissa

All the five districts in the state of Orissa registered positive trends in achievement in mathematics with four districts namely Bolangir, Dhenkanal, Kalahandi and Rayagada showing significant hike in achievement. The hike in these districts ranged from 8.37 percent in Dhenkanal to 12.72 percent in Bolangir.



- All districts in Orissa display positive trends in mathematics achievement.
- Four out of five districts register significant hike in achievement.

## Summing up

The results shown in the preceding paragraphs revealed that students' achievement in mathematics in class I showed positive trends in all the 13 districts across the states. Of them, 11 districts registered significant hike in achievement. Four of the five districts of Andhra Pradesh demonstrated more than 25 percent hike in mathematics. Two districts each from the states of Gujarat and Orissa, and one from Andhra Pradesh have shown an improvement of 10 to 25 percent. Like in language, Dangs in Gujarat and Gajapati in Orissa have not shown significant improvement in mathematics achievement. Analysis of results signify that while the tempo of improvement in achievement in 11 out of 13 districts be maintained, spirited attempts may be made in the remaining two districts to boost the level of students' achievement in mathematics.

### 3.2 Comparative profile of class III students on BAS 1996 with 1999

A comparative assessment of class III students' achievement on BAS tests conducted in the year 1996 with that of the same set of tests readministered in the year 1999 is discussed here as under. While making these comparisons one should take note of the difference between the sample size of BAS 1996 and 1999.

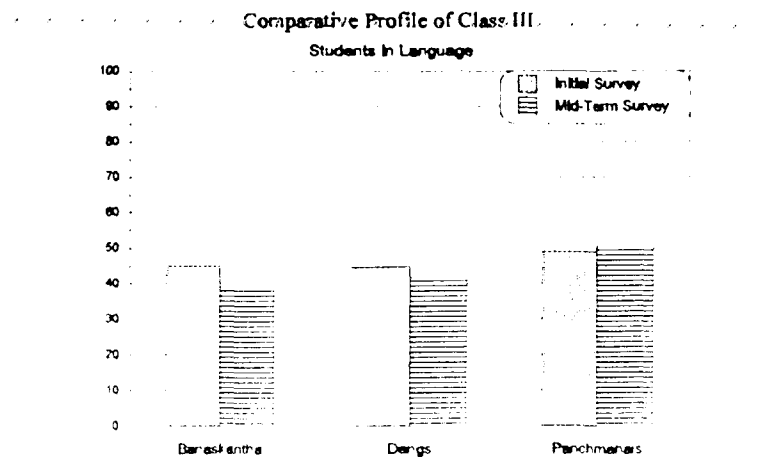
#### 3.2.1 Comparative profile of class III students in language

Table 3.3 : Comparison of achievement of class III students in language on the BAS test administered during the Initial Survey and Mid-term Survey

State	District	BAS test administered during						Difference (2-1)	CR Value
		Initial Survey (1996)			Mid-term Survey (1999)				
		(1)			(2)				
		N	M%	SD	N	M%	SD		
Gujarat	Banaskantha	711	45.02	26.13	231	39.09	14.31	-5.93	3.29*
	Dangs	425	44.88	22.89	63	41.82	16.46	-3.06	1.03
	Panchmahals	596	49.02	10.91	217	50.68	18.49	1.66	1.57

#### Gujarat

Of the three districts, Panchmahals showed positive trend in students' achievement. This trend however, was not found to be significant. In Banaskantha the performance of students took a dip showing significant decline.



- Panchmahals displays positive trend but not significant.
- Banaskantha and Dangs portray negative trends.

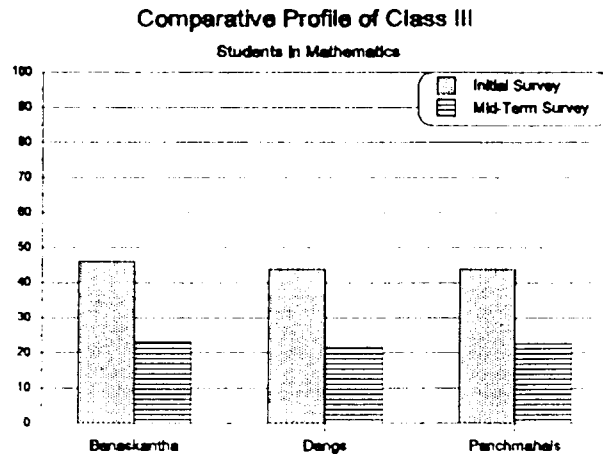
**3.2.2 Comparative profile of class III students in mathematics**

Table 3.4 : Comparison of achievement of class III students in mathematics on the BAS test administered during the Initial Survey and Mid-term Survey

State	District	BAS test administered during						Difference (2-1)	CR Value
		Initial Survey (1996)			Mid-term Survey (1999)				
		(1)			(2)				
		N	M%	SD	N	M%	SD		
Gujarat	Banaskantha	711	46.05	28.45	233	23.17	15.4	-22.88	11.71*
	Dangs	425	43.87	22.45	62	21.72	19.03	-22.15	7.38*
	Panchmahals	596	43.90	22.75	210	22.75	17.45	-21.15	12.25*

**Gujarat**

It is evident from the aforesaid table that the students' achievement in mathematics in the state of Gujarat did not show any improvement. Instead, all the three districts have demonstrated a significant decline in mathematics achievement.



- All districts display significant decline in mathematics achievement

## Summing up

The results discussed in the aforesaid paragraphs revealed that the performance of class III students both in language and mathematics turned out to be far from satisfactory. None of the districts in the state of Gujarat showed significant improvement in both the subjects. The situation in mathematics achievement was found to be worse than in language, for all the three districts showed drastic decline in mathematics achievement. It may be pertinent to mention here that students' achievement in mathematics on newly generated MAS 1999 test as against the BAS 1999 tests was found to be almost two times more in Dangs and Panchmahals district as shown in Table 2.4. It is evident from the analysis of results that the DPEP interventions have failed to produce the desired results. Another reason for decline in performance may be the variation between the test contents developed in the year 1990 and the revised course content being transacted in the year 1999.

### 3.3 Comparative profile of class IV students on BAS 1996 with 1999

A comparative profile of class IV students' achievement on BAS tests conducted in the year 1996 with that of the same tests readministered in the year 1999 is given in the following paragraphs.

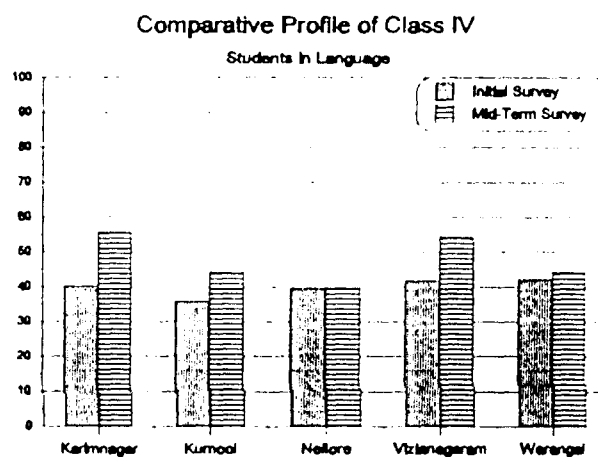
#### 3.3.1 Comparative profile of class IV students in language

Table 3.5 : Comparison of achievement of class IV students in language on the BAS test administered during the Initial Survey and Mid-term Survey

State	District	BAS test administered during						Difference (2-1)	CR Value
		Initial Survey (1996)			Mid-term Survey (1999)				
		(1)			(2)				
		N	M%	SD	N	M%	SD		
Andhra Pradesh	Karimnagar	778	40.23	11.14	220	55.82	16.61	15.59	13.12*
	Kurnool	565	35.92	16.29	157	44.43	17.99	8.51	5.35*
	Nellore	504	39.48	14.99	109	40.02	9.72	0.54	0.47
	Vizianagaram	313	42.00	16.67	128	54.35	15.85	12.35	7.32*
	Warangal	618	42.32	13.94	123	44.42	15.27	2.10	1.41

State	District	BAS test administered during						Difference (2-1)	CR Value
		Initial Survey (1996)			Mid-term Survey (1999)				
		(1)			(2)				
		N	M%	SD	N	M%	SD		
Orissa	Bolangir	362	41.27	8.51	168	40.52	20.06	-0.75	0.60
	Dhenkanal	529	42.94	6.73	133	59.71	22.65	16.77	11.63*
	Gajapati	236	39.62	7.20	80	54.99	22.88	15.37	9.05*
	Kalahandi	282	41.37	7.04	87	42.57	16.49	1.20	0.97
	Rayagada	392	43.90	7.35	78	42.90	27.32	-1.00	0.62

## Andhra Pradesh



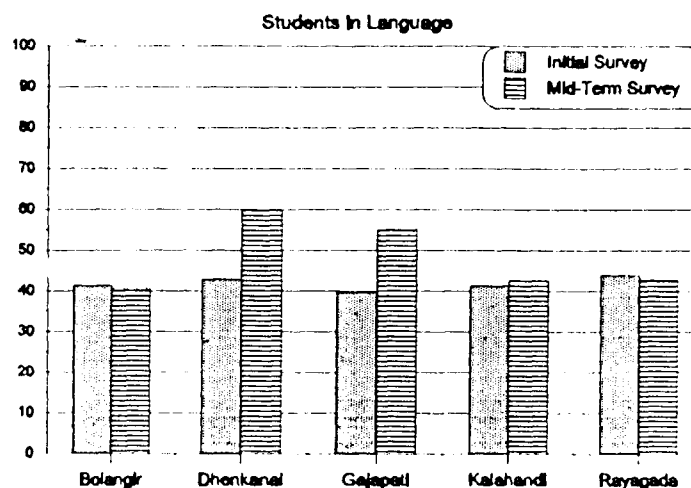
Students' achievement in three out of five districts displayed significant improvement in language. The remaining two districts also displayed positive trend, though not significant. The hike in achievement varied from 0.54 percent in Nellore to 15.59 percent in Karimnagar.

- All districts display positive trends in achievement.
- Three out of five districts portray significant hike in mathematics achievement.

## Orissa

The performance in language in the state of Orissa had shown significant improvement of more than 15 percent in the districts of Dhenkanal and Gajapati. Rest of the districts did not register any noticeable change in learning achievement

## Comparative Profile of Class IV



- Two districts display significant hike in language achievement.
- No perceptible change in three districts.

### Summing up

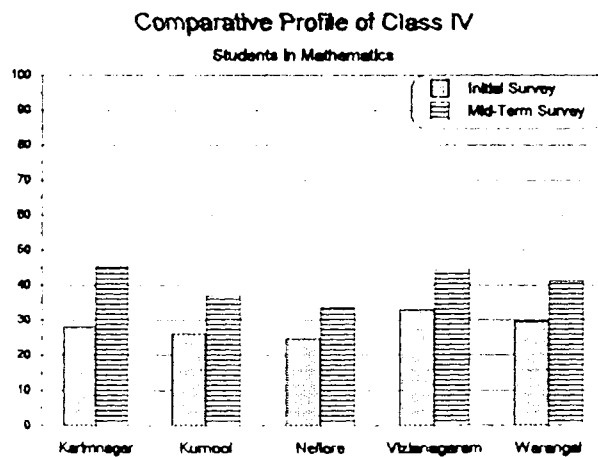
It is evident from the aforesaid discussion that 8 out of 10 districts demonstrated positive trends, of them, 5 portrayed significant improvement in language achievement in class IV in the states of Andhra Pradesh and Orissa. Karimnagar and Vizianagaram in Andhra Pradesh and Dhenkanal and Gajapati in Orissa have displayed more than 10 percent hike in achievement in language. Though two districts demonstrated decline in performance, none of these was found to be significant. Five districts that did not demonstrate appreciable improvement warrant focussed attention.

### 3.3.2 Comparative profile of class IV students in mathematics

Table 3.6 : Comparison of achievement of class IV students in Mathematics on the BAS test administered during the Initial Survey and Mid-term Survey

State	District	BAS test administered during						Difference (2-1)	CR Value
		Initial Survey (1996)			Mid-term Survey (1999)				
		(1)			(2)				
		N	M%	SD	N	M%	SD		
Andhra Pradesh	Karimnagar	729	28.15	12.30	231	45.38	21.85	17.23	11.43*
	Kurnool	539	26.25	12.58	146	37.00	11.48	10.75	9.83*
	Nellore	496	24.80	11.13	112	33.62	13.65	8.82	6.35*
	Vizianagaram	297	33.13	15.03	127	44.47	15.34	11.34	7.02*
	Warangal	560	29.73	12.73	156	41.23	16.36	11.50	13.69*
Orissa	Bolangir	362	34.75	15.10	159	37.26	21.30	2.51	1.53
	Dhenkanal	529	39.73	15.93	133	55.58	21.84	15.85	9.44*
	Gajapati	236	42.50	16.13	82	47.38	20.64	4.88	2.18*
	Kalahandi	282	30.72	12.43	86	36.45	12.32	5.73	3.74*
	Rayagada	392	40.45	15.63	86	37.53	21.35	-2.92	1.46

#### Andhra Pradesh

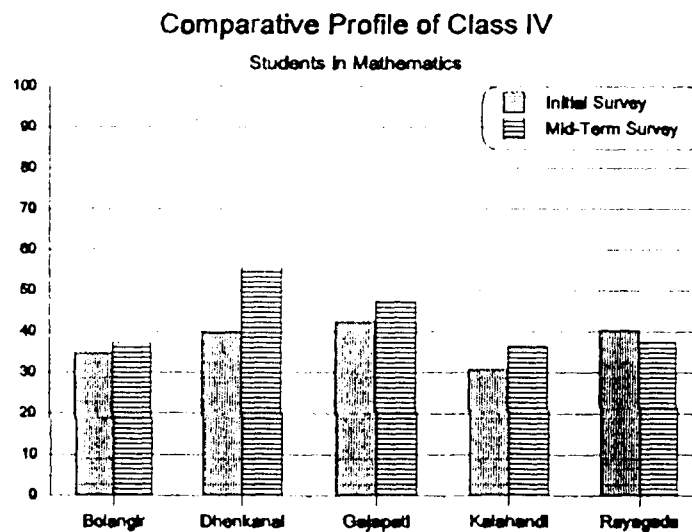


All the five districts in Andhra Pradesh demonstrated significant improvement in mathematics achievement. The hike in achievement ranged from 8.82 percent in Nellore to 17.23 percent in Karimnagar. All the districts seem to have been progressing toward realising the DPEP goal of 25 percent increase in achievement.

- All districts portray significant raise in mathematics achievement.
- Karimnagar displays a hike of more than 17 percent.

### Orissa

Four of the five districts in the state of Orissa exhibited positive trends that ranged from 2.51 percent to 15.85 percent with Dhenkanal, Gajapati and Kalahandi showing significant improvement in students' achievement in mathematics. Rayagada districts did not display any striking change in mathematics achievement.



- Four districts display positive trends, three of them being significant
- Dhenkanal portrays more than 15 percent hike in mathematics achievement.

### Summing up

The results shown in the preceding paragraphs revealed that nine out of ten districts displayed positive trends in mathematics achievement in class IV. These trends were found to be significant in eight districts. Four districts of Andhra Pradesh and one district of Orissa registered more than 10 percent hike in mathematics achievement. Bolangir and Rayagada districts of Orissa did not display marked improvement in achievement. Interestingly, of all the



districts Gajapati in Orissa turned out to be one such district wherein students' achievement in both the subjects in class IV showed significant improvement while in class I there was no appreciable change.

### 3.3.3 Districts claiming hike in achievement

Table 3.7 and 3.8 illustrate hike in achievement in language and mathematics respectively on BAS tests administered during 1996 and 1999.

Table 3.7: Districts claiming Hike in Achievement in Language - BAS test 1996 vs 1999

Class	Total Districts	Districts claiming hike				Districts with significant hike
		>25%	10-25%	<10%	Total	
I	13	1	7	5	13	10
III	3	0	0	3	3	0
IV	10	0	4	6	10	5

An overview of the comparative profile of students' achievement on BAS 1996 vs 1999 revealed that 10 out of 13 districts have shown significant hike in language achievement in class-I and 8 out of them have registered a hike of more than 10 percent. Against this, none of the three districts of Gujarat in class III have shown significant improvement in language achievement. In class IV, five out of 10 districts have displayed significant improvement in language achievement. Of them, four have registered a hike of more than 10 percent.

Table 3.8: Districts claiming Hike in Achievement in Mathematics - BAS test 1996 vs 1999

Class	Total Districts	Districts claiming hike				Districts with significant hike
		>25%	10-25%	<10%	Total	
I	13	4	5	4	13	11
III	3	0	0	3	3	0
IV	10	0	5	5	10	8

The figures posted in Table 3.8 revealed that 11 out of 13 districts have shown significant hike in mathematics achievement in class I and of them 9 districts have displayed more than 10 percent hike in achievement. None of the districts in Gujarat has shown any sign of improvement in mathematics achievement in class III. In class IV, 8 out of 10 districts belonging to Andhra Pradesh and Orissa have portrayed significant improvement in mathematics achievement. Of them, five districts have registered a hike of more than 10 percent.

CHAPTER - 4  
**GENDERWISE DIFFERENCES IN ACHIEVEMENT  
 ON MAS TESTS**

The present chapter provides for genderwise differences in achievement on newly generated competency based tests employed during the conduct of mid-term assessment survey in the year 1999. A detailed account of genderwise differences in achievement both in language and mathematics in respect of classes I, III and IV is discussed in the subsequent paragraphs.

**4.1. Differences in achievement in Class I**

Genderwise differences in achievement demonstrated by class I students both in language and mathematics are given as under:

Table 4.1 : Genderwise mean achievement of class I students in language

State	District	Boys			Girls			Difference (1-2)	CR Value
		(1)			(2)				
		N	M%	SD	N	M%	SD		
Andhra Pradesh	Karimnagar	356	77.42	21.95	407	79.03	21.74	-1.61	1.02
	Kurnool	455	78.05	24.06	359	77.99	24.99	0.06	0.03
	Nellore	311	69.58	30.24	349	69.74	30.63	-0.16	0.07
	Vizianagaram	335	73.78	25.36	334	69.25	27.52	4.53	2.21*
	Warangal	328	82.21	19.16	416	82.64	18.85	-0.43	0.31
Gujarat	Banaskantha	435	66.40	27.40	371	63.55	28.45	2.85	1.44
	Dangs	246	68.35	25.15	253	67.90	24.40	0.45	0.20
	Panchmahals	405	75.70	21.40	395	76.10	21.65	-0.40	0.26
Orissa	Bolangir	305	71.70	24.9	282	72.46	22.65	-0.76	0.39
	Dhenkanal	373	89.26	16.85	332	88.28	17.20	0.98	0.76
	Gajapati	309	77.83	21.80	246	78.01	19.90	-0.18	0.10
	Kalahandi	245	77.43	24.10	236	72.10	26.35	5.33	2.31*
	Rayagada	235	68.62	31.80	176	60.63	33.35	7.99	2.46*

#### 4.1.1. Differences in achievement in language

The figures shown in Table 4.1 revealed that the differences in achievement between boys and girls in four of the five districts in the state of Andhra Pradesh were not found to be significant. However, the differences in achievement in the district of Vizianagaram turned out to be significant. But all these differences were found to be less than five percent. Interestingly, the existing differences in three out of five districts found favour with the girls.

The genderwise differences were not found to be significant in all the districts of Gujarat. Besides, whatever differences existed, they were found to be less than five percent. In Panchmahals district, the differences in achievement were found to be in favour of girls.

In the state of Orissa, the differences in achievement between boys and girls were not found to be significant in three out of five districts. In Kalahandi and Rayagada districts these differences were however, found to be significant favoring boys and these differences were more than five percent mark.

- All districts both in Gujarat and Andhra Pradesh and 3 districts of Orissa lay claim to DPEP goal of reducing genderwise differences to less than five percent.
- Kalahandi and Rayagada in Orissa still to realise the DPEP goal.
- Differences in achievement favour girls in 3 districts of Andhra Pradesh, 1 district of Gujarat and 2 districts of Orissa.

#### 4.1.2. Differences in achievement in mathematics

Table 4.2 presents the differences in achievement in mathematics of class-I students.

Table 4.2 : Genderwise mean achievement of class.I students in mathematics.

State	District	Boys			Girls			Difference (1-2)	CR Value
		(1)			(2)				
		N	M%	SD	N	M%	SD		
Andhra Pradesh	Karimnagar	362	82.62	18.88	399	78.78	19.42	3.84	2.76*
	Kurnool	452	86.06	17.71	365	82.62	22.03	3.44	2.42*
	Nellore	321	76.29	25.76	342	73.29	26.68	3.00	1.47
	Vizianagaram	344	79.58	23.66	326	73.28	24.75	6.30	3.36*
	Warangal	334	87.80	17.80	424	84.35	22.15	3.45	2.38*

State	District	Boys			Girls			Difference (1-2)	CR Value
		(1)			(2)				
		N	M%	SD	N	M%	SD		
Gujarat	Banaskantha	441	65.15	29.30	362	60.70	30.20	4.45	2.11*
	Dangs	245	73.25	25.35	255	68.90	29.65	4.35	1.76
	Panchmahals	408	75.75	23.10	388	74.40	22.75	1.35	0.83
Orissa	Bolangir	305	60.05	27.75	282	58.95	27.7	1.10	0.48
	Dhenkanal	373	85.66	18.20	332	84.38	18.30	1.28	0.93
	Gajapati	309	45.05	41.60	246	48.54	41.85	-3.49	0.98
	Kalahandi	245	55.20	27.65	236	64.58	26.10	0.62	0.25
	Rayagada	235	69.77	31.45	167	61.48	33.65	8.29	2.52*

The figures placed in Table 4.2 showed that in Andhra Pradesh, the genderwise differences in mathematics achievement were found to be significant in four out of five districts. However, these differences were found to be less than five percent in all the districts except Vizianagaram where it turned out to be 6.30 percent.

The genderwise differences in mathematics achievement were not found to be significant in two out of three districts of Gujarat. However, all these differences were found to be below five percent.

In four out of five districts of Orissa, the genderwise differences in mathematics achievement were not found to be significant. All these differences were found to be less than five percent, one of them being in favour of girls. In the district of Rayagada the achievement differences between boys and girls were found to be significant and above 5% mark.

- All districts in Gujarat and 4 out of 5 districts each in Andhra Pradesh and Orissa claim of reducing genderwise differences to less than five percent.
- Vizianagaram in Andhra Pradesh and Rayagada in Orissa still to lay claim to the DPEP goal.
- In Gajapati district differences in achievement favour girl students.

#### 4.2. Differences in achievement in class III

Genderwise differences in achievement demonstrated by class III students both in language and mathematics are shown as under

#### 4.2.1. Differences in achievement in language

Table 4.3 illustrates genderwise differences in achievement in language of class III students

Table 4.3 : Genderwise mean achievement of class III students in language

State	District	Boys			Girls			Difference (1-2)	CR Value
		(1)			(2)				
		N	M%	SD	N	M%	SD		
Gujarat	Banaskantha	376	37.28	13.06	473	39.52	11.32	-2.24	2.67*
	Dangs	210	49.94	20.15	184	47.20	18.56	2.74	1.39
	Panchmahals	465	54.45	16.46	437	52.98	15.69	1.47	1.37

The figures posted in Table 4.3 revealed that in two out of the three districts in the state of Gujarat the genderwise differences in achievement were not found to be significant. In Banaskantha, the differences were found to be significant favouring girls. However, all these differences were below the five percent ceiling of the DPEP.

- All districts realise the DPEP goal of reducing genderwise differences in achievement in language.
- Girls stand to gain in Banaskantha.

#### 4.2.2. Differences in achievement in mathematics

Table 4.4 displays the differences in achievement in mathematics of class III students.

Table 4.4 : Genderwise mean achievement of class III students in mathematics

State	District	Boys			Girls			Difference (1-2)	CR Value
		(1)			(2)				
		N	M%	SD	N	M%	SD		
Gujarat	Banaskantha	379	32.07	16.90	457	31.90	13.45	0.17	0.16
	Dangs	210	46.80	22.00	180	47.90	20.70	-1.10	0.50
	Panchmahals	459	44.40	21.20	451	45.25	19.4	-0.85	0.63

The figures posted in Table 4.4 revealed that the genderwise differences in mathematics achievement in class III were not found to be significant in the state of Gujarat. All the differences that existed were found to be way below the DPEP ceiling of five percent mark. In the districts of Panchmahals and Dangs the existing differences found favour with the girls

- All the three districts in Gujarat lay claim to the DPEP goal
- Existing differences favour girls in two out of three districts

### 4.3 Differences in achievement in class IV

Genderwise differences in achievement displayed by class IV students both in language and mathematics are listed as under.

#### 4.3.1 Differences in achievement in language

Table 4.5 illustrates genderwise differences in achievement in language of class IV students.

Table 4.5 : Genderwise mean achievement of class IV students in language

State	District	Boys			Girls			Difference (1-2)	CR Value
		(1)			(2)				
		N	M%	SD	N	M%	SD		
Andhra Pradesh	Karimnagar	443	56.48	17.13	418	57.02	18.46	-0.54	0.45
	Kurnool	535	59.67	18.74	331	57.48	17.68	2.19	1.73
	Nellore	343	53.04	17.58	272	53.24	17.38	-0.2	0.14
	Vizianagaram	386	62.73	15.16	342	60.47	14.44	2.26	2.06*
	Warangal	427	61.53	17.57	371	60.32	17.67	1.21	0.97
Orissa	Bolangir	289	44.66	19.03	253	43.24	19.06	1.42	0.86
	Dhenkanal	442	63.63	13.17	366	64.01	13.20	-0.38	0.41
	Gajapati	264	62.27	17.16	186	62.21	18.03	0.06	0.04
	Kalahandi	223	45.03	16.49	218	45.57	17.76	-0.54	0.33
	Rayagada	319	52.18	17.73	243	53.38	16.30	-1.20	0.82

The figures shown in Table 4.5 revealed that the genderwise differences in language achievements in class IV were not found to be significant in four out of five districts of Andhra Pradesh. The existing differences were found to be less than five percent in all the districts. In two out of five districts these differences found favour with girls.

The genderwise differences in achievement in Class IV in all the districts of Orissa were not found to be significant. Not only this, even the existing differences were found to be far below five percent mark. In three out of five districts, the existing differences found favour with the girl students.

- All the districts in Andhra Pradesh and Orissa achieve the DPEP goal.
- Achievement differences find favour with girls in two districts of Andhra Pradesh and three districts of Orissa

### 4.3.2 Differences in achievement in mathematics

Table 4.6 reflects genderwise differences in achievement in mathematics of class IV students.

Table 4.6 : Genderwise mean achievement of class IV students in mathematics

State	District	Boys			Girls			Difference (1-2)	CR Value
		(1)			(2)				
		N	M%	SD	N	M%	SD		
Andhra Pradesh	Karimnagar	446	43.74	20.10	421	45.55	21.64	-1.81	1.27
	Kurnool	518	51.78	19.50	318	48.58	19.91	3.2	2.27*
	Nellore	336	40.11	19.26	288	40.00	18.85	0.11	0.07
	Vizianagaram	384	53.20	18.07	361	51.41	17.16	1.79	1.39
	Warangal	412	48.10	21.09	418	42.84	21.49	5.26	3.56*
Orissa	Bolangir	289	20.83	7.70	253	20.57	8.43	0.26	0.37
	Dhenkanal	442	21.96	6.13	366	22.52	6.60	-0.56	1.25
	Gajapati	264	22.26	6.60	186	23.03	5.83	-0.77	1.28
	Kalahandi	223	20.19	7.90	218	18.07	9.25	2.12	2.58*
	Rayagada	319	20.72	8.08	243	21.10	7.63	-0.38	0.56

The data posted in Table 4.6 revealed that the genderwise differences in achievement in mathematics in Class IV were not found to be significant in three out of five districts of Andhra Pradesh. All these differences were found to be less than five percent except in Warangal district where it turned out to be 5.26 percent. In Karimnagar district the differences found favour with the girls.

The differences in achievement in mathematics between boys and girls in class IV were not found to be significant across the districts in the state of Orissa. All these differences turned out to be less than 5 percent and three of them found favour with the girl students.

- All five districts in Orissa and 4 out of 5 in Andhra Pradesh lay claim to DPEP goal
- Warangal too appears to be approaching the DPEP goal.
- In one district in Andhra Pradesh and in three in Orissa differences in achievement find favour with girls.

### Summing up

An overview of the districts that laid claim to the DPEP goal of reducing differences in achievement is displayed in Table 4.7.



Table 4 7. Districts claiming DPEP goal in regard to Gender

Class	Total Districts	Districts claiming DPEP goal	
		Language	Mathematics
I	13	11	11
III	3	3	3
IV	10	10	9

It is evident from the results that the DPEP goal of reducing the achievement gaps between boys and girls both in language and mathematics has been attained in 11 out of 13 districts across the three states. Of the remaining districts, Rayagada in Orissa has to put in extra efforts to bring down the differences in achievement to less than 5 percent mark. Besides, the differences in achievement in Kalahandi in language and in Vizianagaram in mathematics also need to be brought down within the DPEP ceiling of 5 percent. It may be mentioned that in class I differences in achievement found favour with girls in 6 out of 13 districts in language and in 1 out of 13 districts in mathematics.

In class III, all the districts in Gujarat have narrowed the differences in achievement in both the subjects to less than five percent. One district in language and two districts in mathematics were such where differences in achievement favoured girl students.

Genderwise differences in language achievement in class IV were found to be far below 5 percent level in all the ten districts belonging to Andhra Pradesh and Orissa. These differences in achievement found favour with girls in two districts in Andhra Pradesh and in three districts in Orissa. In mathematics, the achievement differences between boys and girls were found to be less than 5 percent in 4 out of 5 districts in Andhra Pradesh and in all the five districts in Orissa. The differences in achievement in mathematics have found favour with girls in one district of Andhra Pradesh and three districts of Orissa. The district of Warangal is so near the DPEP goal that with a little effort it can realise the goal.

CHAPTER - 5  
**AREAWISE DIFFERENCES IN ACHIEVEMENT ON  
 MAS TESTS**

This chapter gives an account of areawise differences in achievement on newly generated competency based achievement tests employed during the conduct of mid-term assessment survey in the year 1999. It may be pertinent to mention here that in the state of Gujarat the areawise dichotomy existed only in two out of three districts namely Banaskantha and Panchmahals. The District of Dangs does not have any urban areas.

**5.1 Differences in achievement in class I**

Areawise difference in achievement exhibited by class I students both in language and mathematics are discussed as under:

**5.1.1. Differences in achievement in language**

Table 5.1 illustrates the differences in achievement in language of class I students.

Table 5.1 : Areawise mean achievement of class I students in language

State	District	Urban			Rural			Diffe- rence %	CR Value
		N	M%	SD	N	M%	SD		
Andhra Pradesh	Karimnagar	69	86.01	18.60	694	77.51	22.00	8.33	3.56*
	Kurnool	261	79.12	22.64	553	77.51	25.28	1.61	0.91
	Nellore	142	68.59	30.21	518	69.96	30.51	1.37	0.48
	Vizianagaram	208	70.70	27.83	461	71.89	25.96	1.19	0.52
	Warangal	227	82.14	20.21	517	82.59	18.42	0.45	0.29
Gujarat	Banaskantha	198	69.80	23.20	608	63.55	29.15	6.25	2.74*
	Dangs	-	-	-	498	68.15	24.80	-	-
	Panchmahals	200	82.30	18.65	600	73.75	22.00	8.55	4.93*
Orissa	Bolangir	138	81.78	18.75	449	69.09	25.20	12.69	5.46*
	Dhenkanal	142	88.98	16.35	563	88.76	17.20	0.22	0.14
	Gajapati	159	82.86	22.30	396	75.92	20.40	6.94	3.52*
	Kalahandi	80	77.25	23.70	401	74.33	25.55	2.92	0.94
	Rayagada	55	78.91	25.80	356	63.08	33.40	15.83	3.36*

The figures posted in Table 5.1 signified that in the state of Andhra Pradesh the areawise differences in achievement were not found to be significant in four out of five districts. All these differences turned out to be less than five percent. In three out of these four districts the existing differences favoured rural students. However, in Karimnagar the differences in achievement between urban and rural students were found to be significant favouring urban students.

In the state of Gujarat, both the districts displayed significant differences in achievement between urban and rural favouring urban students. These differences were found to be above the DPEP ceiling of five percent.

Areawise differences in achievement in class I language were not found to be significant in two out of five districts in the state of Orissa. In the remaining districts, the differences were found to be significant favouring urban students and above the DPEP ceiling.

- 4 of the 5 districts in Andhra Pradesh and 2 of the 5 districts in Orissa claim to reach the DPEP goal.
- Both the districts of Gujarat, one district of Andhra Pradesh and three districts of Orissa still to reach the DPEP goal.
- Bolangir and Rayagada districts of Orissa need to work harder to realise the DPEP goal.
- Achievement differences in class I language find favour with rural students in 3 out of 5 districts in Andhra Pradesh.

### **5.1.2 Differences in achievement in mathematics**

Table 5.2 displays differences in achievement in mathematics of class I students.

Table 5.2 : Areawise mean achievement of class I students in mathematics

State	District	Urban			Rural			Diffe- rence %	CR Value
		N	M%	SD	N	M%	SD		
Andhra Pradesh	Karimnagar	158	84.34	17.18	603	79.64	19.66	4.70	2.97*
	Kurnool	241	87.18	17.23	576	83.41	20.72	3.76	2.68*
	Nellore	158	74.97	27.46	505	74.67	25.90	0.28	0.12
	Vizianagaram	208	77.69	26.88	462	75.98	23.18	1.72	0.79
	Warangal	226	90.51	15.59	532	83.90	21.85	6.61	4.70*
Gujarat	Banaskantha	198	67.15	27.90	605	61.85	30.25	5.30	2.18*
	Dangs	-	-	-	500	71.05	27.70	-	-
	Panchmahals	201	79.60	20.50	595	73.45	23.50	6.15	3.31*
Orissa	Bolangir	138	68.51	25.05	449	56.76	27.50	11.75	4.47*
	Dhenkanal	142	81.34	22.00	563	85.99	17.20	4.65	2.71*
	Gajapati	159	56.45	42.35	396	42.64	41.45	13.81	3.52*
	Kalahandi	80	65.63	27.20	401	64.75	26.85	0.88	0.27
	Rayagada	55	77.00	25.55	356	64.55	33.35	12.45	2.65*

The data shown in Table 5.2 revealed that two out of five districts in the state of Andhra Pradesh did not display areawise significant differences in achievement in mathematics. However, in the remaining three districts where differences in achievement were found to be significant, these differences were less than five percent in two districts.

In the state of Gujarat both the districts displayed significant differences in achievement between urban and rural students favouring students of urban areas. These difference were, however, found to be marginally above five percent mark.

In two out of the five districts of Orissa the differences in achievement in mathematics between urban and rural students were found to be below 5 percent level, of them, one districts displayed significant difference in favour of rural students. In the remaining three districts the differences were farther from the DPEP ceiling, favouring urban students.

- Four of the five districts in Andhra Pradesh and two of the five in Orissa lay claim to the DPEP goal.
- Both the districts in Gujarat one district in Andhra Pradesh and three districts in Orissa still to attain the DPEP goal.
- Bolangir, Gajapati and Rayagada districts of Orissa need to put in extra effort to bridge up the gaps in achievement.
- Achievement differences in Dhenkanal in Orissa find favour with the rural students.

## 5.2 Differences in achievement in class III

Areawise differences in achievement displayed by class III students of Gujarat both in language and mathematics are discussed in the following paragraphs.

### 5.2.1 Differences in achievement in language

Table 5.3 illustrates areawise differences in achievement in language of class III students of Gujarat.

Table 5.3 : Areawise mean achievement of class III students in language

State	District	Urban			Rural			Diffe- rence %	CR Value
		N	M%	SD	N	M%	SD		
Gujarat	Banaskantha	267	39.38	15.69	582	38.14	14.02	1.24	1.15
	Dangs	-	-	-	394	48.66	12.80	-	-
	Panchmahals	280	51.37	12.65	622	54.80	17.38	3.43	2.96*

Figures printed in Table 5.3 revealed that areawise differences in achievement in language in class III were found to be below 5 percent in both the districts in the state of Gujarat. Of the two districts, the differences in achievement in Panchmahals were found to be significant favouring rural students.

- Both the districts in Gujarat overcome the DPEP goal.
- Differences in achievement favour rural students in Panchmahals

### 5.2.2. Differences in achievement in mathematics

Table 5.4 presents areawise differences in achievement in mathematics of class III students of Gujarat

Table 5.4: Areawise mean achievement of class III students in mathematics

State	District	Urban			Rural			Difference %	CR Value
		N	M%	SD	N	M%	SD		
Gujarat	Banaskantha	249	32.10	16.03	587	31.92	17.18	0.18	0.16
	Dangs	-	-	-	390	47.32	21.53	-	-
	Panchmahals	290	38.70	15.93	620	47.70	21.50	9.00	6.35*

Figures printed in Table 5.4 revealed that the differences in achievement between urban and rural students were not found to be significant in Banaskantha. However, in Panchmahals the differences were found to be significant favouring rural students.

- Banaskantha lays claim to DPEP goal.
- Panchmahals displays exceptional trend of showing 9 percent difference in favour of rural students.

### 5.3 Differences in achievement in class IV

Areawise differences in achievement exhibited by class IV students of Andhra Pradesh and Orissa both in language and mathematics are discussed in the subsequent paragraphs.

#### 5.3.1 Differences in achievement in language

Table 5.5 portrays areawise differences in achievement in language of class IV students.

Table 5.5 : Areawise mean achievement of class IV students in language

State	District	Urban			Rural			Difference %	CR Value
		N	M%	SD	N	M%	SD		
Andhra Pradesh	Karimnagar	200	64.50	20.71	661	54.39	16.08	10.11	6.35*
	Kurnool	306	53.29	18.10	560	61.87	17.81	8.58	6.71*
	Nellore	183	54.64	16.89	432	52.49	17.70	2.15	1.42
	Vizianagaram	253	61.14	16.56	475	61.95	13.88	-0.81	0.66
	Warangal	225	61.75	16.79	573	60.66	17.93	1.09	0.81
Orissa	Bolangir	165	45.16	22.61	377	43.49	17.24	1.67	0.94
	Dhenkanal	252	65.9	13.43	556	62.85	13.07	3.05	3.04*
	Gajapati	149	62.41	18.09	301	62.16	17.23	0.25	0.14
	Kalahandi	107	39.1	14.96	334	47.28	17.77	8.18	4.29*
	Rayagada	120	58.95	14.23	412	50.01	17.83	7.94	4.50*

The figures displayed in Table 5.5 revealed that areawise differences in achievement in language in class IV were not found to be significant in three of the five districts of Andhra Pradesh. In the remaining two districts, the differences were found to be significant, favouring urban students in Karimnagar and rural students in Kurnool district.

Like Andhra Pradesh, the achievement differences between urban and rural students were found to be less than five percent in three out of five districts in the state of Orissa. In the remaining two districts the differences were found to be significant favouring rural students in Kalahandi and urban students in Rayagada district.

- Three districts each in Andhra Pradesh and Orissa lay claim to DPEP goal.
- One district each in Andhra Pradesh and Orissa with significant difference find favour with rural students.
- One district each in both the states with significant differences find favour with urban students.

### 5.3.2 Differences in achievement in mathematics

Table 5.6 illustrates areawise differences in achievement in mathematics of class IV students.

Table 5.6 : Areawise mean achievement of class IV students in mathematics

State	District	Urban			Rural			Difference %	CR Value
		N	M%	SD	N	M%	SD		
Andhra Pradesh	Karimnagar	186	56.21	24.22	681	41.45	18.59	14.76	7.66*
	Kurnool	317	47.81	20.54	519	52.25	19.01	4.44	3.12*
	Nellore	178	41.56	15.93	446	39.46	20.16	2.10	1.37
	Vizianagaram	259	49.02	16.60	486	54.10	17.94	5.08	3.87*
	Warangal	254	45.98	19.44	576	45.22	22.28	0.76	0.50
Orissa	Bolangir	165	19.75	9.20	377	21.12	7.48	1.37	1.82
	Dhenkanal	252	21.98	5.63	556	22.32	6.65	0.34	0.70
	Gajapati	149	22.46	5.65	301	22.64	6.63	0.18	0.28
	Kalahandi	107	19.15	9.18	334	19.13	8.40	0.02	0.02
	Rayagada	120	22.66	8.10	442	20.40	7.83	2.26	2.78*

The entries posted in Table 5.6 revealed that areawise differences in achievement in mathematics in class IV were found to be less than 5 percent in three out of five districts in the state of Andhra Pradesh. Of them, one district displayed significant difference favouring rural students. In the remaining two districts the differences in achievement turned out to be significant and above 5 percent level, of them, one favouring urban students and another favouring rural students.

In four of the five districts of the state of Orissa, the achievement differences were not found to be significant. Three of the existing differences found favour with rural students.

- All districts in Orissa and three out of five in Andhra Pradesh realise the DPEP goal.
- Of the two districts in Andhra Pradesh showing more than 5 percent differences, one favours urban and another favours rural students.
- Half of the districts in the two states favour rural students.

### Summing up

An overview of the districts that laid claim to achieving the DPEP goal of reducing areawise differences in achievement is illustrated in Table 5.7.

Table 5.7: Districts claiming DPEP goal in regard to Area

Class	Total Districts	Districts claiming DPEP goal	
		Language	Mathematics
I	12	6	6
III	2	2	1
IV	10	6	8

The results discussed in the earlier paragraphs reveal that the goal of reducing the achievement gaps between urban and rural students in language in class I has been attained in four out of five districts in Andhra Pradesh and two out of five districts in Orissa. The remaining districts of Andhra Pradesh and Orissa and both the districts of Gujarat have still to bring down the differences in achievement to less than five percent so as to realise the DPEP goal. As regards areawise differences in achievement in class I mathematics, the position is identical to that of class I language achievement. While in class I language the achievement differences have found favour with rural students in Nellore, Vizianagram and Warangal districts, in class I



mathematics the achievement differences have found favour with rural students in only Dhenkanal districts.

The analyses of results in respect of areawise differences in achievement in language in class III reveal that both the districts in Gujarat have laid claim to achieving the DPEP goal. Interestingly while the areawise differences in mathematics achievement in Panchmahals district have favoured rural students with a huge margin, in Banaskantha the differences in achievement have been almost eliminated.

The findings enumerated in respect of areawise differences in achievement in language in class IV signify that three districts each in Andhra Pradesh and Orissa have been found to be sited under the ceiling of the DPEP. Of the remaining four districts, the differences in achievement have found favours with rural students in Kurnool and Kalahandi districts and with urban students in Karimnagar and Rayagada districts. The achievement gaps in class IV mathematics are observed to be narrower than that of language. These gaps indicate that the DPEP goal has already been achievement in all the five districts of Orissa and in three out of five districts in Andhra Pradesh. In the remaining two districts in Andhra Pradesh where the gaps in achievement are more than the DPEP ceiling, one district favours rural students.

In those districts where the differences in achievement have stood below the ceiling of the DPEP, continuous monitoring is required not to allow these gaps to increase. However, extra efforts need to be made to bring down the achievement gaps to less than five percent in those districts that have not yet realised the DPEP goal.



### Class III Mathematics Test

S.No.	Competency	Item Numbers
<b>I. Understanding whole numbers</b>		
1.	Reads and writes number names of 4-digit numbers	14,17
2.	States the place value of a digit in 3 or 4 digit number	6
3.	Identifies a number immediately after a 4-digit number	16
4.	Writes a 4-digit number in expanded form	18,19
5.	Identifies the smallest amongst the 4-digit numbers	15
6.	Arranges 4-digit numbers in ascending and descending order	20
7.	Identifies the place of a digit in 4-digit number	5,7
<b>II. Addition, subtraction, multiplication and division of whole numbers</b>		
8.	Adds two or three, 3 or 4 - digit numbers with carrying	1,2
9.	Subtracts 3-digit numbers with borrowing	8,9
10.	Subtracts 4-digit numbers without borrowing	10
11.	Subtracts 4-digit numbers with borrowing	11
12.	Solves word problems using addition and subtraction	3,13
13.	Multiplies two or three digit number with a single digit number using carrying	23
14.	Multiplies two or three digit number with a single digit number without carrying and involving zero	21,22
15.	Divides a 3-digit number by a single digit without borrowing	31,32
16.	Solves word problems using multiplication and division	33
<b>III. Simple Problems of Daily-life Relating to Units of Money, Length, Mass, Capacity, Area and Time</b>		
17.	Makes any value upto Re using varying collections of coins	26,29
18.	Writes money in decimal notation	25
19.	Solves simple money problems using either addition or subtraction without conversion	28
20.	Solves simple money problems using either addition or subtraction with conversion	12
21.	Solves simple money problems using multiplication or division without conversion	27,30
22.	Solves simple money problems using multiplication or division with conversion	24
23.	Adds lengths given in Kilometres and metres, without conversion	38
24.	Converts Kilograms into grams	39
25.	Converts litres into millilitres	40
26.	Reads time from the clock	4
<b>IV. Use of Fractions</b>		
27.	Demonstrates understanding of fractions as part of regions	35
28.	Understands the concept of fraction as a part of one	36
29.	Addition of fractions with same denominator	37
<b>V. Understanding of Geometrical Shapes</b>		
30.	Counts the number of sides in a plane figure	34

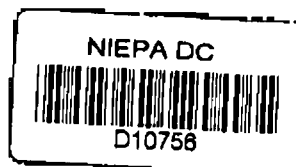
### Class-IV Language Tests

Competency	Item numbers
Word Knowledge	1 to 35
Reading Comprehension	1 to 35

### Class - IV Mathematics Test

S.No.	Competency	Item Numbers
<b>I. Understanding whole numbers</b>		
1.	Identifies prime numbers	25
2.	States the place value of a digit in a given number	3,4
3.	Reads and writes the number names	9,10
4.	Writes the numbers in expanded form	11
<b>II. Addition, Subtraction, multiplication and division of whole numbers</b>		
5.	Adds two or three 4-digit numbers with carrying	1
6.	Subtracts 4-digit numbers with borrowing	5,6
7.	Solves daily life problems involving addition and/or subtraction	7,8
8.	Understands various terms of multiplication such as multiple, multiplier and product	13,14
9.	Multiplies the numbers, one of them being zero	12
10.	Finds the L.C.M. of two given numbers	26
11.	Identifies the prime factors of a given number	27
12.	Understands various terms of division such as divisor, dividend, quotient and remainder	22
13.	Divides a number by one digit number	20,21
14.	Solves daily life problem involving division	19
<b>III. Simple Problems of Daily-life Relating to Units of Money, Length, Mass, Capacity, Area and Time.</b>		
15.	Solves simple money problems using addition, subtraction, multiplication and division	17,18
16.	Applies unitary method to buying and selling problems	15,16
17.	Solves simple problems related to standard units of length	36,39
18.	Solves simple problems related to weight	35,38
19.	Solves simple problems related to capacity	37,40
20.	Solves simple daily life problems related to time	2
<b>IV. Use of Fractions, Decimals and Percentage</b>		
21.	Demonstrates understanding of proper fractions as parts of regions	34
22.	Identifies simple fractions	32,33
23.	Finds equivalent fractions	30,31
24.	Converts fractions to decimals	28,29
<b>V. Understanding of Geometrical Shapes</b>		
25.	States properties of a triangle and square	23,24

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