

CHAPTER - 1

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1.1 INTRODUCTION :-

The Universal declaration of Human Rights proclaimed by the United Nations in Dec. 1948 (Article-26) observes "Every one in the world - men, women, boys & girls of all ages have the fundamental right to education. Education is a key compound of human resource development and a great liberating force. Education had continued to evolve diversity and extent its reach and coverage since the dawn of human civilization. Education can help ensure a safer, healthier, more prosperous and environmentally sound world while simultaneously contributing to social, economic, cultural progress and tolerance of international co-operation.

Universalisation of Elementary Education :-

The UEE has been one of the goods of educational development. The constitution makes the following provision under the article - 45, "The state shall endeavor to provide within a period of 10 years (by 1960) from the commitment of this constitution for free and compulsory education for all children until they complete the age of 14 years, but the target was not fulfilled yet. The NPE, 1986 & POA 1992 envisaged the launching of National Mission, has the central objectives of mobilizing necessary resources for achieving the goal of Universalization of Elementary Education.

1.2 SCIENCE EDUCATION AND NATIONAL POLICY ON EDUCATION (NPE)

National Policy on Education (1986) Clearly stressed that science education will be strengthened as to develop in the spirit of inquiry, activity, objectivity the courage to question and aesthetic sensibility. Science education program 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. Universalization of science is an effort to popularize science among all children who are with in the formal and non- formal system of education and the target can only be achieved if science as a discipline is made compulsory to all up to 10th grade and later on this may be extended to higher level as well. Meaningful knowledge, employable and useful skills and rational and scientific attitude ought to be the consequences of the meaningful science education endeavor.

IMPORTANCE OF SCIENCE IN OUR DAILY LIFE :-

Due to importance of science in almost every walk of life, all commissions and committees, including National policy on education (1986) have emphasized "Science for all" as an integral part of general education at school stage. Not only access to education for all but success in the educations, being that be ensured for all. The implications being that school system should accept accountability of achievement of minimum levels of learning for all.

Science has helped man to quantify ideas to be precise and to utilize spatial concepts in his day to day life. Its place in physical and biological science and in practical arts from the informational and computational standpoint, as well as its cultural significance makes it

indispensable in every day life. In a society which is rapidly changing into an industrial and technological society, scientific literacy is essential for each and every citizen.

To achieve the above, it has been emphasized that certain process and skills have to be learnt by student at the mastery level.

SCIENCE EDUCATION AT UPPER PRIMARY STAGE :-

Children at this stage begin to recognize, the relationship of science, technology and human enterprise. The process has to be strengthened and concretized. The learner is better equipped to understand the processes that underlie simple scientific activities and to visualize their use in solving problems and taking decisions. They also begin to appreciate the cause effect and structure function relationship. The environment should continue to be a major source of the learning and the students should try to understand the changes taking place all around. They would also gain an understanding of living world, balance of nature and the role of air, water and energy. Due emphasis should be given to conservation of natural sources. Elementary understanding of some basic principles of science relating to matter, materials and energy can be introduced at this stage, familiarity with life processes, health, nutrition and diseases, soils and agricultural practices and adaptation would also be included.

Instead of loading the student with scientific information's efforts should be made to help them to learn key concepts with cut across all the disciplines of science. This would generate curiosity and would enhance awareness and understanding. The learner can be encouraged to improvise simple equipment and design low cost experiments using local resources to understand scientific concepts and seek explanation of some of the natural phenomena.

They can also be made aware of some of the local and global concerns and need to be constantly aware of these particularly in areas like drinking water, environment, health, nutrition, family welfare and other.

INSTRUCTIONAL STRATEGY FOR SCIENCE TEACHING :-

According to the curriculum framework (2000) for effective transaction of the curriculum of achievement of curricular objectives, appropriate strategies should be used providing learning activities. Instructional strategies may assume a variety of modes and may involve activities, such as observation, collection of materials and information, demonstration of experimentation project assignment, supplementary reading may also form an important part of the total instructional strategies. Receiving regular feed back for teaching and learning should be in built component of teaching learning strategy, continuous and comprehensive evaluation (CCE) plays an important role in providing regular feed back. It should be used for remediation. Different kinds of strategies are needed for slow, average and fast learners. Diagnostic and remedial instruction should be used for the low achievers.

The NPE 1986 has recognised that "a human being is a positive asset and a precious national resource which needs to be cherished returned and developed with tenderness and care coupled with dynamism.

The quality of performance and the height of achievement in various walks offers including education is well known to depend upon certain factors, one of which is motivations. The problem of motivation assumes special importance in the context of school education. A teacher

is supposed to arrange the educational situation in such a way so as to encourage pupils to put their heart and soul in the school activities.

Failure to perform a task should not always be interpreted as the failure of the child. It may be due to teacher's inability to make the task clear. It may be due to poor or inadequate teaching or teaching material. Diagnosing the learning difficulty is an important activity at all levels of schools but it has a special significance. If they are not diagnosed at the right time, they lead to further deterioration in learning, frustration and also drop out from school. Thus, a stagnation and wastage to community in terms of loss of time of teachers and opportunity to some other deserving students.

Here a question arises how to reduce the wastage of time, money and energy. The remedial teaching may be one of the major efforts in this direction.

1.3 MEANING OF REMEDIAL EDUCATION :-

The term remedial education does not imply the persistence of some new and magical educational formula which will enable us to remove with a wave of the wand, all the problems that face the backward child, and speedily restore him to his rightful place in the class.

Unfortunately, there is no such magic formula and there is no easy way. In a sense, there is no such thing as remedial education, there is only education, or perhaps, sound education. If the term remedial education actually has any meaning at all it is particular emphasis in educational approach. It is concerned with the individualization of education, that is with the individual child. In helping the backward child with his problems, we are simply extending the approach to its logical conclusion.

A process of removing or reducing the severity of the causes diagnosed and thereby improving the academic achievement is called remedial teaching. In other words, the teaching strategy based on the diagnosis or directed towards achieving the desired improvement in academic result is called remedial teaching. The remedial teaching can be equated with the treatment given by the doctor for any illness. The teaching strategy and techniques used in remedial teaching are individualized i.e. made the child or client specific.

The remedial teacher needs to be empathetic, patient, good task analyzer, creative, innovative and non- judgemental. The study habits of the child are minutely observed, analyzed and then gently corrected. The child is made aware of his or her strengths and weaknesses. The process of modification/ improvement in the academic achievement using individualized instruction as the basis is called remediation. The teaching done using various innovative approaches and techniques of teaching like cooperative learning, activity based learning, child centered learning, programmed instruction etc during the process of remediation is known as remedial teaching.

1.4 IMPORTANCE OF REMEDIAL PROGRAMME :-

An average Indian school fails to bring out the potential talent in the individual's personality. It fails to direct the creative urges of students in the positive direction. In the contemporary Indian schools the memorization of textbooks is given the prime attention, as it leads to better academic achievement.

There are some students in each class who have some difficulties in understanding and learning certain concepts. The difficulty varies from individual to individual, subject to subject,

grade to grade and institution to institutions. In order to make teaching- learning process effective, it is essential to identify the learning difficulties of students during instruction. This can be done by making use of diagnostic tests.

The process of finding the reasons for academic failure of a child or for some observed discrepancy between the achievement and potential is called educational diagnosis. The diagnostic tests consist items based on a detailed analysis of the specific skills involved in successful performance and a study of the most common errors made by students. Thus, a good diagnostic test will permit a student to demonstrate all aspects of the skill being measured and will pinpoint the types of errors that he has made. These tests are available for different subjects and are designed for students of below average performance. Such tests may provide only partial information for diagnosing a student's difficulty. Therefore, supplementary information concerning the physical, intellectual, social, emotional development of the student is also needed before an effective remedial programme is initiated.

AIMS OF THE REMEDIAL PROGRAMME :-

Once the child's errors and difficulties have been located precisely, it then becomes possible to frame a remedial programming at:

1. Correcting basic errors.
2. Re-establishing the child's confidence in himself and his ability to succeed in the subject.
3. Improvement in teaching learning process of the diagnostic subject.

4. Identifying the retarded learners who are having troubles in learning some important basic skills.
5. Discovering hazards to the learning as learning difficulties or specific retring needs.
6. Suggesting the remedial teaching procedures for the effective as well as corrective learning of various important basic skill.
7. Suggesting modifications and revisers in the text book and curricula.
8. Introducing effective evaluation procedure for pupils of various language group.

PRINCIPLES OF REMEDIAL EDUCATION

In framing the remedial programmes, certain following basic principles have to be borne in mind.

1. Good personal relationship must be established right from the start of remedial work. If report between the teacher and pupil is poor, then not even the most enthusiastic effort will bring success. The teacher should seek to convey to the child his or her personal concern and involvement, and genuine desire to help.
2. The plan to attack on the problem should be clearly defined and set out. Where treatment is to be given in a group situation, it is advisable to actually write down what you intend to try and to with each child, and how you are going to do it.
3. An open mind must be kept on the methods and procedure to be used. The teachers must be prepared to modify, supplement or abandon a programme at any time in the light of results and try a new approach.

4. Great care must be exercised in the choice of materials to be used in remedial work, bearing in mind the age, ability, attainment and interest level of the child.
5. Motivation should be optimum and all methods of enlisting interest should be used according to the child's age and attainment level. Play and story methods would be most effective with younger children, while utility and mastery approach would probably be most effective with children of higher age, the child's natural desire to win praise through success will operate at all age levels.
6. The programme should be so designed as to furnish the pupil with immediate opportunities for success. Further this success should be made clear and obvious to the child.
7. The pupil himself should be involved as much as possible in the remedial programme, which he is to follow. Progress should be measured not against any external standards, but in the light of his own previous levels of attainment. The keeping of progress charts and a record of timed performances, for example are useful in this context.
8. Treatment should be given individually or in small groups, if progress is to be rapid.

Each child would of course, tend to have his own remedial programme.

DIAGNOSIS IN THE SUBJECT AREAS :

The first step in remedial work is to make a thorough examination of the child's difficulties in the subject or subjects in which he is failing. This is an analytical examination design to locate.

1. The level at which break down is occurring.
2. The seriousness of the failure.
3. The specific errors being made, and
4. The cognitive weakness, if any

REMEDIAL PROCEDURES :-

The ultimate purpose of diagnosis is to afford a basis for effective remedial procedures. When the cause of or causes of the pupils, unsatisfactory adjustments have been determined, an intelligent programme of correction can be planned ... Wherever the same causes appear to operate in several pupils, group measures may be practiced. Usually, however remedial programs must be planned for each pupil individually.

PREVENTIVE DIAGNOSIS :-

In the long run, the greatest value of a diagnostic and remedial programme is the discovery of preventable factors within the control of the school which leads to maladjustment, frequently modification in school organization, curriculum, instructional materials and teaching methods are suggested by an analysis of what is happening to the pupils under the existing programme. Manifestly, factors which have produced learning difficulties in the past are likely to do so in the future. It is always better, and generally easier, to prevent errors than to correct them. It will often be found that a program of studies which provides wider differentiation in method and content to suit pupils of varying abilities

and interests is the way out of many difficulties. The systematic use of readiness tests of various types to determine when the pupils are sufficiently mature, physically, mentally, and socially.

Termans says "Perhaps the most important conclusion to be drawn from the extensive researches have reported is that disability of any degree in any of the basic schools subjects is wholly preventable. Prevention is the highest level of diagnosis, its ultimate goal.

Once the learning difficulties of students are identified, they can be overcome through remedial measures and the slow learner may rise to the level of the fast learner. Diagnosis of learning difficulties is a scientific process and so is remediation. Therefore one must be acquainted with the concept, principles, steps followed in diagnosis, construction of diagnostic tests, principles of remediation and follow up programme etc. These may be discussed one by one.

PRINCIPLES OF DIAGNOSIS :-

Diagnosis is the process of determining the existing capabilities of students by analyzing his performance of the hierarchy of essential tasks in a specific subjects with the intent of facilitating his learning by assigning appropriate remedial or advanced learning tasks.

Following are the principles of diagnosis which are to be followed to have reliable diagnostic findings.

1. Establish rapport with students for their cooperative attitude.
2. Study of individual student is essential.
3. Test and not to teach.
4. It should be continuous/ thoroughness.
5. To maintain efficiency
6. Evaluating diagnostic data.

STEPS IN DIAGNOSIS :-

1. Identifying students who have learning difficulties.
2. Determining the specific nature of the learning difficulty.
3. Determining the factors causing learning difficulties.

CONSTRUCTION OF DIAGNOSTIC TEST :

Goods in dictionary of education, defined diagnostic test as an (1) examination intended to measure achievement in a narrow subject field or related subfield, particularly with a view to determine specific weaknesses of pupils as a basis for remedial measures (2) An examination, the results of which permit a broad, general diagnosis of pupil's weaknesses and strengths.

Following are the steps in construction of the diagnostic test :

1. **Planning** :- In order to make correct diagnosis, a teacher needs much more data on the specific difficulties of students. Diagnostic test have therefore, to be much longer than the achievement test, to make necessary subtest sufficiently reliable. Further, it requires more detailed and exhaustive content analysis. During content analysis, the content (unit) is to be broken into learning points and these are to be arranged in hierarchical order. There should be no omission of learning points. In other words, there should be continuity in learning points. If some learning points are omitted, the diagnostic test will become faulty as the weaknesses of those students who are deficient in them will go untouched. There is no need to prepare a blue print during the preparation of diagnostic tests.

2. **Writing the Items** :- As far as the diagnostic test is concerned, it is not very important to know the relative importance of the various learning points because we are not to decide their relative weightages. The basic principle is to cover all of them so as to give an unbroken sequence. So for each learning point an adequate number of items or questions have to be written so as to provide decisive evidences. Preferably more than three items should be written for each leaning point. The items should be of objective type which includes the short answer type. The item should be of average difficulty level. No rigid time should be fixed. In other words, students should be allowed to take as much time as they like for answering all the items. Various points to be kept in mind while writing different types of items.
3. **Assembling of the items** :- After the items on different learning points are selected, they have to be assembled into a test. The basis of arranging items or questions in diagnostic test is entirely different from that of other tests. In the diagnostic test, the questions should be clubed around the learning points, even when the questions are of different types. The learning points and the corresponding questions are to be arranged in hierarchial order of their complexity. If they are so arranged, students need not change their mental sets. Further, this arrangement also helps in analyzing the responses of students with a view to identify their weaknesses.
4. **Providing directions.** :- clear and specific instructions for students should be written. If this is not down, the wrong response may be attributed to the faulty instruction. So, it will be difficult to identify the weakness. Further, instructions for its administrations should also be written very clearly. The person using the test must follow the instructions.

5. **Preparing scoring key and marking scheme :-** In order to increase the reliability, validity and objectivity of the result, the scoring key and marking scheme should be provided.
6. **Reviewing and editing.:-** The test should be given to subject specialist & the items should be modified in the light of their suggestions..

In education, diagnostic testing is a multidimensional process that requires well planned effort on the part of the teacher. When conducted in a systematic manner, it should help to identify and subsequently remove learning impediments. As a result, the learning could turn out to be more meaningful to the learners and satisfying to the teacher. A variety of strategies could be used to diagnose the learning impediments.

PRINCIPLES OF REMEDIATION :-

1. Students must have a successful and satisfying experience during the remedial programme.
2. Remedial successes must be told to the students.
3. The programme should be flexible.
4. It should be conducted in terms of established goals.
5. It should result in skill development in which student has demonstrated a deficiency.

There may considerable improvement in the achievement of students if remedial measures are practiced after reliable diagnostic findings. The results of various study conducted on diagnosing learning difficulties and application of remedial measures show that students can perform better, develop confidence and grasp the subject matter.

1.5 NEED OF THE STUDY :-

Although the term "remedial teaching" is virtually self-explanatory. It has as one of its chief functions in the remedying or removal of the effect of originally poor teaching and poor learning. It is based upon a careful diagnosis of defects and causes, and aims to correct weaknesses and eliminate bad habits which may be found.

In addition to this, use of the term "remedial" is also employed in a broader sense to connote teaching which is developmental in its scope. Pupils are frequently found in our schools who do not possess any particular defects or faults which need correction but who urgently need assistance in developing increased competence in reading and the other fundamental processes. In their cases, it is not primarily a problem of reteaching or the remedying of evils, but it is rather teaching for the first time those basic skills which are sorely needed and which apparently are lacking.

Due to the above mentioned importance of remedial teaching researcher try to find out the effect of remediation in general science.

1.6 STATEMENT OF THE PROBLEM :-

In view of the background presented above the problem is stated as "A Study of the Effect of Remedial Teaching on Achievement of Class VII Students in General Science".

1.7 OPERATIONAL DEFINITIONS OF THE TERMS USED:-

1. REMEDIAL TEACHING :-

Remedial teaching involves taking a pupil where he is and from that point leading him on to greater achievement. It is just good teaching in which the learner and his needs occupy the focal point. Remedial teaching is essentially good teaching which takes the pupil at his own level and by intrinsic methods of motivation leads him to increased standards of competence. It is based upon a careful diagnosis of defects and is geared to the needs and interests of pupils. It involves those special measures used to meet the educational needs of children with learning difficulties.

2. ACHIEVEMENT IN GENERAL SCIENCE :-

It is the attainment of pupils on the unit test.

1.8 OBJECTIVES OF THE STUDY :-

The study was addressed to the following major objectives :-

1. To study the effect of remedial material used in general science at upper primary stage (class VII).
2. To investigate the effect of gender on learning science at upper primary stage.
3. To identify the mistakes committed by children in general science of class VII in the unit "sustenance of individual".

4. To analyze the sources and causes of these mistakes and to identify the emerging trends.
5. To suggest how the achievement level of students of upper primary stage may be increased.

1.9 HYPOTHESIS :-

1. There will be significant difference in students achievement in general science after remedial teaching.
2. There will be significant difference in girls achievement in general science after remedial teaching.
3. There will be significant difference in boys achievement in general science after remedial teaching.
4. There will be effect of remedial materials on gender in achievement in general science.
5. There will be significant difference in students achievement related to the concept of digestive system after remedial teaching.
6. There will be significant difference in students achievement related to the concept of respiratory system after remedial teaching.

7. There will be significant difference in students achievement related to the concept of circulatory system after remedial teaching.
8. There will be significant difference in students achievement related to the concept of excretory system after remedial teaching.

1.10. SIGNIFICANCE OF THE PROBLEM :-

By this study, suitable suggestions can be made for improving the teaching of general science in schools. Various remedial teaching procedures can be suggested for effective as well as corrective learning of various important basic skill. Various learning problems related to science difficulties can be identified.

1.11 DELIMITATIONS :-

The study has to be limited to the constraints of expertise se and time of the investigation.

1. Due to lack of time and resource small data has been used.
2. The experiment was limited to one unit "sustenance of individual" in general science of class VII.
3. For the study, the students from class VII were taken from one school only.
4. The experiment was restricted to only one school in which most of the students belongs to the deprived section of the society. This representation by just a single school would no doubt affect the result to some extent.