

Status of Learning Achievements in India

A Review of Empirical Research

October 2004

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This report is a review of empirical research on the status of learning achievements of primary school children in India. The report collates the findings of micro level studies and macro level surveys conducted between 1994- 2004. The report commissioned by Azim Premji Foundation has been prepared by Ms. Sujata Reddy, a research consultant. Azim Premji Foundation is not liable for any direct/indirect loss or damage whatsoever arising from the use or access of any information, interpretations and conclusions that may be printed in this report."

CHAPTER I

INTRODUCTION AND PERSPECTIVE

1. Quality of Primary Education: A Historical Perspective

There is unanimous agreement among educationists today, that the quality of primary education in almost all parts of our country is poor. A majority of our children in rural and even urban areas are left with no option but to attend poor quality and often dysfunctional schools. A historical perspective can help us understand how this came about. Under the British, education was elitist and was restricted to the privileged few, but with the gradual spread of modernization, the Indian government strived to make it the universal privilege of the masses. To achieve this, their efforts were concentrated exclusively on increasing the number of schools and teachers to provide better access. Numerous schemes, such as the mid-day meal scheme, provided incentives to the pupils from the deprived sections, enabling their attendance. These endeavours resulted in the creation of an educational system that was vast, with nearly 94% of the population having primary schools within a distance of one kilometer, and near total universalisation of school enrolment. However, similar claims could not be made regarding efficiency, quality and achievement of learners. With emphasis on access, effort to improve the quality of existing primary schools was given little thought. There was thus a linear sequencing of access first and quality later (*Ramachandran, 2004*).

The demand for quality basic education and the perceived decline of the public educational system led to a parallel development of the increase in private aided and unaided schools. These schools promised education of a better quality, but with higher fees. There was thus a shift to private schools by economically better off children in towns and cities, while government primary schools became the only recourse of the poor and socially disadvantaged groups.

The quality of a school depends on a variety of factors including infrastructure, presence and motivation of teachers, minimum teaching standards and a minimum achievement level of pupils. Since the primary aim of an educational institution is to ensure that all the learners acquire the desired skills and knowledge (*Aggarwal 2000*), the quality of a school can be estimated by the extent to which students have acquired knowledge, skills, values and attitudes, which refer to the actual learning outcomes.

The government's concern with educational achievement took a concrete shape as late as in the 90's with the formulation of the MLL document, which specified the standards that all children had to achieve at the primary stage. The Minimum Levels of Learning (MLLs) had to be followed by all schools across the country, and were an attempt to bring education of a comparable quality to all children. Following this, attempts were made to assess the standards actually achieved by learners and tests were developed to measure learner achievement through surveys and empirical studies.

Statistical and empirical evidence, gathered from the recently conducted surveys and studies on learning levels, point to the significant proportion of children attending government schools, who go through the primary stage, learning very little. Thus, learners' achievement in India is very low, and the most important challenge for primary education is to improve educational outcomes of children.

Objective of the Study:

The main concern of this report is to study the current status of learning achievements at the primary stage, by undertaking a review of the available literature and synthesizing the findings of achievement studies and surveys conducted during 1994-2004. A close scrutiny of the findings would enable us to assess the trends in learning achievements today and consequently to reach some conclusions on the quality of primary education in India.

Before embarking on this task, it is necessary to clarify some important aspects, pertaining to learning achievements, in this chapter:

- i) At the outset, an attempt is made to define learning parameters, by providing a conceptual perspective on learning achievements and the way it is conceived in these studies.
- ii) Further, the assessment parameters are dealt with which clarify the nature of the tests used to measure learner achievement in this synthesis of studies and surveys.

- iii) Next, attention is focused on the extent of learning taking place in primary schools today, which is substantiated by statistical evidence.
- iv) It was considered essential to highlight the standards of learning achievement actually prescribed by the Indian government before analyzing the actual learning levels of children. This called for a brief discussion of the salient aspects of the Minimum Levels of Learning, followed by a short critique of the approach as it emerged over the years.
- v) Finally, the outlay of the report and points of caution to be kept in mind are presented.

2. Learning Achievements and their Measurement: A conceptual perspective

The primary function of education is to facilitate the all-round development of the individual. Since personality has been defined as a set of cognitive and non-cognitive traits (*Ebel and Frisbie 1991*), learning in schools encompasses the development of the desirable cognitive and non-cognitive characteristics of personality. The scholastic (cognitive) traits refer to the intellectual skills and knowledge, while the non-scholastic (non-cognitive) area refers to the affective and psychomotor skills such as socio-personal qualities, interests, attitudes and values. It is important to remember that the affective and cognitive areas are not independent aspects of the personality. Many affective goals can be reached through cognitive learning and the development of socio-personal traits also requires a certain level of cognition (*Ebel and Frisbie 1991*).

Research has thus established that learning outcomes should refer to the acquisition of both cognitive and non-cognitive competencies which are necessary for the child's overall development. Scholars feel that a reliable indicator of the quality of education would be the assessment as to whether pupils are learning effectively, acquiring knowledge and skills, and growing socially and morally or not (*Aggarwal 2000; Govinda and Varghese 1993*).

In our country, however, assessment tools do not as yet test the acquisition of non-cognitive skills. Schools have, by and large, laid emphasis on the cognitive domain in education. Hence research on learning achievements has focused only on assessing the acquisition of basic skills of literacy and numeracy. Though the assessment of the non-cognitive areas has been stressed in the NPE, no systematic effort has yet been made in this regard.

Cognitive outcomes assessed in achievement surveys and studies, thus refer to the package of knowledge and skills to be attained in the primary stage and are elaborated in terms of competencies which a child is expected to acquire at each level and in the 3 subject areas. These competencies are clearly outlined in the Minimum Levels of Learning (MLL) document. Scores obtained by learners on achievement tests should be taken only as indicators of the level of performance in concerned areas and not as measures of the total learning achieved by students through various experiences in the school.

Since the 1960's, students' academic performance is being assessed on a regular basis, in advanced countries. In India, however, assessment of learning achievements has only recently begun. Learning can be measured along important dimensions related to the curriculum, either through class room assessments – examinations, assignments etc., or through standardized achievement tests. Assessments by teachers are fraught with difficulties, since results may vary depending on teachers' judgements. Thus standardized achievement tests, based on pre-defined standards, have proved to be useful in assessing the skills and competencies acquired by pupils (*Aggarwal 2000*). Thus studies on learner achievement in India have utilized competency based achievement tests, that measure learning in mathematics, language and science.

It is crucial to note, at this juncture, the flaw in relying only on simple assessment measures - tests and scores - to measure learning in all its facets. Achievement tests often test facts based on memory rather than assess complete understanding of a concept. Students' creative efforts are also not assessed in this manner.

3. How much are children learning?

Our focus in this report, as stated above, is to examine the extent to which children are learning at the primary stage. A brief look at some statistical evidence on classroom assessments, the findings of achievement surveys and the completion rates of children in various grades, would give us a clear indication of the learning levels in our country today. These findings are corroborated by findings of empirical studies which are examined in great detail, in the following chapters.

The tables below try to capture the reality of levels of learning among children.

Table 1

Percentage of boys and girls securing more than 60% Marks

STATE	IV / V BOYS	IV / V GIRLS	VII / VIII BOYS	VII / VIII GIRLS
Andhra Pradesh	59.90	59.12	52.62	54.75
Assam	21.17	18.52	14.72	13.09
Bihar	32.14	31.86	23.87	24.00
Gujarat	53.88	54.29	59.07	63.27
Haryana	29.89	30.11	16.40	17.50
Himachal Pradesh	44.91	46.55	16.98	19.04
Jharkhand	22.89	22.60	19.97	20.19
Karnataka	59.37	60.49	44.26	48.98
Kerala	38.90	42.85	35.92	41.16
Madhya Pradesh	23.73	23.05	18.99	21.96
Maharashtra	63.16	62.38	25.34	26.98
Orissa	10.50	9.52	12.17	11.93
Rajasthan	52.50	51.22	46.97	48.48
Tamil Nadu	44.64	47.63	24.95	26.69
Uttar Pradesh	39.34	38.29	32.56	36.70
Uttaranchal	40.23	36.05	24.22	23.95
West Bengal	40.21	38.40	23.31	21.40

Source: DPEP Report Cards in Sinha A. 2003.

Table-1 portrays the dismal academic performance of children, considering that a large number of class IV / V children complete primary school with less than 60% marks. Such children are unlikely to complete middle / secondary school, as academic load increases after this stage (*Sinha A. 2003*). The fact that most children are far below the mastery levels, in tests, indicates a major gap in the understanding levels of children. It is essential to gain mastery over competencies, such as reading, writing and numerical operations, since children would have serious problems at higher levels if these are not mastered at the primary stage.

Table 2
Mean achievement scores of class-IV students

State / district	Mean Achievement Score in Language for Boys : Class – IV	Mean Achievement Score in Language for Girls : Class – IV	Mean Achievement Score in Mathematics for Boys : Class – IV	Mean Achievement Score in Mathematics for Girls : Class – IV
Haryana				
Jind	58.85	55.90	46.82	46.35
Kaithal	45.30	52.66	42.31	48.19
Chattisgarh				
Bilaspur	53.88	50.52	41.59	38.20
Raigarh	50.12	46.06	33.17	33.93
Madhya Pradesh				
Betul	66.09	67.53	62.09	61.76
Dhar	59.94	59.33	48.13	46.01
Tamil Nadu				
Dharmapuri	71.46	69.92	61.50	60.69
Villupuram	68.00	67.56	62.28	62.49

Source: Gautam S K S 2002

A brief glimpse of the mean achievement scores of Grade IV children, as evident from achievement surveys in DPEP I States, reveals the poor academic performance of boys and girls in language and maths. The achievement surveys are examined in greater depth in the forthcoming chapters, but suffice it to state at this juncture, that children have failed to attain mastery in two subject areas, as the figures indicate.

Table 3
The dropping enrolment scenario

Class	Boys (in millions)	Girls (in millions)	Total (in millions)
Class – I	17.1	13.4	30.5
Class – II	13.4	10.4	23.8
Class – III	12.2	9.6	21.8
Class – IV	11.0	8.6	19.6
Class – V	10.2	7.8	18.0
Class – VI	9.4	6.6	16.0
Class – VII	8.3	5.9	14.2
Class – VIII	7.6	5.0	12.6
Class – IX	6.2	4.0	10.2
Class – X	5.4	3.4	8.8
Class – XI	2.4	1.6	4.0
Class – XII	2.1	1.4	3.5

Source: MHRD Selected Educational Statistics 2000-2001.

The fact that children are not learning is also evident from the dropping enrolment scenario, there being 30.5 million children in Class I and only 3.5 million in Class XII. The dropping enrolment reflects low learning in the system since most children are not completing grades for which they are enrolled (*Sinha A. 2003*).

Even though children progress in primary grades due to the non detention policy, in practice, little learning is taking place. Children are pushed from one grade to the next, irrespective of how much they are learning. Findings from a number of studies reveal that class III/IV children are not able to read and write even simple sentences. Thus something is surely wrong with the learning outcomes of children (*Ramachandran 2003; Dhankar 2002; Batra 2002; Dewan 2002*).

Another factor contributing to the declining learning levels in schools is the curriculum load at each level, which makes it difficult for children to cope with the increased quantity of facts and information. This has encouraged students to go in for private tuitions. A heavy curriculum works against the first generation learners coming from poor background, who neither receive academic support at home nor can afford tuitions. As a result of the curriculum load, schools have lost sight of kindling creativity, developing a critical mindset in children and inculcating a value system based on the tenets of our constitution (*Ramachandran 2004*).

Evidence of limited learning in government schools is also obtained from the growing belief that these schools are failing to provide adequate learning opportunities, while the demand for quality basic education is increasing (*Sinha A. 2003*). This has spurred the expansion of the private unaided schools. The social composition of the government school comprising children of poorest households, many of whom are first generation learners, has made it a place where almost no learning is taking place. According to Shanta Sinha, the withdrawal of the elite from these schools has made them non-performing and non-accountable entities (*Shanta Sinha in Sinha A. 2003*). The decline of the government schools is probably the reason behind the phenomenon of the private schools thriving in India.

Before we begin our analysis of the findings of achievement studies and surveys, it is vital to highlight the learning standards which all children should attain as specified in the MLL document. All the studies of learner achievement have utilized the MLL as the basic framework, and the tests employed have focused on measuring competencies specified therein. The MLL approach has also been an integral part of various educational programmes of the government. This section, at first, proposes to examine the salient features of the MLL as a conceptual framework. Over the years, the MLL approach has attracted a great deal of criticism from educationists, as it was thought to be a mechanical approach. The critical observations and comments, made by prominent educationists and academicians, are discussed next, to highlight the lacunae in the approach of the government towards learning achievements.

4. The 'Minimum Levels of Learning' and its critique

Special focus on educational achievement began in India in 1980 with the preparation of the MLL document, which was further refined and operationalized in 1991. It was a step taken by the government towards improving the quality of elementary education and achieving a comparable standard of education throughout the country.

In order to establish the benchmark for learning achievements in the country, the government laid down the MLLs which specified the standards to be achieved by all learners in various grades of the primary stage, in each curricular area. The MLLs were thus laid down for the three curricular areas of language, maths and environmental studies from grade I to V. Not only did the MLLs find place in the National Policy on Education and its Programme Of Action, but the MLL approach became an integral part of the educational programmes such as DPEP.

MLL was conceptualized as a three dimensional model encompassing the three key aspects – Competency, Mastery and Equity.

- i) The MLL laid down learning outcomes in the form of a set of identified competencies that are essential for all children to acquire at each stage of elementary education and in the three curricular areas – maths, language and environmental studies. With this, conventional syllabus-based teaching gave way to one that laid emphasis on learning by all children.
- ii) It postulated that these competencies and skills have to be acquired at the level of mastery, where these become sustainable and would not allow a relapse of the pupils into illiteracy. The programme goals specify that mastery could be attained when a child acquired 80 per cent of the specified competencies and 80 percent of the children achieved this at the specified level.
- iii) The element of equity implied that all children irrespective of their economic and social background should be able to learn up to this defined level and the curriculum and teaching – learning materials had to be designed in such a manner.

The MLLs were also to be used as a guideline for classroom teaching as well as for the evaluation of learner achievement. As an evaluatory tool, the MLL could help the teacher (or anyone else), by serving as a standard, against which the progress of the child/children could be assessed, in terms of essential learning outcomes. The MLL therefore had implications for guiding the evaluation of children's learning outcomes.

Accordingly, based on these concepts, administrative and pedagogic interventions were worked out. Almost all major states adopted the MLLs, and based on this, curriculum revision, redesigning of text books, classroom transactions, evaluation and teacher orientation were the gamut of activities taken up under the programme.

The MLL programme has been criticized by various authors essentially from three angles, as follows:

a) Conceptualization; b) Formulation; and c) Implementation.

a) Conceptualization of MLLs:

Many critics have argued that the philosophical and conceptual basis of the MLL concept is flawed in many ways. Some have questioned the assumptions made and the terminology used in the various definitions in the project document. Others have called it patently behaviouristic and out of tune with the times. Another major criticism is that MLL concept does not adopt a holistic approach, while it is also criticized that the approach followed is not child centered.

i) MLL Concept's premises are flawed:

According to Anil Sadgopal, "the MLL has been mechanically imposed on the primary schools of the entire country despite its highly questionable philosophical and pedagogic basis" (*Sadgopal, 2004*). The objective of the MLL approach was to create an educational system wherein "all children ... reach a minimum level of learning ... that would eventually enable them to understand their world and prepare them to function in it as permanently literate, socially useful and contributory adults" (*NCERT, 1991*). Given the fact that the MLL approach considers the aim of education as one of teaching children to become 'socially useful and contributing adults' on growing up, Dhankar questions the validity of such an aim in the democratic system, since all individuals are 'socially useful' in their own way. This is a purely utilitarian approach treating some as 'useful' and others, perhaps, as 'used'. Further, according to the author, the education system must surely aim higher than merely turning out 'useful adults'. As the MLL statement also says that the purpose of the programme is to make children permanently 'literate', the author contends that reading and writing should lead to much more than mere literacy. The aim of education as one that enables children to understand their world is also criticized, since it presumes that the way the world is to be understood is 'given'. According to Dhankar, "we are well within our rights to impart the understanding of the world we have ... but it should be done in a non-binding manner" (*Dhankar 1995*). This would thereby allow scope for a different understanding.

ii) MLL concept is patently behaviouristic:

In the behaviourist – connectivist framework, knowledge is treated as a 'given' and is broken down in to a hierarchical taxonomy of 'specific' learning objectives. This approach is teacher centered and the child is viewed in a minimalist fashion. This was as against the new child centered approach, which emerged in the 1970's, called constructivism, wherein the child, like any other human being, is regarded as being engaged in making sense of the world, acting upon it, and producing knowledge (*Sarangapani 2000*). The concept of MLL is however derived from the behaviouristic framework. This approach, according to Jangira, focuses on specific competencies and their attainment at mastery level (*Jangira 1997*). Many critics argue that this patently behaviouristic approach of measuring learning by change in observable behaviour is not defensible, nor is it feasible to measure learning outcomes in strictly quantitative terms (*NCERT 1998*). The basic critique against the MLL being a behaviouristic model, according to Dhankar, is that, MLL limits pupils to develop only basic competencies in language, maths etc., rather than training them to become complete, motivated, independent and rational learners. Moreover, competencies in maths for e.g., should be acquired not just to solve everyday problems, but to enjoy the process of learning itself (*Dhankar 1995*). Thus, the behavioral paradigm of the MLL is now 'discredited' and needs to be discarded (*Sadgopal 2004*).

iii) MLL approach is not child centered:

Flowing from the previously elaborated understanding that the MLL approach is behaviouristic in persuasion, it has been argued, by many, that it is not 'child centered'. To quote Padma Sarangapani, "The MLL has not brought about any ... revolution in which the child replaces the teacher as the centre of the curriculum. Post MLL curriculum related activities continue to be narrowly teacher – defined and led, and are geared to evaluation" (*Sarangapani 2000*). According to Jangira, the MLLs ought to have been implemented in the context of a child centered approach, which is more humanistic and which would have led to the overall development of the child (*Jangira 1997*).

iv) MLL approach is fragmentary and non-holistic:

According to Padma Sarangapani, MLL has highly specific and fragmentary learning objectives in terms of observable behaviour (*Sarangapani 2000*). The criticism leveled against the MLL approach is that competencies cannot be broken down in to steps in a linear way i.e., they do not necessarily get acquired by children in a sequence from one competency to another and then to another, unidirectionally. Instead, children need to move back and forth in a kind of a spiral form within the same learning area, again and again, in order to learn it well. They also need more than just one activity or experience to learn a particular thing. At the same time, they can pick up many competencies from any one activity or lesson or experience. Thus, children's way of learning is holistic and not segmented in nature. The MLL approach did not take this aspect of children's learning into consideration (*NCERT 1998*). According to Dhankar, "the idea of chopping up a subject area in discrete competencies to be mastered one by one is neither epistemologically sound, nor is it supported by the theories of learning" (*Dhankar 2002a*).

b) Formulation of MLLs:

Many authors, including the NCERT themselves, have opined that many flaws have crept into the MLL concept, approach and programme, at the stage of formulation. Broadly, the criticisms refer to the fact that MLLs have concentrated only on the cognitive traits at the cost of affective traits; they have prescribed competencies for each of the five grades instead of at two levels only, as originally contemplated; they have overlooked the vast regional and cultural diversities and variations in an attempt to specify 'uniform' standards; and that the standards set were unrealistic given the conditions of the schools and the school environment.

i) Emphasis on the cognitive traits:

The aim of education must address improvement in the cognitive as well as the affective and psychomotor traits of the children. The MLL project had the limited aim of improving the cognitive domain only (*NCERT 1998*). Anil Sadgopal says "in the MLL approach, the cognitive domain is viewed in isolation of the affective domain and psychomotor skills" (*Sadgopal 2004*). According to Dhankar, "the presentation of MLLs creates a dichotomy between cognitive and affective domains which is hard to sustain" (*Dhankar 2002a*). Since the Committee had laid down MLLs for only three of the six curricular areas i.e., language, mathematics and environmental studies, the other important areas got 'consciously' neglected (*NCERT 1998*). The conscious decision to give priority to cognitive areas has created a biased perspective of the primary education curriculum (*Jangira 1997*). Dhankar also states that the MLL approach sees education as teaching of only 3Rs (reading, writing and arithmetic). The arts and skills are not given any place in the curriculum (*Dhankar 2002a*).

ii) Two levels and not five grades:

The terms of reference of the Committee specified MLLs for classes III and V for the primary grades and not for each grade separately. The intention was that it would allow for pacing of learning according to child's efficiency (*Jangira 1997*). Mastery was thus to be achieved i.e. 80% of the specified competencies to be acquired by a child and at least 80% of the children of a class to achieve this mastery. Specifying MLLs for all 5 grades did not fit well with this original idea of 'mastery learning' (*NCERT 1998*). According to Dhankar, the rigidly defined competencies to be mastered within a given time (grade wise competencies) by all children "is not viable idea, nor is it desirable" (*Dhankar 2002a*).

iii) MLL - an unrealistic expectation:

Given the definition of 'mastery', the MLLs as specified are actually not 'minimum levels' in practice. These are at best essential or 'desirable'. This became an unrealistic expectation in the absence of flexibility in terms of learning time, particularly in view of the predominance of first generation learners on the one hand and poor learning conditions (not even 'minimum learning conditions') on the other (*NCERT 1998*).

iv) MLLs did not consider regional and cultural variations:

Anil Sadgopal felt that the uniform and mechanical imposition of the MLL ignored the rich diversity of the country which ought to have been the basis of a planned curriculum (*Sadgopal 2004*). In fact, due to wide spread disparities in learning conditions in the country, it is very difficult to identify the 'minimum' levels which can be mastered by all (*NCERT 1998*). Instruments such as MLLs which measure students against "narrow decontextualised standards will continue to show tribal and low caste people as 'disadvantaged' and 'deprived' in educational settings" (*Sarangapani 2000*). Although a provision was envisaged by the Committee for "regional and preferably district adaptation of MLLs", it was not implemented. The result was that in most schools students could not achieve the stipulated levels of mastery (*Jangira 1997*).

c) Implementation of MLLs:

Many authors have clearly brought out the fact that the implementation of the project was not in strict consonance with the originally intended plan and also that the implementation itself had several shortcomings. These are mainly brought out by Jangira in his study of the implementation of the MLLs.

i) Implementation strategy:

- Lack of systematic and sustained institutional support resulted in implementation of MLLs without adequate preparation and professional back up.
- Although the phasing of MLLs implementation in to initiation, extension, expansion and consolidation phases was contemplated, its implementation, however, had gaps. For example, expansion phase was not proceeded by a systematic and objective review and adequate preparation.
- The implementation of continuous monitoring of students learning progress was not adequately achieved since neither teachers were provided guidelines nor were they provided the needed skills.
- Maximum priority was placed on the revision and re-revision of 'competency based text books' rather than on training and class room practice.
- There has been an almost mechanical implementation of the programme using MLL document sequence as 'the teaching sequence' which was not intended (*Jangira 1997*).

ii) Evaluation and remedial teaching:

- According to Anil Sadgopal, "the MLL experiment has never been scientifically evaluated" (*Sadgopal 2004*). Although evaluation of a continuous and comprehensive nature is the crux of the MLL approach leading to mastery learning, this has been the weakest component as is evident from the field studies (*Jangira 1997*).
- Although remedial teaching which is linked to evaluation was intended in the programme, it was rarely seen at the field level (*Jangira*). Even the NCERT have stated that the area of remedial teaching did not get enough attention (*NCERT 1998*).

5. Outlay of the Report and points of caution

To reiterate, the primary concern of this report is to assess the current status of learning achievements of primary school children in India. This has been attempted by systematically collating the findings of micro level empirical studies as well as macro level achievement surveys conducted between 1994-2004. An effort is also made to analyse these findings and elicit some broad patterns that may emerge.

Apart from this introductory chapter, the following chapters constitute the report:

Chapter II is a synthesis of the findings of micro level field studies conducted at a point in time. Though these have been conducted at different times and at different locales of the country, they have a common aspect - all of them have assessed the basic competencies, to be acquired by children at the primary stage, through MLL based achievement tests. The mean scores of these studies are represented in chart 1.

Chapter III is a temporal analysis of achievement surveys which formed a part of the government's educational programmes such as DPEP. It presents the results of large scale surveys conducted periodically over the life span of the programme. These are represented in charts 2 and 3. The project conducted Baseline, Mid- term and Terminal surveys, to assess the progress in the improvement of learning achievements so that the success or failure of the programme could also be assessed.

Apart from this quantitative analysis, the third chapter also presents the findings of a set of qualitative studies of the DPEP programme in Phase I States, conducted by independent evaluation agencies. These are vastly different from the previous surveys which focused on quantitative data in the form of achievement scores. They are in-depth explorations of the learning status of children, and follow a holistic approach in understanding the teaching-learning process in its entirety.

Chapter IV tries to cull out from the studies and surveys analysed above, the host of school, pupil and home background factors which influence learning levels of children in varying contexts. Such an understanding would throw some light on the reasons responsible for low learning levels in our country.

Chapter V is the conclusion of the report, which briefly recapitulates the findings of learner assessment studies. It also raises some questions that are left unanswered and reflects on some important issues that have emerged from this study of learning achievement.

An attempt has been made in the report to bring together, in one place, findings of all major studies and surveys on learning achievements. While undertaking this exercise, a few points of caution that the reader must keep in mind are:

- i) The report puts together data from macro-level surveys as well as micro level empirical studies. At the first glance, the findings of the different studies do not look directly comparable, since they are conducted in different parts of the country, at different points in time and with differing samples. The results have been taken together for comparison because they all share a similarity in perspective – all of them, irrespective of scale of the study, assessed achievement levels within the broad framework of the MLL.
- ii) Achievement tests used in empirical studies and surveys were different in that they were developed at different times and by different organizations. However, all of them measured the basic competencies as operationalized under the MLL framework. Thus, they were all tests of basic competencies even though they were not parallel tests. They could thus form the basis for comparisons.
- iii) In the report, the studies and surveys have been categorized and analyzed in separate chapters, on the basis of time frame. The second chapter deals with point in time studies – these are mainly micro-level studies conducted at a point in time. The third chapter focuses on large scale achievement surveys which were a part of the educational programmes and which were conducted periodically over the life span of the programme. This enabled us to understand the dynamics of learner achievement over a period of time.
- iv) From the point of view of current relevance, it was decided to restrict the review of studies to those conducted since 1994, i.e., for the last 10 years. The aim of the study was to review all major studies on learner achievement and efforts have been made to ensure that the review has been all-inclusive although the report does not claim to be exhaustive.
- v) The report is essentially based on published literature. The study attempts to identify broad patterns by grouping the findings together. No attempt has been made to come up with one's own postulates in this study.
- vi) The scope of this study has been outlined previously. However, it is essential to clarify what the study does not deal with. This study does not focus on theoretical issues such as the various theories and definitions of learning. It does not go into the methodological issues pertaining to the validity of the tools and techniques used to assess learner achievement. It does not focus on teaching – learning processes within the classroom environment.

CHAPTER II

ANALYSIS OF RESEARCH ON LEARNING ACHIEVEMENTS: POINT-IN-TIME STUDIES

1. Current Research on Learner Achievement

Prior to 1990, empirical research on learner achievement was rather limited and mainly academic in nature. Findings of these investigations were not used for policy reforms. Amongst them, the ones that deserve a special mention are Dave's study in 1988, which conducted an evaluation of achievement levels of class I and IV children in 22 states and UTs. The fourth survey of research in education (1991) also identified some doctoral studies on learner achievement (*Aggarwal 2000*). However, the government's real concern with learner assessment began in 1991, with the specification of the MLLs, followed by limited efforts to assess the status of learner achievement in the country. A large scale national survey was conducted by NCERT in 1994 but since then, no other large scale survey has been undertaken in recent years. A handful of studies with smaller samples were conducted sporadically in different parts of the country. After the '90s however, policy planners realized the significance of assessment data and EFA projects of the government incorporated the assessment of learning achievement in an effort to bring about 'quality improvement' in primary education. Large scale achievement surveys were thus conducted covering DPEP districts and states. However, not many evaluation studies have been undertaken in non DPEP districts. A regular system of assessing achievements is also yet to be operationalized for the country as whole (*Aggarwal 2000*).

This report categorizes learner achievement studies into two groups. The first group comprises the point in time studies, which refer to research studies conducted at a particular point of time while the second group consists of achievement surveys that look at the status of learning over a period of time. The former are studies with differing sample sizes that have been conducted in different parts of the country, but with a common objective – of assessing the basic competencies of children in the three subject areas under the broad framework of the MLL.

The point-in-time studies which have been analyzed in this chapter have assessed achievement levels of primary school children, either at the completion of primary school (class IV), or at the initial grade (class I) as well as the terminal grade (class IV) of primary schooling. The studies have focused on the mean achievement scores attained by the sample students as well as on the percentage of students who have attained various levels of achievement. Variations in achievement scores, between locations, gender and social category in the studies are also examined. By placing the overall results of these studies together (see chart I for a consolidated table), this chapter first identifies the broad patterns emerging from the findings. It next deals with the variations in learner achievement displayed in the studies.

2. Broad Patterns

Most of the recent studies assessing learner achievement in India have shown that achievement levels at the terminal grades of primary school are disappointingly low. The national level study by Shukla and others exhibited an average of 46.6% in language and 41.20% in maths. Aikara's study of learning achievement in the states of Bihar, Maharashtra, Rajasthan and Karnataka found mean achievement scores to be 41.2% for language, 34.7% for maths and 42.2% for environmental studies. Specific state-wise studies in different states exhibited the same trend. In Tamil Nadu, Bashir found the scores of grade IV pupils to be 33.1% for maths, 45.2% for word knowledge and 31.97% for reading. In Bihar, Hasan's study assessed grade V children at 48% for language (word meaning), 35% for reading comprehension and 32% in maths. Aggarwal's study of 169 schools of Delhi came up with similar findings – grade IV children scored 40.46% in maths and 56.5% in language. Varghese's study of the educationally forward state of Kerala also showed the same trend. Grade IV children scored only 37.2% in maths and 47% in Malayalam. Similar low achievement scores of grade IV students were also found in M.P. by Govinda and Varghese and in Bengal by Roy, Mitra and Ray. Thus the average levels of performance are unacceptably low in all areas where they have been studied (*Shukla et al 1994; Aikara 1997; Bashir 1994; Hasan 1995; Govinda and Varghese 1993; Roy, Mitra and Ray 1995; Aggarwal 2000; Aggarwal and Chugh 2003; Varghese 1999; Jayalakshmi 2001*). These achievement scores, reported from different studies appear rather poor when compared to the standards of learning achievement specified in the MLL document.

Apart from mean achievement scores, an attempt has also been made to depict learning achievement in terms of the percentage of students who attained various levels of achievement. The results of the studies present an equally bleak picture in this regard. Aikara's study found that only 10.8% percent of the students achieved mastery in

language, 5.6% in maths and 10.1% in environmental studies. In Aggarwal's Delhi sample, the results of the test revealed that only 3% of learners were able to attain more than 80% in maths while 10.9% learners obtained 80% or more in language. Hasan's study in Bihar found the percentage of students achieving mastery to be very negligible in both areas. In language, about 20 – 30% scored below 40% in word meaning, while in reading comprehension, majority of the students were in the 0 – 39% range. In maths, about 60 – 70% of students scored between 1 – 39%, suggesting that the major part of the maths competencies were not mastered by majority of students. In many districts, no student had reached the mastery level. Varghese's study of Kerala shows that not even 1% of the children attained mastery in maths and only 7.5% of the children scored above 60%. Even in Malayalam, very few attained mastery in grade IV. In Govinda and Varghese's study of Madhya Pradesh, the level-wise analysis of performance shows that even after the completion of 5 years of schooling, only 10% of children in Hindi and 5% in maths acquired mastery over basic knowledge and skills. Thus, the percentage of students attaining mastery levels depicted in different studies is negligible and is no where near the 80% target specified in the MLLs (*Aikara 1997; Hasan 1995; Aggarwal 2000; Varghese 1999; Govinda and Varghese 1993; Roy, Mitra and Ray 1995; Aggarwal and Chugh 2003*). These results also lead one to question whether it is realistic to expect an average student of primary school to achieve mastery at 80% level in different competencies tested by the MLL.

Mean achievement scores represented in various studies highlight the wide variations that exist between states. Moreover, certain studies have found that states such as Bihar and Rajasthan have higher achievement scores compared to the educationally developed states such as Kerala, Maharashtra and Karnataka (*Aikara 1997; Shukla et.al 1994; Varghese 1999*) (see chart 1). Aikara's study shows the mean score for language to be 53.8% in Bihar and 53.3% in Rajasthan while in Karnataka it was 35.7% and 32.6% in Maharashtra. Similarly, the mean score in maths was 48.2% in Rajasthan and 44.5% in Bihar, while it was 29.2% in Karnataka and 26.5% in Maharashtra. Similar findings regarding variations between states have also emerged from Shukla's study. Varghese finds that in Kerala, achievement levels were lower compared to other states (*Aikara 1997; Varghese 1999; Shukla et.al 1994*). Though this may at first appear difficult to explain, one plausible explanation given by research scholars is that in less developed states such as Bihar and Rajasthan, enrolment rates are low and drop out rates high. Therefore students who were academically better off were tested here. In contrast, in states such as Kerala and Karnataka, almost all children are enrolled and drop out rates are lower. Since most children reach grade IV, the mean achievement levels represent the average achievement of the population, while in other states, the mean scores are of the academically better off children (*Aikara 1997; Varghese 1999*).

The focus of certain studies has been to determine achievement levels of learners at the entry stage as well as the terminal stage of primary schooling. The results of such studies indicate that the achievement levels of grade I children are reasonably high in both the subject areas i.e., language and maths. However, the performance tends to decline sharply as students progress to higher classes. Aggarwal's study of Delhi schools finds that while the mean percentage score of grade I was 80.16% for language and 78.18% for maths, the achievements scores for grade IV were 40.46% for maths and 56.5% for language. Varghese found that, in Kerala, the mean score for grade II children was 59.3% in maths and 67% for Malayalam. However in grade IV, these slipped to only 37.2% for maths and 47% for Malayalam. Hasan's study of Bihar arrived at similar conclusions. In language, grade I children scored an average of 50% on word recognition. In maths, the scores were 63% for number recognition and 52% for numerical operations. In grade IV, language competencies, students scored 48% for word meaning and 35% for reading comprehension. In maths, the mean percentage score was 32%. In Karnataka, the baseline survey of the Sarva Shiksha Abhiyan revealed a similar trend. The performance of grade I students was relatively better than grade III students in all districts. While the average score for grade I competencies was 70% in language and 69% in maths, the achievements of standard III students showed a slump with 43.48% in language and 38.82% in maths (*Aggarwal 2000; Aggarwal and Chugh 2003; Hasan A. 1995; Varghese 1999; Jayalakshmi 2001*).

A number of explanations for this phenomenon have been offered by different scholars. The drop in achievement levels at the terminal stage (class IV) was true for both language and maths. Aggarwal highlights that while grade I tests were oral, grade IV tests are written. It appears that while children can express themselves orally and understand, they have difficulties in making the transition to written communication, and this affects their achievement levels. Moreover, poor learning levels at the later stage are also a result of the quality of teaching-learning in classrooms. He feels that the thrust of teaching has to shift from memorization to understanding of concepts in higher classes. In another study, Aggarwal and Chugh explain that the level of teaching deteriorates as children move to higher grades. Jayalakshmi explains the trend in Karnataka by stating that tests of literacy and numeracy at

grade I are oral tests, hence the achievement levels assessed may not be reliable while the tests at grade IV are objective and competency based (*Aggarwal 2000; Aggarwal and Chugh 2003; Jayalakshmi 2001*).

A close scrutiny of chart 1 shows that most studies exhibit poorer performance of children in maths in comparison to language. Shukla's national level study shows that the overall scores of children were 41.2% in maths and 46.66% in language. Varghese found in Kerala that the mean score was 37.2% in maths and 47% in language. Govinda and Varghese found in Madhya Pradesh that grade IV children scored 38.26% in maths and 47.06% in language. In Hasan's study of Bihar, the mean score for class V was 32% for maths while it was 48% for language (word meaning). Aikara's study of learner achievement in 4 states shows the overall mean score to be 34.7% in maths compared to 41.2% in language and 42.2% in environmental studies. In his study of Delhi schools, Aggarwal found the average score in maths to be lower compared to the mean score in language. This was true of both the Hindi and English medium schools. Jayalakshmi's recent baseline survey of Sarva Shiksha Abhiyan in Karnataka found the overall mean score of grade III children in maths to be less than 38%. Even the better performing districts like Mangalore and Bangalore North did not achieve a score of more than 50%. Similar findings have been reported in the 3 DPEP districts of Kerala studied by Varghese (*Shukla et.al 1994; Govinda and Varghese 1993; Hasan 1995; Aikara 1994; Varghese 1999; Jayalakshmi 2001; Aggarwal 2000; Aggarwal and Chugh 2003*).

Thus, irrespective of the state or medium of instruction, these studies reflect the low achievement of primary children in the subject area of mathematics. Aggarwal puts down the low scores in maths in grade IV to the low educational qualifications and low motivation of teachers. This phenomenon could also be a result of teaching styles, with emphasis being placed on rote learning instead of the 'knowledge component' (*Aggarwal 2000*).

3. Variations in Learner Achievement

This analysis of point-in-time achievement studies would remain incomplete if one ignores the variations in achievement levels, which become pronounced if one examines the disaggregated scores by locality (rural-urban), gender, social category, school management etc.

i) Rural – Urban Variations:

It becomes pertinent to note the difference in the performance of students of schools located in rural and urban areas. Shukla's nation-wide survey study found no difference in the achievement of children from urban/rural areas. While no difference was recorded in Arunachal, Orissa, Punjab, Sikkim and UP, the urban group had a higher average in AP, Haryana, J & K, Karnataka, Kerala, Maharashtra, West Bengal and Delhi. The study showed that in some states, like MP, rural children performed better than urban children, possibly because all rural children studied in government schools while in cities better off parents did not send children to government schools. There was a general tendency for achievement in capital cities to be higher than in other parts of the state. Roy, Mitra and Ray, in their study of West Bengal, found hardly any difference between rural and urban children. In Aikara's study, the mean scores for rural children were 40.7%, 34.9% and 42.0% in language, maths and EVS respectively, while the students of urban schools fared in almost the same manner with mean scores of 42.3%, 33.3% and 42.6% (*Shukla et.al 1994; Aikara 1997; Roy, Mitra and Ray 1995*).

Some research studies have also shown how achievement levels vary in schools of different localities. Govinda and Varghese's study of 5 districts of Madhya Pradesh shows how mean achievement scores show a systematic improvement as one moves up from a very under developed, to a less developed, to a developed rural area and again from semi urban to privileged urban areas. While the mean scores in Mandla (an under-privileged rural area) were 23.58% in Hindi and 13.88% in maths, in Indore (which is highly urbanized), the scores were 56.96% in Hindi and 49.40% in maths. In this study, the mean scores of 3 rural localities (Mandla, Rewa and Rajnadangaon) were much lower than the overall mean score of the total sample. Scholars explain that in these 3 rural localities, infrastructural facilities were poor and there was a single system of government schools, which all the children attended. The urban localities had a dual system of government and private schools, which segregated children according to their socio-economic background. Children performed better in private schools due to the pattern of the centralized management and monitoring practices of schools (*Govinda and Varghese 1993*). Findings on rural-urban differences on learning achievements do not show a clear cut trend. Panda, who studied academic performance of rural, urban and tribal students of Orissa, found a higher achievement score of class V in

rural children compared to urban and tribal students. Bashir's data from Tamil Nadu shows differences in achievement scores between rural and urban areas with performance actually being higher in the rural schools. Similarly, Jayalakshmi's baseline survey of SSA in Karnataka found that mean scores of rural children exceeded those of urbanites in most districts, in both subject areas in grade I. In grade III, where general performance was poor, rural children have performed uniformly better than urban children in both language and maths. Hasan finds no uniform trend in Bihar with urban students doing better in some districts and rural children in other districts (*Panda 2001; Bashir 1994; Jayalakshmi 2001; Hasan 1995*).

Since rural-urban variations in learner achievement studies do not follow a consistent pattern, we have merely represented the findings of various studies, but find it difficult to make a conclusive statement in this respect.

ii) Gender Disparities in Learning Achievements:

Gender variations in achievement levels emanate from the differential gender participation in different types of schools. Studies have shown that a common strategy adopted by parents in urban areas to optimize schooling is to send sons to private schools and daughters to government schools. Thus the share of female students is greater than male students in government schools (*Banerji 2000; Aggarwal 2000*).

Empirical studies have come up with diverse set of findings on gender variations in achievement scores. Shukla's nation-wide study concluded that boys had higher mean achievement scores than girls, especially in the tests of maths and word knowledge. This trend was noticed in Rajasthan, Tripura, UP and West Bengal. However girls did better than boys in maths in Meghalaya, Mizoram, Punjab, and Delhi. Aikara's study of learner achievement in 4 states drew similar conclusions, with boys performing better than girls on all the 3 tests. Though the difference was not significant in language and EVS, in maths, however, boys scored 34% and the girls scored 32.6%. In Hasan's Bihar sample, gender differences were not found to be significant in class IV but performance of boys was a shade better in numeracy tests of class II. In Aggarwal's study of Delhi schools, the mean score obtained by girls was much lower than boys, especially in maths. Differences in achievement between boys and girls were significant in Hindi medium schools, but were absent in English medium schools. Roy, Mitra and Ray, in West Bengal, as well as Varghese in Kerala, found no significant differences between the achievement of boys and girls. Jayalakshmi's baseline survey of Karnataka found that in grade I, while girls excelled over boys in many districts in language, in maths, boys scored better than girls, through mean differences between the two were minimal. However, in grade III, the gender differences in mean scores for language and maths were not significant (*Shukla et.al 1994; Aikara 1997; Hasan 1995, Aggarwal; Roy, Mitra and Ray 1995; Varghese 1999; Jayalakshmi 2001*).

A small sample study of gender variations in maths achievement was conducted on class IV children in rural Maharashtra by Pai and Chitra Natarajan. Their findings revealed that the mean score obtained by girls on maths concepts was 19.70, as against 17.41 for boys. It was also found that boys and girls in urban areas liked maths teaching more than their rural counterparts. The girls in urban areas perceived maths as less difficult than their rural counterparts. This study thus contradicts the findings that boys always out-perform girls in maths achievement. It finds gender differences across context, but within a context gender plays little role (*Pai and Natarajan 1997*).

Most studies have found gender variations in achievement scores to be less significant on the whole, though many studies exhibit the trend of better performance of boys over girls in the subject area of mathematics.

iii) Variations among Social Categories:

With reference to the variations in learner achievements by social category, several studies have found consistently that children from scheduled castes/and scheduled tribes are the poorest achievers. The NCERT survey by Shukla and others found that, for the entire country, the backward classes and 'others' did better than the SC and ST pupils, whereas SCs had a higher mean compared to STs. Aikara's study found a similar pattern across all the four states studied i.e., Bihar, Rajasthan, Karnataka and Maharashtra. The mean score by social groups in his study were as follows:

Table 4
Performance of Caste/Tribe Groups in Language, Maths and EVS

Subjects	SCs	STs	OBCs	Others
Language	35.2%	36.0%	41.7%	43.8%
Maths	27.88%	32.2%	35.7%	36.7%
EVS	36.2%	36.8%	43.2%	44.6%

Source: Aikara 1997.

Thus the best performance was by the 'Others' category followed by the OBCs, then the STs and finally the SCs. Hasan's study of Bihar found that in both grade II and grade V, the mean scores of SC/ST children were lower than other caste groups in language and maths, due to social disadvantages. Yash Aggarwal's study of schools of Delhi found that a predominant proportion of SC children studied in government schools. The performance of these students is far lower compared to the general category. Jayalakshmi finds variations between social groups in achievement levels to be marginal in the Karnataka baseline study. The achievement gap between SC and other students was 6–9 percentage points in all the 3 tests in her study. Within caste groups, gender variations became important. The Delhi study found girls in the SC/ST category having far lower achievement scores than boys (*Shukla et.al 1994; Aikara 1997; Hasan 1995; Aggarwal 2000*). Reasons for the poor achievement of SC/ST children can be attributed to the fact that the SC/ST population is acutely disadvantaged socially and economically, with many pupils being first generation learners. They get few educational facilities; do not use and derive enough benefit from such facilities; and finally the language of ST groups is different from the standard language of the school, resulting in poor achievement (*Sharma 1998; Aggarwal 2000*).

iv) Variations by type of School Management:

A significant factor responsible for variations in achievement scores among students is type of school or management. A number of important studies highlight the differences in achievement between public and private schools in their study sample. Govinda and Varghese, in their study of five districts in M.P., found the prevalence of a dual system of schooling in urban localities (such as Gwalior and Indore), where both government and private schools exist. In urban areas, private schools out-performed the government schools, whose conditions were similar to the government schools of underprivileged rural areas (such as Mandla and Rewa). The plausible explanation for this performance differential appears to be the pattern of organisation in the school. Urban government schools are mainly attended by children of poor socio-economic background, whereas in rural areas, the government schools are attended by all. The urban private schools attract children from the higher socio-economic strata. The better performance of private schools, as compared to government schools in urban areas, is explained by better facilities as well as by effective internal monitoring practices (*Govinda and Varghese 1993*).

Aggarwal's research of learner achievement in Delhi also found achievement to vary by school management. Both grade II and V children of the government MCD schools in Delhi had lower mean percentage scores in both language and maths compared to children of private aided and unaided schools. Students of private schools scored nearly 50% higher in maths than their counterparts in MCD schools. Their mean scores were 52% as against 37% scored by government school children. Aggarwal found under-achievement to be more severe in the case of MCD schools. The number of students attaining mastery level was also higher in private unaided schools compared to government schools. This reflects the low teaching standards in government schools (*Aggarwal 2000*). Similar findings are also reported by others (*Aikara 1997; Singh 1996 and Bashir 1994*) who found private unaided schools displaying a higher level of achievement compared to government schools. Private unaided schools were in a more advantageous position than the public schools in terms of student composition, teacher inputs and physical facilities. Thus, children of these schools tended to score higher (*Bashir 1994*). Varghese found that, in Kerala, variations in learning achievements were less a result of factors outside the school than because of practices followed within the school. This was due to the more equitable distribution of educational facilities in Kerala (*Varghese 1999*).

This analysis, based on empirical research of point-in-time studies, reinforces the finding that was presented in the introduction, highlighting the unacceptably low achievement levels prevalent among primary school children today. The temporal analysis of learner achievement through large scale achievement surveys in DPEP states, and the qualitative studies will be our concern in the following chapter.

CHAPTER III

ANALYSIS OF RESEARCH ON LEARNING ACHIEVEMENTS – SURVEYS AND QUALITATIVE STUDIES

In the 1990's, the measurement of learner achievement became a part of the several EFA projects of the government such as Lok Jumbish, Shiksha Karmi Project and the DPEP, which were launched in the country, to bring about a qualitative improvement in primary schooling. Some of them even set targets for raising learning achievements in a phased manner. Achievement surveys were thus conducted periodically, through the life span of the programmes, which have enabled us to understand the progress in improving learning achievements over a period of time. Results of these surveys reveal comparatively high levels of achievement after a specified period of operation of the projects. Section A of this chapter analyses the findings of the achievement surveys, to examine how far the programmes met their targets, of raising learning levels, as per their objectives. Section B examines the findings of the qualitative studies conducted by independent evaluation agencies to assess the impact of the DPEP on learner achievement, amongst other aspects. A comparison of the two sets of findings is also attempted in this chapter.

1. Achievement Surveys

A. Lok Jumbish

The main objective of the Lok Jumbish Project in Rajasthan was to bring about a qualitative improvement in primary education. This was attempted by ensuring the achievement of the MLLs in primary and upper primary schools. Two achievement surveys were conducted under the Lok Jumbish Project in Rajasthan during the period 1992 to 1997. A benchmark achievement survey was conducted in 1994, to establish the baseline achievement levels of class I and Class II learners and competency tests were prepared for assessing Hindi and maths achievement including both written and oral items. The scores, according to the survey, were quite low being in the region of 34 – 37%, in the two subjects for class I and class II respectively. The scores indicated the level before the adoption of the MLL approach.

After two years of being taught according to the MLL's in class I and II, a post test achievement survey (PTAS) was conducted in April 1996, for assessing the impact of the MLL approach on the achievement of pupils. Though these were not parallel tests, the tests used in the PTAS were similar to those in the 1994 benchmark survey. The comparative performance at a glance reveals that the mean performance of students in the PTAS is higher than the mean scores of students tested in the benchmark survey. This superior performance in the PTAS (1996), compared to those in 1994, reveals a definite trend towards improvement in learning levels after a few years of the programme (*Srivastava in Yadav et.al 2000*). The table below clearly depicts this improvement.

Table 5

Lok Jumbish Project - Mean Achievement Scores

Survey	Class	Languages	Maths
Benchmark Survey 1994	I	37.57%	34.3%
	II	36.5%	36.2%
Post Test Achievement Survey 1996	I	53.0%	32.8%
	II	54.2%	61.1%

(*Source: Srivastava A.B.L. in Yadav et.al 2000*)

B. Shiksha Karmi Project

The Shiksha Karmi Project was launched in Rajasthan in 1987, to revitalize and expand primary education in the remote and backward villages of Rajasthan. An evaluation study was conducted to find out the level of achievement of students studying in Shiksha Karmi schools for five years or more. The competency based tests for class V students were based on class IV syllabus. The results showed the overall mean score of students to be 71.3% for Hindi and 50.7% for maths (*Srivastava and Jain 1995*).

Thus the results of learning achievement surveys conducted as part of the EFA Projects show a comparatively higher level of achievement, after a specified period of the operation of the project.

C. DPEP

After the national level study on learner achievement by NCERT in 1994, during the last 10 years, the major achievement surveys covering a wide spectrum of states were those that were conducted in districts where the District Primary Education Programme was launched. These were conducted over the life span of the project by the government agency, NCERT.

i) The background:

The DPEP was a centrally sponsored scheme, launched by the Government of India and external donor agencies, to expand the opportunities for poor and disadvantaged children for receiving quality primary education. Districts were chosen on the basis of low female literacy and participation in the total literacy campaign. The programme interventions included enrolment drives, teacher training, textbook and curriculum renewal etc. The impact of inputs and processes initiated under DPEP had to be reflected in improved learning achievement of students. Moreover, in DPEP, there was considerable emphasis on enhancing achievement levels of pupils at the primary stage for which clear quantitative targets were set. Thus achievement surveys were conducted to find out to what extent the DPEP objective of improving quality of primary education was achieved.

ii) Objectives of DPEP:

The DPEP objectives with respect to learning achievement were threefold:

- (i) All children should achieve a minimum average score of 40%.
- (ii) Average achievement levels should improve by 25% over the life of the projects.
- (iii) Gender and social differences in achievement levels should be reduced to less than five per cent.

The DPEP, like other educational development programmes, incorporated the standards of learning achievement, outlined in the MLL document, and envisaged that children would strive to master the competencies in subject areas, in an effort to attain the goal of mastery learning.

iii) Areas covered under DPEP:

The DPEP phase I started in 42 districts of 7 states (Assam, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharashtra and Tamil Nadu) in 1994, as a 7-year programme, terminating in 2001. DPEP phase II started in 76 districts spread over 12 states, as a 5-year programme in 1997 terminating in 2003. The phase I states had newer districts included in phase II of DPEP, while the new phase II states where DPEP was introduced were Andhra Pradesh, Gujarat, Himachal Pradesh, Orissa, Uttar Pradesh and West Bengal.

iv) Types of Surveys:

In order to measure learning achievements, during the life span of the programme, the BAS, MAS and TAS surveys were conducted in both phase I and phase II states. In DPEP phase I states, the Baseline Achievement Survey was conducted in 1994 in order to provide data on the status of achievement at the beginning of the programme in 42 districts. The Mid-term survey was repeated after 5 years in 1997, and in 2001 the Terminal Assessment Survey was conducted in 49 districts of 8 states (due to the bifurcation of districts and creation of the new state of Chattisgarh the number of states become 8). In DPEP phase II states, the BAS was conducted in 1997 and the MAS in 2000, in 76 districts. The TAS was conducted in 2003 in 86 districts.

The achievement surveys measured the average performance of students on competency based tests in maths and language, at the end of class I, and in the penultimate grade of primary school (grade III/IV).

v) Tools:

The tools used in these achievement surveys were rationally developed standardized criterion-referenced tests. These were (i) tests of literacy and numeracy for class I students, which were mainly oral in nature; (ii) achievement tests in language and maths for class III/IV, which were mainly written tests. Achievement tests both in language and maths were based on competencies identified in the MLL document. There was, however, a change in the nature of instruments

used in the MAS and TAS surveys, compared to the tools used in BAS. The new tests were developed due to the change in the curriculum and new competency levels being defined in the MLLs. In the light of this, a temporal analysis, assessing the progress in learner achievement over the span of the project, was made by (i) administering the BAS tests to a smaller sample of 5 schools per district in phase I and 10 schools per district in phase II during the Mid Term Survey (only for purposes of comparison); (ii) comparing the results of MAS and TAS (new tests); and (iii) calculating the hike in achievement during TAS over BAS taking into account the achievement difference in BAS and MAS (old tests) and MAS and TAS (new tests).

The findings of the BAS, MAS and TAS surveys, assessing the progress made in improving learning achievements in accordance with the three objectives of the DPEP, are now presented.

vi) Findings-DPEP Phase I districts:

The tables below indicate the number of districts which achieved the objectives, out of the total, where the assessment was carried out.

Objective – 1: All children should achieve a minimum target of 40%.

Table 6

Number of districts achieving target in MAS and TAS

Class	MAS	TAS
I	42/42	49/49
III/IV	26/42	46/49

Language:

Class	MAS	TAS
I	41/42	49/49
III/IV	11/42	32/49

Maths:

Source: Based on data from Gautam 2002; Prakash Ved et.al 1998a.

With reference to the first objective, TAS found that in class I, the minimum 40% score was achieved in all the districts in language and maths. However, the objective could not be fully attained in class III/IV, where performance dropped sharply. 46 out of 49 districts achieved the minimum score in language at the end of TAS and much fewer i.e., only 32 out of 49 districts, in maths (Gautam 2002). Thus performance at the initial stage is better than at the terminal stage of primary schooling.

Objective – 2: Average achievement levels should improve by 25% over the life of DPEP.

Table 7

Number of districts achieving target in MAS and TAS as compared to BAS

Class	MAS over BAS (old tests)	TAS over MAS (new tests)	TAS over BAS
I	6/42	7/49	23/49
III / IV	2/42	14/49	39/49

Language:

Class	MAS over BAS (old tests)	TAS over MAS (new tests)	TAS over BAS
I	9/42	9/49	38/49
III / IV	1/42	14/49	35/49

Maths:

Source: Based on data from Gautam 2002; Prakash Ved et.al 1998a.

It was difficult to assess the performance of DPEP I in terms of the second objective, due to the difference in test instruments as explained earlier. However, the only comparison possible was between BAS and MAS (old tests), the latter being administered to a much smaller sample. It revealed that for class I language, only 6 out of the 42 districts (i.e. 14%) achieved the targeted rise of 25% in language and by the time of TAS, this had increased to 23 out of 49 districts (however the real cause of concern was that by the time of TAS, achievements declined in 6 districts). For class I, maths results were slightly better with 9 out of 42 districts achieving the 25% increase by the time of MAS, but by the time of TAS this jumped phenomenally, as 38 out of 49 districts achieved the target.

In comparison, the picture was rather grim for class III/IV, with only 2 districts achieving the target in language and 1 in maths by the time of MAS. The situation improved dramatically by TAS with 39 out of the 49 districts achieving the 25% increase in learning levels in language and 35 out of 49 in maths. Though the outcomes appear substantially better by TAS, it is evident that in both grades, DPEP was still a long way from realizing its second objective. (*Gautam 2002; Prakash Ved et.al 1998a*).

Objective – 3: Gender and social differences to be reduced to less than five per cent.

Table 8

Number of districts achieving the target

Gender:

Class	Language	Maths
I	44/49	40/49
III / IV	45/49	46/49

Schedule Castes/and others:

Class	Language	Maths
I	38/49	39/49
III / IV	39/49	33/49

Schedule Tribes/and others:

Class	Language	Maths
I	29/45	39/45
III / IV	32/45	31/45

Source: Based on data from *Gautam 2002*.

TAS data showed that gender differences in learning achievement were significantly reduced in most districts. Substantial progress has been made with respect to bridging the gap between SC children and others. The high dropout rates at the higher level may have made it easier to achieve this target. Moreover, S.K.S Gautam states, the achievement levels were higher and the gender and social differences wider at the entry level but as the achievement levels dropped in grade III/IV, it was possible to squeeze the differences to below 5%. It was found that ST children fared lower in terms of achievement levels, thus making it difficult to bridge the gap between ST children and others (*Gautam 2002*).

vii) Findings - DPEP Phase II districts:

Objective 1: All children should achieve a minimum of 40%

Table 9

Number of districts achieving target in MAS and TAS

Language:

Class	MAS	TAS
I	76/76	86/86
III / IV	66/76	84/86

Maths:

Class	MAS	TAS
I	76/76	86/86
III / IV	47/76	72/86

Source: Based on data from *Gautam 2003; Prakash Ved et.al 2000 a,b*.

In DPEP phase II districts, the MAS which was conducted in the year 2000 in 76 districts revealed that all had achieved the minimum target score of 40% for language and maths in class I. This finding was substantiated by TAS.

For classes III/IV, as in DPEP I, far fewer districts achieved the minimum score of 40%. By the time of MAS, 66 out of 76 districts achieved the minimum in language and 47 out of 76 in maths. By 2002, when TAS was conducted, this target was achieved in 84 out of 86 districts for language and 72 out of 86 districts in maths. This indicated that maths performance was still poor in some districts for this grade.

Objective 2: Average achievement levels should improve by 25% over the life of DPEP.

Table 10

Number of districts achieving target in MAS and TAS as compared to BAS

Language:

Grade	MAS over BAS (old tests)	TAS over MAS (new tests)	TAS over BAS
I	11/73	8/86	69/86
III / IV	5/73	8/86	75/86

Maths

Grade	MAS over BAS (old tests)	TAS over MAS (new tests)	TAS over BAS
I	23/73	4/86	76/86
III / IV	4/73	15/86	68/86

Source: Based on data from Gautam 2003; Prakash Ved et.al 2000 a,b.

As in DPEP phase I states, there was difficulty in assessing this objective due to difference in instruments used. The MAS over BAS comparison (based on a much smaller sample) revealed that very few districts achieved the 25% hike in learning levels and a similar trend was reported from the comparison of the results of MAS and TAS (new tests) sample. However the TAS over BAS comparison shows a significant jump in the number of districts meeting this target (see table 10 above). The author clarifies that while calculating the hike in achievement during TAS over BAS the achievement difference between BAS and MAS (old tests) and MAS and TAS (new tests) has been taken into account.

Objective 3: Gender and social differences to be reduced to under 5%.

Table 11

Number of district achieving the target

Gender:

Class	Language	Maths
I	81/86	71/86
III / IV	84/86	80/86

Scheduled Castes:

Class	Language	Maths
I	69/85	65/85
III / IV	78/85	74/85

Scheduled Tribes:

Class	Language	Maths
I	38/63	41/63
III / IV	53/63	49/63

Source: Based on data from Gautam 2003; Prakash Ved et.al 2000 a,b.

The findings are similar to the outcomes in phase I states. Gender differences in learning achievements have been reduced the most and tribe based differences the least (*Gautam 2003; Prakash Ved et.al, 2000 a, b*).

The above account summarizes the results of the achievement surveys in terms of the extent to which objectives of DPEP, pertaining to learning achievements, have been achieved. The overall picture that emerges from the temporal comparison of learner performance through the BAS, MAS and TAS surveys shows significant gains in terms of realizing the first objective, i.e., obtaining a minimum 40% score in language and maths at both the entry level and penultimate year of primary schooling, by the end of the programme. While this is a welcome outcome, the same statement cannot be made regarding the attainment of the second objective i.e., obtaining a rise of 25% in achievement levels from the baseline level. The sudden and dramatic rise in the number of districts achieving the second objective between MAS and TAS, for both grades, appears difficult to explain. Finally, the DPEP programme was largely successful in realizing its third objective of reducing gender and social disparities in learning achievement.

The surveys also revealed some broad trends on learner achievement which are discussed below:

a) A striking finding of the achievement surveys has been the large difference in average achievement scores between the best performing and worst performing districts within the state as well as between the states. The author attributes this to the element of contextuality prevailing over the primary school system (*Gautam 2003*). This element was found across all surveys and in all states. In the TAS 2002 survey of DPEP II districts, the average performance of class I students in language in Assam varied from 51.86% in Karbi Anglong to 80.66% in Bongaigaon. In the MAS 2000 survey, the performance of class IV children in maths varied from 23.84% in Mandla to 75.11% in Shivpuri within Madhya Pradesh state. Often the mean score for the best district was roughly twice that of the districts with the minimum score, within a state (see chart 3 on range of average performance of children) (*Gautam 2003; Prakash Ved et.al 2000b*).

b) There is clear evidence to suggest that achievement levels tend to decline as children move along the educational hierarchy. Thus the performance of students in class I both in language and maths was better than their counterparts in classes III/IV (see chart 2 and 3 on achievement scores in DPEP states). This confirms the decline in educational standards as children move from lower to higher grades and requires serious examination. The issue relating to the transition from oral to written mode of evaluation as children move from lower to higher grades, also needs attention.

c) Another trend that emerged was the relatively poor performance of students in maths compared to language, for both class I and classes III/IV, especially for the latter. This was evident from the fact that many districts could not secure the minimum 40% score in maths, compared to language, in grade I and III/IV. Moreover, the target of raising achievement levels by 25% was much more difficult to realize in the case of maths (as is evident from the achievement scores in DPEP I and II states) (see chart 2 and 3). The extent of under achievement in maths is much higher than that of language.

Researchers have attempted to further analyze the achievement surveys in DPEP phase I and II states, in order to get a comprehensive view of the status of learning achievements at the end of the DPEP programme. By focusing on the most recently conducted achievement surveys - the TAS in DPEP I and II states, Srivastava has attempted to aggregate the district-wise scores of class IV children to obtain a state level picture. He could thus arrive at some definitive conclusions on the extent of learning by students completing primary education in DPEP states (for figures, see aggregated achievement scores in chart 2 and 3).

a) A striking observation of this analysis is that achievement of class III / IV children is much below the mastery level performance in almost all the states. Srivastava's analysis reveals that the performance of grade III children was rather unsatisfactory. If a mean score of 60% is taken as a satisfactory level of performance, only the states of Gujarat and Maharashtra exhibited a satisfactory trend in language (the mean score of Assam phase I districts is not considered, due to the vast variation in scores when compared with Assam phase II districts). In maths, not even 1 state (excluding Assam phase I), displayed satisfactory performance. The performance of grade IV children in language was found to be satisfactory in Andhra Pradesh, Madhya Pradesh (II), Tamil Nadu (I) & (II) and Uttar Pradesh. But the aggregated mean scores were rather low in the remaining states of Chattisgarh, Himachal, Haryana (I & II), Orissa. In mathematics, barring the two states of Tamil Nadu and Uttar Pradesh, aggregated scores were low in all other DPEP states (see chart 2 & 3 for aggregated scores) (*Srivastava 2004*).

b) The percentage distribution of scores in language and maths, in both DPEP I & II states, showed a great variation between states. Moreover, the percentage of students having high scores (above 60%) was much greater in phase I than phase II districts. A possible explanation for this trend could lie in the nature of the districts included therein.

Table 12

Percentage of students scoring 80% and above

Grade III	Language	Maths
Phase I	18.03%	14.62%
Phase II	9.98%	11.46%

Grade IV	Language	Maths
Phase I	20.86%	22.78%
Phase II	15.76%	11.46%

Source: Based on data from *Srivastava 2004*.

The results displayed in the table above lead to the conclusion that only a small fraction of the total students achieved mastery level competencies, at the close of the DPEP programme (*Srivastava 2004*). We thus have miles to go before the targets of MLL can be achieved.

2. Qualitative Studies – DPEP Phase I States

Apart from analyzing the government study conducted by the NCERT on learner achievement, a close examination must also be made of the series of studies by independent evaluation agencies. These studies were commissioned by the MHRD and were aimed at evaluating the impact of pedagogical interventions in formal primary schools under the DPEP in the phase I states. The studies were conducted by Digantar in Kerala, the Bodh Shiksha Samiti in Maharashtra, the RSPEE in Haryana, the Vidya Bhavan Society in Karnataka and Tamil Nadu and Sambhav in Madhya Pradesh and Chattisgarh. Their findings are of critical relevance to this study, which attempts to assess the status of learning. It would be of interest to see if the findings are in consonance with the fairly encouraging picture which emerged from the achievement surveys of the NCERT. In their methodological approach, these studies differed from the achievement surveys in a number of important aspects, which we shall enumerate below –

These studies differed from the achievement surveys of NCERT in 5 important ways –

- The NCERT conducted quantitative assessment in the form of periodic large-scale achievement surveys, for all the DPEP districts. On the other hand, studies by independent agencies were in-depth examinations of only a couple of DPEP districts of the state.
- While the NCERT achievement surveys formed the base for a quantitative analysis of data, the micro studies were a synthesis of quantitative as well as qualitative data giving an overall picture.
- The achievement surveys pertained only to testing achievement levels of class I and III/IV children, but the in-depth studies followed a more holistic approach and examined other facets of the DPEP programme such as the curriculum, teachers, classroom processes as well as learning achievement.
- The tools used in the NCERT surveys were standardized and objective paper-and-pencil achievement tests, while these studies used a diverse set of tools. Interviews as well as classroom observations supplemented the achievement tests in the assessment of learner achievement. The achievements tests developed by the independent evaluation agencies were in keeping with the curriculum and local content. Some, like the ones developed by Digantar in Kerala, had varying levels of difficulty.
- The achievement surveys were conducted in DPEP I & II over a period of 3 time frames – the BAS, MAS and TAS. The independent research studies were 'point-in-time' studies of the impact of DPEP.

A. Findings:

The findings that emerged from the six studies with respect to the status of learning achievement in the DPEP I states is presented below:

i) The most noticeable trend visible in all the independent evaluations was the strikingly low achievement profile of grade IV children, in both language and maths. This was in stark contrast to the results of the TAS surveys conducted by NCERT. Madhya Pradesh reported low aggregate scores of 15.8% in language and 15.9% in maths. In Chattisgarh, scores of children were 16.4% in language and 11.7% in maths. In Maharashtra, children scored 44.4% in language and 39.0% in maths. Tamil Nadu's three districts exhibited a score of 47.0% in language and 50.17% in maths (see chart 2) (*Bodh Shiksha Samiti 2002; Sambhav 2003; Agnihotri 2002*).

ii) The second important indicator of learner achievement pertained to the percentage of students reaching various levels of achievement. The levels of achievement varied in each case study, as mastery of a competency referred to the percentage of correct responses to total number of items included in the achievement test. The findings with reference to the above, present a very dismal picture.

- In Madhya Pradesh, in language, 80% of children were below the 33% mark with 39% having scored a zero. Only 4% secured above 60%. In maths, 87% of the children were below 33% marks and only 3% secured above 60% (*Sambhav 2003*).
- In Chattisgarh, in maths, 90% of children secured below 33% and 1% above 60%. In language, 80% children scored below 33% and 5% scored above 60% (*Sambhav 2003*).
- In Kerala the results were better. In language, 26% of the children scored more than 75% while 58% were between 40 – 75%. In maths, however, only 8% scored above 45%, and 58% scored below 40%. The study team found a pattern of dipping achievements with more advanced learning in both areas of language and maths. Here average achievement fell steadily as children moved from simpler levels to more advanced concepts (*Dhankar 2002b*).
- In Haryana, language results showed that only 8% of the children were proficient readers and only 6% were proficient writers. 79% children scored below 30% in reading and 80% fell in this range in writing. In maths, 76% of children could not solve word problem with proficiency and only 9% scored above average (*Batra 2002*).
- In Karnataka, in language, though about 46% of the students scored above 60%, this was because questions were pitched at the class 2 level. In the cloze test, 82% of students were below 40%. In maths, more than 38% of students were below 40% (*Dewan 2002*).
- In Maharashtra, it was found that most of the students of both the districts performed below the minimum acceptable level of 40% in language and maths (*Bodh Shiksha Samiti 2002*).

The figures from these case studies clearly demonstrate the fact that a very small percentage of children actually reached mastery level in the specified subject areas in the DPEP districts, despite DPEP interventions. The findings throw up an even gloomier picture than that presented by Srivastava's study and this is indeed a sad commentary on the quality of primary education in the country.

iii) The case studies have also brought forth specific areas of learning difficulties that have been identified in the subjects of language and maths. All the studies consistently exhibited poor achievement in maths compared to language. In Karnataka, the study team found maths performance to be poor even in numerical questions, which meant that children had not acquired the level expected by middle of class 2. In Maharashtra, Kerala and Haryana, most students were unclear about the application of mathematical concepts such as carry over, place value and zero, operations in problem solving and fractions. In Madhya Pradesh, children were very poor in problem solving and geometry. In Kerala, there was a stark difference between language and maths results – more than 3 times the number of children scored above 75% in language whereas in maths only 8% scored over 75% (*Dhankar 2002b; Sambhav 2003; Dewan 2002*).

iv) Specific areas of learning difficulties were also present in language as indicated by the poor achievement scores of students in this subject. States of Maharashtra, Tamil Nadu and Haryana displayed low language achievement levels, which was disappointing, as Tamil and Marathi were the mother tongues of the children. The problem areas included reading with comprehension and writing even simple sentences. In Tamil Nadu, even the best children could not score above 24% in writing, the mean score for writing being only 12.03%. Children could not read a

simple text in their mother tongue with any understanding. In Madhya Pradesh too, the assessment in language found that 69% of the children did not know how to read and write. Reading with comprehension was problematic even for children in Karnataka. Thus DPEP interventions did not seem to positively impact the reading comprehension and writing skills of children, who remained at the 'below average' level. These skills have thus not been sufficiently developed (*Sambhav 2003; Bodh Shiksha Samiti 2002; Agnihotri 2002*).

v) Lastly, these studies attempted to correlate certain social variables with learner achievement and found that:

- By correlating gender with achievement scores, no clear-cut trend was visible. In Tamil Nadu, girls and boys performed equally well at the primary level. In Maharashtra, most students performed below the expected average irrespective of gender. In Kerala and Madhya Pradesh, boys performed better than girls in maths, while girls did better than boys in language (*Agnihotri 2002; Bodh Shiksha Samiti 2002; Sambhav 2003*).
- Location of the school was found to be an important variable. In Tamil Nadu, children in schools close to urban areas performed better than those in rural/tribal areas (*Agnihotri 2002*).

vi) The results of the qualitative studies are not in keeping with the optimistic picture presented in the TAS survey of DPEP I states by the NCERT. The study team in Tamil Nadu compared the results of their study with the MAS and TAS surveys conducted by NCERT. The MAS and TAS had revealed that in Cuddalore district, in language, achievement scores had shot up to 60% in MAS and to 86% in TAS, from baseline levels. In maths, they had risen from 28% in BAS to 48% in MAS and to 85% in TAS. The independent research study found no evidence to suggest that the average performance in language and maths had reached anywhere close to 85%, as exhibited by the TAS survey (*Agnihotri 2002*). Similarly, Madhya Pradesh data from the independent evaluation study also appeared to be in sharp contrast to the figures of NCERT achievement surveys, though the size of sample and tools used varied to a great extent. While the TAS figures exhibited a score of 60.29% in language and 52.11% in maths for the DPEP districts in Madhya Pradesh, the scores arrived at by the independent research team were 15.8% in language and 15.9% in maths (*Sambhav 2003*).

vii) Since the research studies, commissioned by MHRD, were in-depth evaluations, they attempted to explore the reasons responsible for the abysmally low levels of achievement. In Maharashtra, the poor performance by students in writing, reading comprehension and mathematical operations has been linked to the ineffective use of textbooks and faulty teaching practices. Teachers failed to keep a close check on students' performance (*Bodh Shiksha Samiti 2002*). Classroom teaching practices were also identified as a cause of the deplorable performance in maths by children in Madhya Pradesh. It appeared that a large amount of time was spent doing formal mathematical operations in a totally mechanical way. The old obsession with the sums continued and there appeared to be little or no change in pedagogical practices and methods (*Sambhav 2003*). In Haryana, children's poor performance in geometry was attributed to inadequate representations of geometric concepts and skills in textbooks (*Batra P, 2002*). Achievement levels of children in Tamil Nadu were also linked to classroom processes. It was found that higher achievement levels of children were linked to greater freedom given by the teacher to children to express themselves as well as to the peer group activity generated in the classroom. Moreover it was found that the bigger the class, the lower was the achievement of children (*Agnihotri 2002*). Finally, classroom observations in Haryana indicated that the medium of instruction used in classrooms (i.e. Hindi) could not be comprehended by most children who spoke Haryanvi, and this could be responsible for their low achievement levels in reading and writing. It was observed that the classroom reality requires teachers to use the local dialect to make teaching meaningful. What was missing was appropriate training of teachers in techniques to help children move from the use of dialect to simple Hindi in school (*Batra 2002*).

The detailed examination of large scale achievement surveys and micro studies conducted during the last decade, though vastly different in terms of sample size and time frame, lead us to conclude that learning achievements of primary school children continue to be low and much is left to be desired in this respect. The achievement surveys conducted over a period of time do show some improvement in learning achievement, though a dramatic upswing cannot be expected within a period of a few years.

It is pertinent to note that learner achievement studies have drawn the country's attention to the poor achievement levels prevailing in India at the primary school stage and consequently on the need to develop local specific strategies and interventions to optimize learning outcomes.

As demonstrated above, achievement studies till date have used achievement scores acquired in various subjects as an indicator of learning. It is important to recognize the limitations of utilizing marks/ scores as measures of learning outcomes. Since many aspects of learning cannot be captured through achievement tests, parallel methods of assessment are urgently required such as a classroom observation and interviews. More importantly, we need to widen our scope to testing much more than just measurable outcomes. As Vimala Ramachandran states, assessment processes must measure not only the predictable, but also the unpredictable outcomes – for example, we must test not only the competency to add, but also assess the ability of the child to apply the concept (*Ramachandran 2004*). Thus attention has to be focused on assessing learning in all its facets and complexities.

Available evidence has shown that performance of learners does not depend only on school inputs, but is also influenced by many other socio-economic contextual factors. We now turn our attention to delineating the factors which influence learning achievements of primary school children in India.

CHAPTER IV

FACTORS INFLUENCING LEARNING ACHIEVEMENTS

The above analysis of achievement surveys and point-in-time studies has brought into focus an array of factors which have impact the learning levels of children in India. From the available research evidence, an effort is made to isolate these factors by categorizing them under school characteristics, pupil characteristics and home background influences. It is also pertinent to note, at this juncture, that there exists a great deal of debate on the extent of each of these influences.

Empirical research in the West led scholars to conclude that, in developed countries, home background of students influenced their learning to a greater extent than school factors. It was postulated that in developing countries, on the other hand, it was school quality which was the major determinant of learner achievement (*Heyneman & Loxley 1982; Fuller 1990*). Heyneman and Loxley, further addressing the above question for India, came up with the dramatic finding that 90% of the variance in science achievement was attributed to school and teacher quality and only 10% to home factors (*Heyneman and Loxley 1982*).

A reasonably large amount of research, undertaken in India, challenges this hypothesis and concludes that both the home background and the school are equally important to determine student achievement in India. School children in India come from a variety of socio-cultural and economic backgrounds. The schools are expected to mould children of these heterogeneous groups in a manner that they all acquire cognitive skills of a comparable quality (*Aggarwal 2000*). This heterogeneity of the students' background is also coupled with variations in school quality with varying learning environments and types of schools. The net result of these two factors is the wide difference in learning outcomes. It thus becomes relevant to isolate the school, pupil and home background factors affecting learning outcomes, which will give us some insight into the reasons behind the low achievement levels in India.

1. Home Background Factors

Among the home background factors, the one that was found to be significantly affecting learning is the socio-economic status of the family. This refers to the income and occupation of the family head. Kingdon's study of 30 schools in urban Lucknow found the family's socio economic status to be important in the acquisition of maths and reading skills (*Kingdon 1998*). Bashir's study of primary schools in Tamil Nadu found that a higher income level reinforced better performance in school. A higher socio-economic status led to higher maths achievement. This was especially so in the case of families with working mothers, in rural areas (*Bashir 1994; Saxena, Singh and Gupta 1996*).

Proxies for household wealth, such as parental education and father's occupation, were positively correlated with achievement in many studies. Govinda and Varghese's study in Madhya Pradesh, and Saxena et.al's study using the data of baseline studies in 43 DPEP districts, found that achievement scores increased with higher educational levels of parents. This was so especially if parents were university educated (*Saxena, Singh and Gupta 1996; Govinda and Varghese 1993*). Studies also revealed that children whose parents were cultivators scored the lowest and children of traders/businessmen and other professions scored the highest (*Govinda and Varghese 1993; Varghese 1999*). Roy, Mitra and Ray, in their study of achievement levels in Bengal, found mother's education to be more conspicuously related to children's achievement. Wards of manual labourers scored the least while those of in-service occupations had the highest scores. (*Roy, Mitra and Ray 1995*). Conversely, Hasan's study in Bihar found some association between the large number of students obtaining a zero score on achievement tests with parental illiteracy (*Hasan 1995*).

A number of studies also concluded that a conducive home environment, in terms of provision of facilities for learning, had a positive impact on the learning outcomes of students. Families who are aware of the importance of education can contribute much to their children's learning achievement. An analysis in low literacy districts found that families which encouraged children's schooling by allocating time for study and encouraging reading, had them scoring significantly better on tests of learning achievements (*World Bank 1997; Varghese 1995; Shukla et.al 1994*). Conversely, it was also found that the first generation learners, who lacked learning support at home, found learning becoming increasingly difficult (*Hasan 1995*).

In India, student achievement was also found to be influenced by the social category (caste or tribe) a family belonged to. Several studies have found, consistently, that students of scheduled caste and scheduled tribe families are the poorest achievers, even after controlling other variables such as parental education and household wealth (*Shukla et.al 1994; Kingdon 1998; Aggarwal 2000; Singh 1996; Hasan 1995*). Satvir Singh found the achievement gap between SC/ST children and others to be larger in mathematics than in language. Rath and Saxena, in their study of 44 districts in 7 DPEP states, found that SC/ST students had low attainment in language and maths. The achievement gap in maths did not vary between schools, indicating that their low attainment was the effect of home background factors (*Rath and Saxena 1995*). Ved Prakash and Pandey, while exploring the impact of three demographic variables - gender, area and social category-on achievement of students, found only social category to be a variable significantly affecting the performance of students (*Prakash and Pandey 1996*). Rashmi Sharma's study of 7 elementary schools in rural M.P also found achievement to be affected by the caste composition of the village, with achievement being lower for children from deprived background. Some of the possible reasons which might explain the poor performance of socially disadvantaged groups are (i) these groups seem to get fewer educational facilities; (ii) they do not use or derive enough benefit from such facilities; and (iii) the language of many ST groups is different from the standard language (*Sharma 1998; Aggarwal 2000*).

Among household characteristics, it was found that a small family size positively contributed to higher achievement of children. The presence of a large number of siblings exerted a negative influence on achievement, since the greater the number of siblings, the lesser would be the parental attention to children (*Kingdon 1998; Roy, Mitra and Ray 1995*). It was also observed that regular school attendance, when encouraged by families, fostered higher achievement among children, than among those who attended school less regularly. It was found that student absenteeism for attending to household duties was negatively associated with achievement (*World Bank 1997; Bashir 1994*).

Another important way the background of learners influenced achievement was in the language spoken by them. In many cases this was different from the medium of instruction followed in schools. Students speaking local dialects found it difficult to comprehend teaching in the medium of instruction, leading to a communication gap between teacher and learners. This could have an impact on their learning levels (*Aggarwal 2000; Batra 2002*).

The health and nutritional status of children was also found to have a significant impact on their learning capacity. Recent studies have pointed out how the phenomenon of coming hungry to schools was responsible for the low levels of learning among children (*Ramachandran 2003*). V. Ramachandran highlights how malnutrition affected the children. Inadequate nutrition impacted the child's ability to learn and retain new concepts. Malnutrition also dulled motivation and curiosity restricting psychosocial development (*Ramachandran 2003*).

Pre-school education of children was found to be positively correlated to achievement. Students who attended pre – primary education scored better, having higher percentage points in language and maths, compared to those who did not (*Govinda & Varghese 1993; Y. Aggarwal 2000; Hasan 1995*).

The wider socio-economic context in which a school is located also affected achievement levels of students within. Rashmi Sharma's study from village level data concludes that variations in mean scores on tests were explained better by village characteristics than school variables. She found that:

- An important correlate of achievement was the link of the village with the wider community and urban centre and its distance from the city.
- The literacy score of the village (i.e., the amount of printed matter newspaper etc, reaching the village) determined achievement at school.
- The four variables of modernization-approachability, government presence, market and literacy score of the village-tended to coexist and impact achievement (*Sharma 1997*).

Amongst the important pupil characteristics that were correlated with achievement, gender was an important issue. The NCERT national survey of learning achievements found gender differences in achievement to be relatively small, with boys performing marginally better in states like Bihar, Karnataka, M.P, Rajasthan and U.P. In states with high primary school participation rates, such as Kerala and TamilNadu, the study found no overall differences in achievement of boys and girls (*Shukla et.al 1994*). Saxena, Singh and Gupta found performance of girls to be lower than that of boys

in all states except Kerala (*Saxena, Singh and Gupta 1996*). Many studies found that, on an average, performance of girls was lower than that of boys in mathematics. Govinda and Varghese concluded that sex of the student was not associated with achievement in urban areas, but boys tended to perform better than girls in rural areas, due to differential parental encouragement and supportive facilities given to them (*Govinda and Varghese 1993*). Jain and Arora, examining data of baseline studies in 8 DPEP states, found the gender gap narrowing as the socio-economic status of students increased. The study also found performance of girls increasing with higher percentage of female teachers in schools (*Jain and Arora 1995*).

Another pupil characteristic that correlated with achievement was age. Results of various studies led to the conclusion that younger children performed significantly better than older ones in all the subject areas they were tested in. Conversely, repeaters did significantly worse and older children were often the dropouts or those stagnating and weaker in studies. Repetition of grades was found to be due to lower pupil motivation (*Aikara 1997; Bashir 1994; Kingdon 1998; Saxena, Singh and Gupta 1996*).

2. School Factors

Apart from the home background and pupil factors, school and teacher characteristics also influenced learning outcomes. Some of these characteristics are discussed below.

Among the school level inputs, the level of infrastructural facilities provided in schools- buildings, classrooms, drinking water, toilets, etc.,- was associated with learner achievements and overall school quality. Govinda and Varghese found in M.P. that students in schools with very good facilities scored twice as high in Hindi and maths compared to those in schools with no building and poor facilities (*Govinda and Varghese 1993*). Other researchers have found that students in schools with adequate classroom facility scored higher than those in schools which were lacking in them (*Shukla et.al 1994; Aikara 1997; Singh S. 1996; Bashir 1994*).

Availability of instructional materials is a significant determinant of achievement in low income countries. To correct imbalances across schools in this regard, the MHRD had established the 'Operation Blackboard' scheme for providing additional classroom and teaching materials to schools. Saxena et.al's study found that schools participating in this scheme had higher maths and language achievement than the non-participating schools (*Saxena, Singh and Gupta 1996*). Studies also showed that schools where all the children had textbooks scored two to three times higher than children who had some (or none) of the text books (*Govinda and Varghese 1993; Saxena, Singh and Gupta 1996*).

Teacher quality is another variable that has a significant impact on pupils' overall achievement scores. It was found that teacher education / qualification was the most important determinant of students' achievement in both advantaged and disadvantaged regions (*Govinda and Varghese 1993; Kingdon 1998; Saxena, Singh and Gupta 1996*). Teacher experience was not found to be an important predictor of student achievement in major empirical studies. Indeed, Saxena, Singh and Gupta found that teachers' experience was negatively correlated with students' achievement (*Saxena, Singh and Gupta 1996*). Studies found a negative correlation between multigrade teaching and learning outcomes (*Bashir 1994; Govinda and Varghese 1993*).

Strong positive associations between teaching practices and students' achievement emerged from the studies reviewed. Practices such as giving assignments to students in maths and language, providing testing and feedback and giving homework, were seen to be positively associated with students' learning (*Saxena, Singh and Gupta 1996*). In M.P, Govinda and Varghese found practices such as explanation of new concepts, motivating students' participation in classroom activities and assigning and correcting homework were found in schools with higher academic achievement (*Govinda and Varghese 1993*).

Class size or pupil-teacher ratio was a school variable that was not found to be consistently affecting achievement across all studies. Saxena, Singh and Gupta's study found that school mean achievement continued to decrease as the pupil-teacher ratio exceeded fifty. Govinda and Varghese found the pupil-teacher ratio going against the interests of learners, especially in backward areas (*Govinda and Varghese 1993*). Bashir's study in Tamil Nadu concluded that the pupil-teacher ratio had a positive effect on maths achievement (since maths could be taught with peer group teaching), but for reading comprehension, which required individualized attention, a larger class had the expected negative effect (*Bashir 1994*).

In general, the school's academic climate, which included a number of factors, contributed to pupils' achievement. Indicators such as teacher's commitment, parental involvement, head teacher's leadership, teachers' regular attendance and support to students, all positively related to maths and language achievement, in the study of 44 DPEP districts by Saxena, Singh and Gupta (1996).

Finally, a number of important empirical studies revealed that the type of school management greatly influences student achievement. Bashir found in Tamil Nadu that greater managerial discretion associated with the private schools led to higher academic performance of students. Aggarwal's study of Delhi schools found achievement levels to be lowest in MCD schools and highest for privately managed schools in both language and maths. Govinda and Varghese in M.P. found students in fully private aided and unaided schools to have higher achievement levels than in government schools. The reason for the academic success of private management schools lies in the effective internal monitoring mechanisms characterized by autonomy of the head master. In comparison, government schools were marked by indifference and lacked accountability (*Govinda and Varghese 1993; Aggarwal 2000; Bashir 1994*).

This section has attempted to identify the school, teacher and student background factors that affect student achievement most significantly. In doing so, it has negated Heyneman and Loxley's dramatic conclusion that school factors by far exercise predominant influence on students' achievement and home factors account for very little. The discussion above favours the conclusion that, in India, both the home background and school factors exert equally important influences on children's cognitive achievement.

CHAPTER V

CONCLUSION

So far, this report has reviewed the major research studies and achievement surveys on learner achievement, synthesized the findings and analyzed them, and elicited certain broad patterns. To recapitulate, these are summarized below.

- Academic performance of students at the terminal stage of primary schooling has been found to be disappointingly low. The mean achievement scores range from 25% to 60%, in different samples of the study. Not only was this reflected in the mean scores, but also in the percentage of students who attained mastery levels, which was found to be negligible.
- Studies and surveys uniformly indicate that achievement levels of grade I and II children are reasonably high, but performance declined as students progressed to higher classes.
- Studies have consistently depicted a poorer performance of children in maths compared to language.
- Wide variations in learning achievement, between states and districts, is brought out in surveys as well as studies and reflect the element of contextuality in the primary education system.
- Rural-urban variations in achievement were found to be minimal, while gender disparities, though not being statistically significant, did exist to some extent. Studies showed that boys outperformed girls, especially in maths achievement. Variations by social category found SC/ST children to be the poorest achievers. Variations by school management found private aided and unaided schools displaying higher achievement compared to government schools.
- The temporal analysis of learner achievement was based mainly on the achievement surveys which formed a part of the major educational programmes like the DPEP. These surveys assessed learner achievement periodically over the life of the programme. The surveys displayed the trends in learner achievement with reference to the objectives of the programme. With reference to the first objective i.e., obtaining a minimum score of 40%, the surveys showed significant gains, with all districts attaining the target for grade I children. However, many districts could not attain this minimum score for grade IV children. The surveys revealed that DPEP was not successful in attaining its second objective i.e., achieving a rise by 25% in learning levels from the baseline. The terminal assessment surveys did reveal that majority of districts have achieved this target, but the sudden up-swing in figures, after the mid-term survey, appeared difficult to explain. DPEP was fairly successful in attaining its third objective i.e., reducing gender and social disparities in learning achievement.
- Using the same data generated by achievement surveys, scholars have aggregated the mean scores of districts, to obtain a state level picture. An analysis of this found the achievement of grade IV children to be below mastery level in almost all DPEP I and II states.
- The qualitative studies revealed a strikingly low achievement profile of grade IV children, which was in sharp contrast to the results of the TAS. Moreover, the percentage of students securing mastery over competencies was also negligible, with a majority of the students scoring below 40% in many DPEP phase I states.
- This report also focused attention on the host of home background, pupil and school characteristics, which have influenced learner achievement in the Indian context. The prominent home background factors include the socio-economic status and caste background of the family; parental education and occupation; a conducive home environment; small family size; and health and nutritional status of the child. The important school level factors determining achievement were the provision of infrastructure; availability of instructional materials; teacher quality and teaching practices; pupil-teacher ratio; the school's academic climate; and type of school management.

These findings thus represent the low educational outcomes of primary school children, which are a sad reflection on the quality of primary education in our country. The analysis of learning achievements studies has however, raised some important questions, which need to be urgently addressed.

The striking observation in this analysis of achievement studies is that learning achievements meant only the measurable outcomes i.e., the acquisition of knowledge and skills. An urgent requirement is for the schools to lay stress on other important aspects of learning, such as generating creativity, developing critical thinking and inculcating a value system in keeping with the tenets of the constitution. Learning thus has to be made more encompassive. Consequently, in keeping with the above focus, assessment tools, which have hitherto tested only measurable outcomes that are memory based, would also test understanding of concepts, creativity etc., representing learning in all its facets. Till now, emphasis in learning achievement studies has been on testing the cognitive aspects of learning. Incorporating the assessment of the non-cognitive aspects of learning also becomes imperative to get a complete view of learning.

Another observation was that the findings of the large scale achievement surveys in DPEP states have been at variance with the results of the qualitative studies, on the achievement levels of children. This discrepancy has led us to question the efficacy of the tools and techniques used to test achievements of such a large sample. The need, therefore, is to devise methods of evaluation that can meaningfully and accurately measure learning outcomes, while lending themselves to large scale application. Scholars have also called for 'genuine exploration without loss of face', by institutions engaged in learning assessments.

The absence, till date, of a regularized assessment of learning achievements does call for a systematic and periodic review of the status of learning of children at different stages of elementary schooling on a regular basis and for the whole country. Such statistics would serve the vital purpose of addressing the issue of quality improvement of primary education in a large educational system like ours. However, advanced assessment tools need to be designed to get accurate results.

Lastly, along with periodic large scale surveys, there is also an urgent need for conducting a number of small-scale but intensive studies on all aspects of the teaching-learning process using qualitative methods of analysis. This will give us an insight into how much the children with varied backgrounds are learning in varied contexts, and how this level of learning can be enhanced through various pedagogical inputs.

In conclusion, it can be stated on a positive note that though at present learning achievements in India are low, tremendous efforts are underway, by governments, educationists and NGOs to bring about a qualitative improvement in primary education. Making learning a creative experience for children will go a long way in this endeavour. According to Dr. A P J Abdul Kalam, creativity is the essence of learning and true learning is possible only if educators unleash the creative potential in every single child. With this it will be possible to sustain the smile on the face of children from the time they enter school till they graduate (*Dr. A.P.J. Abdul Kalam at the National Conference on 'Enhancing Learning in Elementary Schools', Bangalore, 2004*).

GLOSSARY

BAS	-	Baseline Assessment Survey
DPEP	-	District Primary Education Programme
EFA	-	Education For All
EVS	-	Environmental Studies
MAS	-	Mid Term Assessment Survey
MCD	-	Municipal Corporation of Delhi
MHRD	-	Ministry of Human Resource Development
MLL	-	Minimum Levels of Learning
NCERT	-	National Council for Educational Research and Training
NPE	-	National Policy on Education
OBC	-	Other Backward Classes
POA	-	Programme of Action
PTAS	-	Post Test Achievement Surveys
RSPEE	-	Resource Support for Practitioners in Elementary Education
SC/ST	-	Scheduled Caste / Scheduled Tribe
SSA	-	Sarva Shiksha Abhiyan
TAS	-	Terminal Assessment survey

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