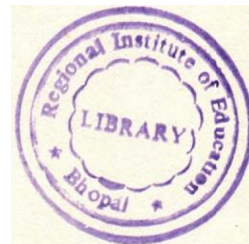# (CHAPTER-I)

INTRODUCTION

INTRODUCTION

1.1   SCIENCE • VITAL FOR SOCIAL CHANGE

Very soon our Society will . be entering in the 21st century, which will be dominated by Science and Technology. This will require our education system to be science oriented. Science occupies a very significant place in the process of social change. It is felt that teaching of science in a particular class should not be a "preparatory" to the next higher class. Statistics shows that quite a small percentage of the school going children are able to study science at higher level. A large proportion of students have no access to science and technological education beyond a few y ars of schooling, more over what ever science they learn in their school, remains purely academic. They do not use scientific knowledge in their daily life.The basic knowledge of science has become indispensable in all spheres of life like health, nutrition, agriculture, industry etc. The narrow focus of science education is to be extended from this point of view, and not only the school going children but 'out - of - school' population should also be given the basic knowledge of science.

The problem related to science education is not unique to India alone.. Interests in science and the effective ways of popularising it, is a problem with far reaching implications, in many countries today, especially in the countries which are in the process

of fast development. There has been immense stress on popularising science which certainly has its repercussions on the rural children. They fee! science to be a difficult subject because there has been very little improvement in the quality of rural science teachers. Even in urban areas, more and more stress is given on mere memorization of scientific concepts, principles and phenomena which otherwise call for proper comprehension, application and development of scientific skills along with generation of scientific templ?r and a proper attitude for science oriented learning experiences.

The scenerio has now drastically changed within a span of few years. It has now been universally recognised and felt that some concrete steps are needed to break the old notions about science education and to change its treatment. Attempts are being made at various levels by various agencies to gentirate an atmosphere which is thoroughly science oriented, by not treating science as an academic discipline but as a way of life, which has a proper place for logic, analysis, observation, interpretation and drawing out conclusions about everything which is occuring around man, may be in the social system or natural system. This can work as a take off point for propagating the idea of "Science for all".

In the modern times when the country is moving towards the twenty first century, science, technology and their intl"oduction as a core subjects of school curriculum, becomes still more necessary. Universalisation of science is an effort to popularise science among all children who are within the formal and non-formal systems of education. Science as a discipline has been made compulsory to all upto tenth grade. Now during the first ten)ears, in the schools all the children \\ill be exposed to science and mathematics . Same approach will be followed in the nun-formal

system as well. Presently the classes are more heterogenous as pupils are drawn from all strata of society with 'Varying socio-economic, cultural and natural environment. To cope up etTecli'Vely with such situation, science education curriculum as well as its transaction has to meet new challenges.

The emerging concept of 'Science for All'[1] is one such step in this direction which aims at improving the quality of life in a society which is increasingly dependent on the emerging and increasing interdependence of science, technology and society. The National policy on Education 1986 includes the policy statement : "Teachers should have freedom to innovate, to device appropriate methods of communication and activities relevant to the needs and capabilities of the concern of the community".

The needs and aspirations of the learners are considered most important and they form the pivot around which the whole teaching- learning process revolves. It has the advantage of ha'Ving intrinsic factor of motivation due to fulfilling the need.

A curriculum primarily based on the needs of the learners and the real life situations from the environment chooses the specific acti'Vities that are in conformity with the objectives i.e. achievement of skills, knowledge and attitude. Investigation of different aspects of real life situations is directly rele vtnt to the interests and needs of the learners and as a result of the study, it is likely to mpron quality of life.

There is need to incorporate "Science for All" component

1. *'Science For All', Report of the National Workshop for Development of Teaching-Leaming Material for Secondary Level, Science Unit, N.C.E.R.T.,New Delhi, 1987*

in the teacher education curriculum. In this context, the policy of providing science as one of the core subjects upto secondary level (class X) is provided in the new school curriculum. As a result of this development, the National Council for Teacher Education in India provided for the training of science teachers in. the need-based teacher education curriculum where content and methods of. science are sought to be taught in an integrated manner encompassing the various areas of science.

As stated in Education Commission, in the lower primary classes, the focus may be on the child's environment viz. social, physical and biological. The accent may be on cleanliness, formation of healthy habits and development of the power of observation, personal hygiene and sanitation. The child may also be introduced to formal areas of science.

In class IV children may be taught the Roman alphabet. This is essential as the internationally accepted symbols for the units of scientific measurement.

At the higher primary stage, the emphasis may shill to the acquisition of knowledge together· with the ability to think logically, to draw conclusions and to make decisions at a higher level.

Every primary school may have a science corner or a room to keep specimens, models and charts with the necessary storage facilities.

At the secondary level, science as a discipline of the mind and a preparation for higher education deserves special emphasis. In the lower secondary classes, Physics, Chemistry, Biology and Earth Sciences has been taught as compulsory subjects for all the

pupils. Building on the introductory courses at the earlier stage, they may be made to cover wider areas and go deeper into the content than before. The changing character of the sciences may be the major factor in curriculum development.

According to Education Commission, during the last few decades the conceptual frame work of physics has undergone a drastic change and this should be reflected in the high school physics curriculum. Similarly in chemistry, the stress hither to laid on memorisation of facts, formulae etc. The present content. of the school course in biology is traditional in nature. The concept of biology as a method of inquiry by means of accurate and confirmable observations, quantitatively and mathematically analysed and controlled experimentation should he impressed on the minds of the young learners.

1.2   SCIENCE POLICY IN POST INDEPENDENCE PERIOD

After independence, Govt. of India realised the importance of science education which clearly reflects in the Mudaliar Commission Report 1953.[1]

The Science Policy Resolution adopted by the parliament of India on March 4, 1958, recognised technology as a key factor for economic development, emphasized the importance of the study of science and its application as a means of providing material and cultural amenities and services to every member of the community.

1. *'Secondary Education Commission: Government of India, Ministry of Education, New Delhi , 1953.*

Although the science Policy Resolution did not specifically mentioned school l'ducation or out-of-school education anywhere as such, its impact on both had been tremendous. Later on conferences and workshops were organised to assess the follow up action on the Resolution of 1958. Some of the recommenda ions of these conferences which had direct bearing to school science education were : -

I.   Efforts should be made to disseminate and popularise science using the media such as documentary films, radio, T.V. popular science Journals and magazines.

II.   The search for scientific talent should be started at the higher secondary school level.

III.   Efforts should be made to provide facilities for the manufacturing of instruments and scientific apparatus required by schools and colleges.

IV.   Scientists in universities and laboratories should take part in school science education. They should establish contacts with local educational authorities in advisory capacities.

13   EDUCATION POLICY 1964

In the year 1964-66 another education commission popularly known as 'Kothari Commission'1 was appointed to advise the Government on the national pattern of education and on the

I. 'National Policy of Education - 1986'

Ministry of Educational, Govt of India New Delhi, 1986

general principles and policies for the development of education at all stages and in all aspects.

For the development of Science and Mathematics Education, Commission gave its recommendation as :

1. Science and mathematics should be taught on a compulsory basis to all pupils as a part of -general education during the first ten years of schooling. In addition there should be provision of special course in these subjects at the secondary stage for students of more than average ability. Science curricula should be re-organised and brought up-to-date, the methods of teaching vitalized, and proper facilities provided for the teaching of subject.

II. The aims of teaching science in the Primary School should be to develop proper understanding of the main facts, concepts, principles and processes in the physical and biological environment. Both deductive and inductive approaches should be utilized to unravel these ideas, approach or the use of the scientifir method.

III. In the lower primary classes, the thrust should be on the child's environment - social, physical and biological. In class I and II, the accent should be on cleanliness, formation of healthy habits and development of the Power of observation. These should be emphasized again in class III and IV, but the study should include personal hygiene and

sanitation. The child should also be introduced to formal areas of science such as the plants and animals in his surroundings, the air he breathes, the water he drinks, the weather that affects his daily life the earth he lives on.

IV. In class IV children should be taught the Roman alphabet. This is essential as the internationally accepted symbols for the units of scientific measurement and symbols for chemical elements and compounds are written in the Roman alphabet.

V. At the higher primary stage, the emphasis may be shifted to the acquisition of knowledge together with the ability to think logically to draw conclusions and to make decisions at a higher level. Science should now be taught as physics, chemistry, biology, geology and astronomy.

VI. In the lower secondary classes, physics, chemistry, biology and earth science should be taught as compulsory subjects for all the pupils.

VIII. At the higher Secondary stage, where diversification of studies will take place, science will not be studied on a compulsory basis by all the students. Science will be studied only by those students who opt. for specialisation in science.

IX. In secondary schools in the rural areas, the linking of education to the agricultural

environment can be d@e through integrated courses which bring out the impact of the physical sciences on biology.

1.4   NATIONAL POLICY OF EDUCATION 1986 :

National Policy of Education 1986 clearly stressed that the science education will be strengthened so as to develp in the child well defined abilities and values such as the spirit of inquiry, creativity, objectivity, the courage to question and an aesthetic sensibility. Science education programme will be designed to enable the learner to acquire problem solving and decision making skill and to discover the relationship of science with health, agriculture, Industry and other aspects of daily life. Every effort will be made to extend science education to the vast number who have remained outside the frame of formal education.

Universalisation of science is an effort to popularise science among all children who are within the formal and nonformal systems of educations and the target can only be achieved if science as discipline is made compulsory to all upto tenth grade and later on this may be extended to higher levels as well. During the first ten years in the schools, all the children will be exposed to science and mathematics education. Same approach will be followed in the non formal system as well. The classes will be more hetcrogenous as pupils would be drawn from all strata of society with varying

1. 'National Policy on Education - 1986' M.H.R.D
Ministry of Education, Govt of India New Delhi, 1986

socio-economic, rultural and natural environment. To cope up with such rapid situation, science education curriculum as well as its transaction would have to meet new challenges. Meaningful knowledge, employable and useful skills and rational and scientific attitudes ought to be the consequences of the meaningful science education endeavour.

1.5 SCIENCE ORIENTED CULTURE IN SCHOOLS

Recent researches in science education have identified the characteristics of students that appear to be related to successful achievement and positive attitudes towards science. It has been reported that, at high school level, boys score as h igh as girls. Therefore provision of science course can be made both for boys and girls. It has also been reported that, students who have had excellent high school science instruction can be expected to do equally well in their college academic courses. If teachers help students in developing their study habits it can enhance achievement in science significantly. Curriculum if not taught properly, develops negative attitudes towards science. There frequently exists a considerable gap between the outcomes of the learning process as envisaged by curriculum developers and those achieved in the typical science class room. Whenever a gap of this natut'e exists, there is the likelihood of children developing a negative attitude towards science and technology.1

I. 'Minimum Levels of Leaming concept and Role of Science Teacher' Ved Prakesh, S.D. Roka, The Primary Teacher Vol. X I X N.C.E.R.T., New Delhi, 1994

The formal school system and teachers who serv•? it have to play a role so that po\'crty, disease and ignorance can be removed by creating awareness among the teachers about the new role which science and technology can play. Science has to be made interesting and meaningful to students. The teachers are to be aware of the new °delivery system" where a learner no longer remains confined to the narrow walls of a science subject.

1.6 SCHOOL CURRICULA AND ENVIRONMENTAL STUDIES.:

In most of the school curricula environmental •?ducation component has been incorporated in subjects like biology, chemistry, geography etc. Al the early level of schooling conservation attitudes are sought to be built through several activities like tree plantation and careful use of the available resources. Out of the various science subjects, biology, may be made a compulsory subject at the school level and various components of the environment be includ,id in the school curriculum. These include; growth of population and its influence or resources, land, water and forest usaaes and environmental health emphasizing the importance of public sanitation, health and common infections diseases. The teachers may integrate the components of environmental education in other science subjects including physics, chemistry and mathematics. Analysis of the methods of teaching about the environment indicates that these are mostly, activist nd advocacy oriented in nature whera appeals are made to the learnc rs for the conser̀ation of environment, mostly through media.

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1.7 MINIMUM LEVEL OF LEARNING -A NEED OF THE DAY:

The large scale expansion has resulted in the creation of educational facilities with widely varying quality in terms of institutional infrastructure, teaching-learning processes as well as the quality of students passing out of these institutions. The quality variations become more pronounced in certain states, between schools of rural and urban areas, between schools managed by government and non-governmentt. bodies. The National Policy on Education-1986; calls for paying immediate attention to :

{i}   Improving the unattractive school environment, the unsatisfactory condition of buildings and inadequacy of instructional material.

(ii) Laying down minimum levels of learning which all children completing different stages of education should achieve.

In 1973 'Minimum Lavels of Learning' had already been made in connection with the UNICEF-assisted projects on 'Primary Education Curriculum Renewal and Devlopment Activities in Community Education and Participation'. The primary education curriculum renewal project was evaluated using a set of achievement tests devloped for all primary classes based on the competencies specified in the minimum learning continuum

1. National Polity of Education 1986', M.H.R.D. Govt of India, New Delhi 1986

utilising the empirical evidences collected through this evaluation study and following the national policy on education-1986, the N.C.E.R.T. prepared another document entitled 'Minimum Levels of Learning at the Primary Stage'1•

The department of education, ministry of human resource development organized a seminar in December, 1989 on the theme •Basic Learning Needs and Levels of Attainments'. Various issues related to basic learning needs of the children at the primary stage, the needs for specifying minimum levels of learning and creation of appropriate mechanism for accessment of learner attainment were discussed during the seminar. On the issue of laying down minimum level of learning, the seminar recommended for initiating concrete efforts at the national level.

1.8   MINIMUM LEVELS OF LEARNING :

1.   Minimum Levels of learning (MLL) emerges from the basic concern that irrespective of caste, creed, location or sex, all children must be givlm access to education of a comparable standard. The major focus of the policy formulation behind the MLL exercise is upon equity and reduction of .existing disparities. The effort is to combine quality with equity keeping in view the developmental needs of children, and girls, who constitute the majority of

1. 'Minimum Levels of Leaming at Primary Stage' Report of the committee set up by the M.H.R.D. Govt. of India, 1991

school-going age population in this country, and to whom, in all likelihood, at least for somt time to come, primary education will be the only opportunity for structured learning. This basic concern underscores the approach adopted by the committee in defining the minimum levels of learning.

2. Minimum Levels of Learning can, perhaps, be specified in a variety of ways, for instance, M L L can be stated as expected learning outcomes defined as observable terminal behaviours. One may also go for analysis of learning objectives such as knowledge, comprehension, application, analysis, synthesis, evaluation and so on and accordingly indicate the expected learning outcomes. One can also state the M L L in terms of learning competencies expected to be mastered by every child by the end of a particular class or stage of education. These different approaches for stating the MLLs are not mutually exclusive of the various alternatives available, the Committee has chosen to state the MLLs in terms of terminal competencies. Each competency can be further sub divided in terms of subcompetencies while specifying the content inputs or while designing specific measures of learning.

3. It may be noted that the set of MLLs would actually represent the rational criteria adopted for Judging the adequacy of the curricular inputs

provided and the learning outcomes to be expected. There can be no finality with respect to any set of MLLs. This applies to the set of MLLs developed by the committee. Two basic considerations kept in views while formulating the MLLs are:

(i) The cognitive capabilities of the children at different classes or grades corresponding to different states of development; and

(ii) The empirical reality in terms of the enabling environmental conditions that characterise the primary education programmes.

4. No attempt has been made by the committee to provide a technical analysis of the meaning of Minimum Levels of Learning.

1.9 SPECIFICATION OF MINUMUM LEVELOF LEARNING.

(A) A Quality Issue

The emphasis on defining precisely what children should have learnt by the end of every stage of education stems principally from three concerns:

1. Firstly, laying down of well-defined levels of learning is expected to introduce a sense of direction and a greater element of accountability in the system. It is often pointed out that neither

teachers and pupils, and as a consequtnce, nor parents and educational planners seem to know where they are and where they ought to be. Without a clearly defined set of cri1eria for measuring student progress, it is not surprising that the teacher lose sight of their goals, and it is far-fetched to presume that such measures as regular attendance and the completion of the syllabus in time can effectively substitute measures of actual attainment of learning. As a natural consequence, the pupils also are likely to lose a sense of purpose and motivation in their studies.. and many parents may get to doubt the worth-whileness of schooling rather than E:mploying the children more usefully elsewhere. Stating precisely what the objectives are and clearly defining them. The minimum levels of learning that all children must achieve at a given stage of education, is thus seen as one of the important prerequisites for infusing a sense of direction to the system and thereby paying the way for improving its accountability.

2. Secondly, it is expected that MLL will provide an effective tool for programme formulation for school improvement. The quality of a school or eductional system should, in the real sense, be defined in terms of the performance., Capabilities of its students; and graduates. Yet, in practice, since inputs into the teaching process are generally

easier to measures than education's multifaceted outputs, quality is often depicted, in terms of the former than the latter. However, at thl' present juncture, when the focus of school improvement programmes tend to be an factors that are likely to multiply costs per capita, it is necesary to set up measures for judging the quality of schools by what students are actually learning. What is it that makes a good schools Is it better buldings, more equipment or better qualified teachers ? To what extent can we increase inputs to increase output in terms of pupil achievement ? \\'hat kind of inputs yield better output ? In order· to find proper answers to these questions and provide inputs selectively, we have to first define our measure of output in the form of expected standard of achievement by particulerly all children.

3. Thirdly, and fundamental to the issus, there is the widely held perception that in a vast majority of government and municipal schools children can barely read their own textbooks even after spending as many as five years in schools. Considering that, to a large number of them, opportunity for education is not likely - to be available beyond the primar^y stage and what they learn here must sustain them throughout their life, it becomes imperative that the educational system makes sure that thesE· precious school years of the

children are not wasted. That all children, irrespective of the conditions they come from and the conditions of the schools they attend, reach a minimum level of learning before tht·y finish primary education, that would eventually enable them to understand their world and prepare them to function in it as permanently literate, socially useful and contributing adults.

(8) A Curriculum Issue

1. Every curriculum, as it attempts to modify the cognitive as well as non-cognitive domains of development of the learner, lays down specific educational objectives and the corresponding learning outcomes expected on the part of the learners. Usually, these are defined with reference to targets of educational achi ement uncler ideal conditions of learning, enabling the learners to fully realize their inherent potential and ‚mgage in socially useful life. However, the criticism levelled against the existing set of curriculum prescriptions and the corresponding learning outcome$ is that they are only designed to prepare students for second ary and university education. Consequently, there is an overload of content, of facts and information that would have very little rel-evance of the life or needs of a majority of students.

2. Also, it is often pointed out that the outcomes of learning expected do not seem to be based on the maturity level of the learner especially during the initial years of elementary education. The ambitiousness in the primary level of syllabus is now incressingly recognized as counter-productive to excellence in learning and dangerous to the concerns of equity. The syllabus load often compels the teacher to ignore altogether certain basic principles of the teaching-learning process. The need to complete the syllabus seems to take precedence over the need to progress according to the pace of tearing of the whole class and teacheres paid themselves forced to ignore the strugglers, forego attempts at remedial teaching or considerations for experimentation, exploration, observation or activity based learning. The conventional textbook and lecture mt·thod of teaching, being the quickest way to complete the syllabus, becomes the best opition availabfo, forcing upon the students a joyless rote memorization, an overemphasis upon textbooks and in many cases, a reliance on help from outside the school. The disadvantage. thus buids into the system for the already deprived needs no special elboration- for those who have no support for learning at home or outside the school no proper textbooks and learning aids, and who consequently have a complete dependence on schools for mastering

these syllabus, it leaves little scope but for repetitions or dropping out. Even many of those who manage to complete, despite these handicaps, attain at best an incomplete mastery of the basic skills.

3. Laying down minimum levels of learning should help to resolve some of these problems by identifing the irrelevent and excessive learning load in the existing curriculum. The M L L exercise should, therefore be viewed as part of a larger curriculum reform endeavour attempting to move towards greater relevance and functionality in primary education.
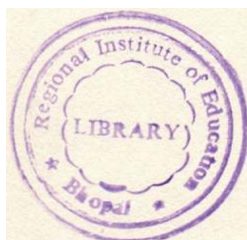
The implications of its textual load and also the burden of memorizing unnecessary and irrlevant facts.

Leaving room for the teacher to relate textbook information and objective reality into a meaningful process of understanding and application.

Ensuring the acquisition of basic competencies and skills, to such a level where they are sustainable, and would not easily allow for relapse into illiteracy.

permitting mastery learning not only by the brighter students in the class but also by almost all children indulging the first generation learners.

1.10 SOME BASIC FEATURES

Specification of MLLs should meet the purpose of increasing learning attainments and serve as performance goals for

the teacher and output indicators for the system. For this, the MLL must have, apart from relevance and functionality, the attributes of achievability, understandability and evaluability.

(l)Achievability

A basic characteristic that MLLs must satisfy is that they should correspond to learning objectives that are achi:-J.ble by all learners. This is so because of certain reasons:

(i) To serve as performance objectives and goals: It is generally observed that curriculum objectives are so remote from the life situation of the ('.hild and the actual levels of achievement in the class that very few teachers feel the assurance that they can help their pupils achieve the objectives. They tend, therefore, to implicitly formulate their own objectives, either going through the notions of textbooks lessons or just rote memorization, it is felt that the teacher would teach to the precribed curriculum objective and accept them as goals only if he feels confident that he can actually. acru\e them. Such a situation must be ensured in our educational institutions if the teachers have to use learning objective as performance goals and output measures.

(ii) To ensure learning up to mastery level by every child in the class : The present objec lives, as achievement tests reveal, are mastered by very few children ·in a class. The majority learns them inadequately, or incompletely, and tend to forget

{21}

them. The endeavour should, therefore, he to set MLLs closer to the realistic levels of atta ability so that the classes as whole works towards mastery of these MLLs. In operational terms, 8(1 percent or more of the children mastering at least 80 percent of the prescribed learning levels should be the performance target for the teacher h6:nceforch.

(iii) In a country in which achievemental le·,els vary widely with regions, destricts, school conditions, socioeconomic profile and other diverse factors, setting realistic and achievable minimum levels necessarily demands a great deal of flexibi_lity in implementation. For example, what is · easily achievable as mastery level learning in municipal schools in Bombay at present may not be immediately feasible for panchayat school in Jaisalmar district, will examine the MLLs in relation to its own situation, and set inttirmediate ta"ligets which would permit, within a r1?asonable expectation of improvement in school conditions and a specified time frame, mastery level attainment by almost all children in their schools. It is necessary that this exercise be preceded by a careful criterion- referenced assessment of the existing levels of achievement. These intcirmediate stage may be set as time-bound targets 10 convey a sense of urgency and serve as a reference against which indices of impleme.ntation and accomplishment can he compared. The e:llpectation

will be that by improving inputs into the? system, the levels of achievement in each school or region are gradually raised till they reach the MLLS. Different regions, depending on these present levels of achievement will take varying periods or time to reach the standards indicated by the Ml.LS. The endeavour will be to direct greater resources where levels of learning are lower and to cc,nsciously accelerate the pace of development in tile needy regions, thereby reducing disparities and equalizing standards over the entire country in the shortest possible time.

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(2)Communicability

It is not enough that the MLLs are realistic and achievable, it is equally important to set them in a language and from that are easily understandable to all the teachers, many of whom located in remote rural areas work in isolation without any outside help or guidance. Apart from primary school teachers, the MLLs should also be understandable to the NFE instructor, the parent, and the community. Thus, in order to function as achievement targets, the MLLs must be spelt out simple enough terms so as to be understandable to all those concerned with the academic growth of the children. Accordingly, an attempt has been made to prepare the Report of the Committee in such a way that it places in the hands of the primary school teacher and the NFE instructor a document that will serve as a statement of expected competencies guiding their classroom teaching and evaluation procedures. This should also be equally useful to curriculum

de.velopers, textbooks writers and educational administrators.

(3) Evaluability

The statement of MLLs should be such that they serve as an effective blue print for continuous and comprehensive evaluation of learners and thereby streamline the processes involved. Presently, no systematic learner evaluation proceduces are adopted at the elementary stage in many of the schools. Most states follow a no-detention or automatic promotion policy according 10 which children are not to be detained in the same class to repeat the course, since this has been identified as a main reason for dropping out without completing even the primary stage of educalion. The no-detention policy presumes an intrinsic ability of all children to learn provided they are taught well enough, and places the ones upon the teacher and the school to create conditions whereby learning can effectively take place. It is, however, observed that many teachers interpret 'no detention' as 'no testing' and have altogether given up doing pupil evaluation with the result that, very often, no one is fully aware of the learning status of the children till they reach the terminal class of the elementary stage. Taking stock of this situation, the working group for the Eighth Five Year Plan (1989) has recommended the introduction of a comprehensive evaluation system.

Students should have a well-defined goal of acquiring a mastery level, particularly in subjects which serve as the basic tools of learning. Parents seem to feel dissatisfied with the levels of learning being achieved in schools and would feel happier with a testing system introduced. Teachers too need to know more clearly

about the expected outcomes in the courses they teach. Educational administrators in the system of tests of learners, the instrumentality to app se the performance of institutions and teachers.

For MLLs to provide this well-defined goal of acquiring a mastery level it is necessary that they must give a clear-cut specification of expected learning outcomes, which would permit the construction of criterion - referenced tests by the teachers. Results of such tests based on the MLLs should be such that th•! teacher can identify which specific learning outcomes or competencies have not even mastered by the learners, help the learner to relearn the clusters of compet ncies representing specific unit as well as prepare correctives for remedial instruction quite precisely. Thus MLLs stated in easily evaluable terms should help the learners achteve mastery levels as they move from one unit to the 'tte»t. Thi attempt has thus been to set the MLLs in such a way as to make assessment of learner attainment easy for the teacher, whelher it is done through written, oral or other types of tests.

l.llMinimum Levels of Learning in Environmental, Studies

1.   Environment is generally taken to consist of two main aspects : natural and human, i.e. man-made and social. This division is often reflected in the curriculum of Environmental Studies (EVS) where traditionally, these have been libelled as part l and II separately, or social studies and science, respectively. In fact, the total environment should he viewed integratively as the product of the interaction among the man, the natural environment and the social environment.

2. The proposed curriculum plan tries to include all these three dy ic and mutually interactive elements. It has been built around ten major competencies. The first one is concerned with one's well-being in the context of natural and social enviroment. The next five deal with the social aspects, such as socio-civic environment, the world of wor spatial relationship between man and his natural environment, man's past present relationship and some common problem concerning environmental interaction. The last four major competencies relate to selected components of natural environment pressing on the scientific aspect besides the p,irsonal and social ones, and include the elements of health, living thin.gs, non living things, and the earth and the sk'')'.

3. The ten major competencies aimed at the cognitive, affective and psychomotor domains of deYelopment together with the content elements associated with them are enumerated below:

(i) The pupil :

(i) acquires awareness about one's well-being in the cont xt of social natural environment.

(ii) explores important aspects of one's socio-civic environment and comprehends their working

(iii) Knows about various people at wc,rk and appreciates the importance about the 'world of work'.

(iv) Understands and interprets the spatial and interaclive relationship between man and his environment.

(v) Begins to see the relationship between man's past and present and to hold the past in its proper perspecth·e.

(vi) Senses common but simple and easily observable socioeconomic situations and problems, anlyses them and seeks possible solutions at his level of experience.

(vii) Understands the factors contrib1,1ting to the prc5crvation of good health.

(viii) Develops skill in gathering and classifying information about living things from one s environment, and drawing simple inferences.

(ix) Observes and <'Xamines some common characteristics of non-living things.

(x) Observes simple phenomena on the earth and in the sky and draws inferences.

4. IL may be pointed out that the proposed scheme of MLLs avoids drawing and hard and fast dividing line between various components of environmental studies and expects them to be treated in a correlated manner. In the ultimate analysis, every child has to conduct himself/ herself as a socially responsible citizen as he/she grows, has to become aware of enviromental conditions

and the need to protecting it, and has to broaden his/her socio-economic and scientific outlook with the attainment of greater maturity. It is for the achievement of such broad life goals that the competencies stated above have to be mastered, curing the initial stage of education.

S. In order to develop these major competencies grade by grade, they have been delineated into specific sub - competencies anchoring them with relevant content units. and have been pre:;ented as a flow chart in a sequential and inter-eonnected nfnner. The horizontal relationship of different competencies within a grade and vertical articulation established across grades have to be kept in view in the process of teaching as well as evaluation. Therefore, a particular numbering system is followed in presenting these competencies including pertinent content elements. For example, the sub-competency number 5.4.2 means that it belongs to the fifth major competency, for class IV, and second competency in the study of progress of man from Early Times to the Present A!:e.

6. Each competency or sub-competency represents a sp cific curricular objective describing expected outcomes of learning in view, effective and attractive procedures of teaching and learning should be followed. The competencies under EVs are such that the techniques of teaching ·can be conveniently made activity-based. The child should,

therefore, be given ample opportunities both individually and in group, as also within the classroom and outside to observe, explore, analyse, interpret and appreciate the natural and social environment of which he/she is an integral part.The textbook and other aids should be used for reinforcement of these processes.

7.   Evaluation of learning outcomes sh>uld be integrated with the process of teaching and children's activities on a continuous basi:,. In the first two classes, it should be largely obst·rvational and oral. Written tests may be gradually introduced from class III but should be supplemented by other techniques. The capacity of understanding and application of knowledge acquired rather than rote memorization should be particularly stressed in formal as wel   s informal examinations.
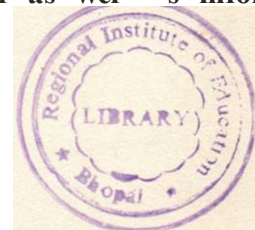
1.12 STATEMENT OF THE PROBLEM

The Present study is to unruveal the fact how much role do MLLs Play in enhensement of the level of achievement of the school children of tribal and non tribal area of Madhya Pradesh. Madhya Pradesh is one of the educationally backward state having literacy rate of -BAS'7o as per 1991 censas. The primary •!ducation has expanded tremendously after the independence.. The number of primar^y schools in   country has increased from approximately 2 lakhs in 1950-51   to nearly 6.32 lakhs. In addition, there are at

present nearly 3 lakhs non-formal education centers to out-of-school children in the age group of 9-14 years.

The quantity wise expansion should not be at the cost of quality education. It will be of great importance to access the minimum levels of learning of V grade students of tribal and non tribal areas both. It was also considered to be fruitful to access if the family size, Parental occupation and parental education has any bearing on the achievement of the Pupils of these areas.

The proposed problem for the investigation is:

TO STUDY THE LEVEL OF ACHIEVEMENT OF ¢ GRADE STUDENTS. OF TRIBAL AND NON-TRIBAL AREAS IN SOME SELECTED COMPETENCIES OF ENVIRONMENTAL STUDIES.

1.13 OBJECTIVES OF THE STUDY

Follwing are the objectives of the Present study.

1. To study the level of achievement of V grade students in some selected competencies of environmental studies.

2. To study the level of achivement of the students from tribal and non-tribal areas.

3. To study the level of achivement of male and female students.

4. To study the effect of Parental education on the level of achievement.

5. To study the effect of Parental occupation on the level of achievement.

6. To study The effect of family size on thl· level of achievement.

1.14 HYPOTHESES.

The study is based on the following hypotheses:-

Ho^1 There is no significant difference in the level of achievement on the basis of gender.

Ho^2 There is no significant difference in th,i level of achievement of the Pupils of tribal and non-tribal areas.

Ho^3 Parental occupation does not effect the level of achivement of the pupils.

Ho^4 Parental education does not effect the level of achi ement of the pupils

Ho^5 Family size has no effect on pupils' achi,?vement.