
UNIT 11 IDENTIFICATION OF LEARNING GAPS AND CORRECTIVE MEASURES

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11.1 INTRODUCTION

Improving learning levels of students is the utmost challenging task faced by the teachers. In order to bring quality improvement in teaching-learning process, it is essential that the learning gaps of students be identified during the instructional

phase and remedial measures be taken so as to improve the learning levels of students. The existence of gaps in learning can be detrimental not only for students' understanding but also hampers the success of teaching-learning process. The identification of learning gaps/difficulties of students is generally referred to educational diagnosis. The term educational diagnosis includes all activities in measurement and interpretation that help to identify gaps in growth and their causal factors for individuals or for class groups. The process of determining the causes of learning gaps or educational difficulties is known as educational diagnosis.

The present Unit will focus on various aspects of diagnostic evaluation and how such type of evaluation can be used to identify learning gaps or difficulties among learners. In addition, this Unit will throw light on ways and means of providing remedial measures so as to fill the learning gaps in different content areas.

11.2 OBJECTIVES

After going through this Unit, you will be able to :

- explain the concept of learning gaps and its diagnosis;
- discuss the purpose and characteristics of diagnostic tests;
- differentiate between diagnostic, formative and summative evaluation;
- distinguish between achievement and diagnostic tests;
- describe the steps involved in the process of diagnosing and identifying learning gaps;
- explain the areas and content of diagnostic testing;
- explain the process of remediation and role of teacher in remedial teaching;
- and
- list down the strategies for providing remediation.

11.3 EDUCATIONAL DIAGNOSIS

Educational diagnosis implies the use of more or less technical procedures designed to locate specific learning and instructional difficulties, and to determine their causes. Since student's progress is to be appraised towards desirable educational objectives, it is necessary to identify factors in the teaching-learning situations that may be interfering with optimum growth of individual learner. Apart from an individual's mental or physical abilities, many deficiencies in the student's achievement are due to the simple reason that means a student is not able to keep pace with the teaching-learning process in the classroom or misses an important step due to some reasons. Such deficiencies tend to accumulate with one deficiency leading to another so that a stage comes when learning becomes quite impossible and thus, the student continues to fall back with the learning gap widening more and more. It is here that the teacher is required to know the specific weakness of the student both individually and collectively so as to provide suitable remedial teaching. This process of locating specific weaknesses in the learning of the students is referred to as 'educational diagnosis'.

The diagnosis of difficulties underlying educational accomplishments undoubtedly constitutes the significant stage in the supervisory and instructional uses of educational tests. Educational diagnosis is the educational assessment of students in order to establish possible cognitive, emotional, health, perceptual, social and other factors that might be impacting on their academic achievement and school adjustment. Deficiencies of a general nature are revealed and brought to light by general achievement survey tests. Specific weaknesses, and to a certain extent the causes of such weaknesses, are identified by the use of properly selected or developed diagnostic tests. Practically, all of the more specific diagnostic procedures, such as the location of defects in speech, hearing and vision are dependent upon educational test results at the initial or preliminary stage. It is only after identification of learning gaps or difficulties that effective diagnostic materials in any school subject can be prepared so as to provide remediation. The analysis of diagnostic test results is useful to the teacher to identify the difficulties of the students before they are firmly rooted in the students' thinking and important learning points that carry over into other sections of the work can be clarified and reinforced.

Check Your Progress 1

- Note :** a) Write your answers in the space given below.
b) Compare your answers with the one given at the end of the Unit.

1. Write down the meaning of educational diagnosis.

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11.4 SCOPE AND IMPORTANCE OF EDUCATIONAL DIAGNOSIS

Educational diagnosis is not a simple task. This is not only solve the learning difficulties of the students but also, it extends more than that. Educational diagnosis at the early stage in schooling helps the students to undenstand them properly and difficulties for future performaces are some extent eradicated from the beginning.

It is therefore the scope of educational diagnosis extends from teaching - learning situations to other socio-personal adjustment and living one's life. As example, in case the problem started from low performances at the school, it further affects the entire personality of the students. It is therefore the causes of low performance of the students may be multi-farious like related to the person, friends, peers, family, society, schools, teachers, intelligence and abilities of the students etc. Realising the above, the remedies that the students are suggested not only to study better rather it also cater to develop other related situations where the students live. It is therefore, educational diagnosis understood as present situation in terms of its causes, what has brought it about or in terms of what it will cause. Ross (1956) has suggested the following five levels of diagnosis:

- (i) Identify the students to whom the problem lies.
- (ii) Identify the problems.
- (iii) Why did the problem occur?
- (iv) What are the suggested remedies?
- (v) How can the problems be prevented?

The first four levels address the corrective diagnosis and the fifth level is preventive diagnosis.

The relevance and importance of educational diagnosis is explained in the following paragraphs:

11.4.1 Analysis as a Basis of Diagnosis

The successful development of school learning difficulties of the students, it extends more than that. depends upon the care with which the underlying and basic skills of the subjects themselves are recognized and utilized in teaching. For instance, teaching a child to add consists not only in developing the habit of responding automatically and correctly to the basic combinations but also involves higher levels of skill such as control of attention span, and carrying from one column to the next. Similarly, silent reading comprehension is not single isolated ability but is composite of knowledge of word meanings, ability to get meanings from sentences, etc. With such knowledge, the teacher has a real basis for instructional procedures. Good diagnosis must parallel the process of good teaching. Effective diagnostic materials in any school subject can be prepared only after the skills contributing to the success in that subject have been isolated and identified.

11.4.2 Diagnosis as the Basis for Remedial Work

Accurate diagnosis of class and individual pupil difficulties, coupled with application of remedy is not only important but necessary for teachers. The success of the remedial or corrective teaching depends upon the accuracy and detail with which the specific skills involved in successful achievement in the subject are identified and isolated in the test. Tests of the general survey type, or tests that report unanalyzed scores, cannot supply this information in sufficient detail.

11.4.3 Diagnosis as the Basis for Preventive Work

An examination of the number and types of skills identified as a result of the diagnostic methods leads to suggestion of a still more constructive use of analytic and diagnostic test results. Diagnosis as applied in education has taken on a meaning indicative of a breakdown in method, a failure of instructional techniques. Unquestionably, one of the basic purposes of diagnosis is the location of weaknesses and the determination of their causes, but there is nothing in the method that precludes its use in the prevention of weaknesses through anticipation of their causes. Out of the knowledge gained through the use of diagnostic procedures should come the basis for preventive work of all types. For example, if after diagnosing the addition of fractions in the fifth grade, it is found that the failure of pupils to reduce the fractions to their lowest terms in the answers is a common weakness, the obvious thing to do so is to correct the defects at once and then proceed to reconstruct the first instruction so that the causes

for this particular weakness may not operate so powerfully in the next grade/class.

11.4.4 Relevance of Diagnostic Test Results

Tests as such are incapable of improving instruction because of any inherent power. Existing conditions are merely revealed by them. The interpretation of test scores and the planning of remedial procedures are the most difficult and also the most important parts of the use of educational test results. One of the greatest needs in the education today is the provision of genuine diagnostic testing in all instructional fields, supplemented by valid remedial work designed to correct the weaknesses and defects of individual pupils as revealed by the tests.

Check Your Progress 2

- Note :** a) Write your answers in the space given below.
b) Compare your answers with the one given at the end of the Unit.

2. Mention two ways in which educational diagnosis becomes important.

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11.5 DIAGNOSTIC TESTS CHARACTERISTICS AND FUNCTIONS

Diagnostic tests are designed to identify strengths and weaknesses of learner's knowledge and use of language. Diagnostic tests are more likely to focus on weaknesses than on strengths. Diagnostic tests should lead to remediation in further instruction. Diagnostic tests thus give detailed feedback which can be acted upon. Diagnostic tests provide immediate results after taking the test. The main purpose of its use is not only to identify the difficulties but also to provide necessary remedial instruction to solve the difficulties.

Cook (1958) has stated the following characteristics of an effective diagnostic test:

- (i) It needs to be an integral part of the curriculum.
- (ii) Test items require response which are closely associated with the subjects.
- (iii) It needs to be based on research evidences of learning difficulties.
- (iv) It involves mental processes of the learner to find out the cause of the problem.
- (v) It needs to suggest specific remedial procedures for the problem identified.
- (vi) It should be designed to cover a long sequence of learning systematically.
- (viii) It should enhance pupil's progress in objective terms.

Functions of Diagnostic Test

The functions of diagnostic test covers the entire system of education. The following specific functions are carried out by diagnostic test:

- It emphasises to practice the objectives of the content and curriculum.
- It caters the strengths and weaknesses of the instructional programmes.
- It discovers the inadequacies of the curriculum, contents, pedagogy used to transact it and detail organisation of content and its process of transaction.
- It provides specific educational guidance to the students in the areas of their difficulties and also monitor the progress further.
- It develops a sence of self understanding of the difficulties occur among the individual students and empower them to solve it.
- It provides self satisfaction to the students and accordingly motivate them to study better and also involve actively in other activities conducted in school as well as home situations.
- It also enable students to compare their past performances and present developments.

Check Your Progress 3

- Note :** a) Write your answers in the space given below.
b) Compare your answers with those given at the end of the unit.

3. Write down any three characteristics of diagnostic tests.

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4. Mention two functions of diagnostic tests.

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11.6 DIAGNOSTIC EVALUATION Vs. FORMATIVE AND SUMMATIVE EVALUATION

In general, diagnostic evaluation focuses on defining a learning problem and taking an action to solve the problem. The term diagnostic evaluation is defined as

evaluation that is used to identify a student's needs and abilities and the student's readiness to acquire the knowledge and skills outlined in the curriculum expectations. It is a key tool used by teachers in planning instruction and setting appropriate learning goals. It involves the process of documentation of knowledge, skills, attitudes and beliefs possessed by the learner. Diagnostic evaluation provides information that is used by teachers and students to determine what students already know and can do with respect to the knowledge and skills identified in the overall and specific expectations. Diagnostic evaluation is an important tool for educators who want to know where their students are academically standing in order to bring those students to where they need to be. It occurs at the beginning of teaching-learning cycle. It provides teachers with information about students' prior knowledge and misconceptions before beginning a learning activity.

In Unit-3, Block-1 of this Course, you have studied details about the placement, formative, diagnostic and summative evaluation. Formative evaluation is an integral part of the teaching-learning process. Formative evaluation refers to frequent interactive assessment of student's progress to identify learning needs and shape teaching. It encompasses classroom interactions, questioning, structured classroom activities, and feedback aimed at helping students to bridge up learning gaps. Students are actively involved in the evaluation process through self- and peer-assessment. Information from external sources may also be used in a formative manner to identify learning needs and adjust teaching strategies. The crucial distinction is that the evaluation is formative if and only it shapes subsequent learning. Formative evaluation is used to measure the student's grasp of small chunks of information. A formative evaluation helps to identify gaps in learning and/or instruction before subsequent material is presented. Such type of evaluation drives learning and instruction by providing immediate information to the teacher and students.

Summative evaluation forms an end point that sums up the performance or learning level of achievement. Summative evaluation provides a look at students' performance as well as an opportunity to evaluate instructional practices. The term summative evaluation generally refers to assessment of learning at the completion of a larger instructional programme. For instance, term-end examinations or semester end examinations are all summative evaluation. However, some interim tests may be considered summative in nature because they measure performance at the end of an instructional programme.

The main differences between diagnostic, formative and summative evaluation are as follows:

Diagnostic evaluation is made to determine what a student does or does not know about a topic. It is concerned with the pupil's persistent or recurring learning difficulties that are left unresolved during the course of classroom teaching and formative evaluations. If a student continues to experience failure in mathematics as measured through formative evaluation techniques, it calls for a more detailed diagnosis of his/her learning difficulties. In medical language, formative evaluation provides first aid treatment for simple learning problems and diagnostic evaluation searches for the underlying causes of those learning problems that remain unresolved by first aid treatment. Whereas, diagnostic evaluation occurs at the beginning of the teaching-learning cycle, formative evaluation usually occurs during instruction and summative evaluation occurs after the end of the instructional process.

Summative evaluation is designed to determine how well learning objectives are met. Its results are typically used for grading or certifying students, judging the effectiveness of the teacher and sometimes evaluating the curriculum. On the other hand, the results of diagnostic evaluation are employed for identifying specific learning gaps of students and providing corrective measures for improving learning among students.

Check Your Progress 4

- Note :** a) Write your answer in the space given below.
b) Compare your answer with the ones given at the end of the Unit.

5. Mention two differences between formative and summative evaluation.

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11.7 DIAGNOSTIC TESTING

Diagnostic testing is a process of carrying out evaluation of students' knowledge and skills so as to identify their specific learning gaps. In diagnostic testing, standardized and teacher made diagnostic tests are used. Diagnostic testing is often used to determine why students is having difficulty despite the use of alternative methods of instruction. The testing process determines students skill deficiencies or learning gaps. The initial diagnostic testing results serve as a baseline to determine progress based on future testing. Diagnostic testing is carried out to guide attainments of pupils, identify difficulties of pupils and for dividing pupils into groups for remedial instruction. This testing help inform the teacher about the level of student knowledge prior to instruction, so that instruction can be tailored to the existing knowledge base. Also, this pre-instructional testing provides information that can be compared to post-instructional testing for the purpose of determining growth. The major instrument for undertaking diagnostic testing is 'diagnostic test' based on particular content and can be a standardized one or a teacher made.

A diagnostic test measures where students are in terms of their knowledge and skills. It assesses the abilities that students have at a particular time to solve problems or answer questions in a subject area. Diagnostic tests can be especially beneficial for teachers who have multiple classes to teach within one subject. A diagnostic test is useful if a teacher uses it more than once throughout the school year. Given at the beginning of the year, it can help the teachers to plan his/her instruction. At the mid year, he/she can determine how many students have learned so far and what he/she needs to review. At the end of the year, a summative test can provide an assessment of a student's total learning for the class. A diagnostic test can show how much students have progressed in their knowledge of a subject. A diagnostic test is primarily used to discover learners' strengths and weaknesses and provide detailed feedback for both teachers and learners to make decisions. The essence of diagnostic testing lies in a comprehensive and creative feedback system for the students and the teachers.

11.8 ACHIEVEMENT TESTS Vs. DIAGNOSTIC TESTS

An achievement test measures the degree or extent of the knowledge, information skills, and competencies that a pupil has acquired through training, instruction or experience. These tests are used to measure the relative accomplishment of pupils in specified areas of learning. From the point of view of diagnosis, the total score on an achievement test is not of any valuable help. Achievement test results reveal difficulties only when they are originally designed for diagnostic purposes. Achievement tests cover the whole unit, lesson or specified content area and are used for grading and comparing the students with each other.

On the other hand, a diagnostic test is an achievement test used to identify the strengths and weaknesses of the students. Such tests include a wide range of items on a given skill or objective. The purpose of a diagnostic test in education is to assess the current state of a student's progress or ability in a particular area.

The main differences between these two types of tests are summarized in Table 11.1:

Table 11.1 : Achievement vs Diagnostic Test

Sr. No.	Achievement Test	Diagnostic Test
1	A test designed to assess the achievement in any subject based on a set of objectives.	A test designed to solve the exact difficulty faced by learners in achievement test.
2	Covers wide content area.	Focus on specific difficult content area.
3	Includes complex items.	Includes simple items.
4	Total score on test is important.	Scoring may not be done. Specific errors are identified.
5	Quantitative in nature.	Mostly qualitative in nature.
6	No attention is paid to minute details of students' responses.	Attention on minute details of students' responses is paid.
7	Follows a fixed time limit.	No time limit for completion.
8	Follows norms for interpretation of scores.	No norms are set or followed.
9	Specified number of test items.	Test items are repetitive on specific difficult content area.

11.9 DIAGNOSING AND REMEDYING LEARNING DIFFICULTIES: STEPS INVOLVED

For diagnosing and providing remediation, the following steps are involved:

1. To identify the individual student or group who has learning difficulties.
2. To identify the specific nature of learning difficulties lies with the students.
3. To determine the necessary factors responsible for the learning difficulties.
4. To provide suitable remedial measures for solving the learning difficulties.

11.9.1 Identify Individual Student/Group having Learning Difficulties

There are a number of methods for identifying those pupils who are experiencing learning difficulties. The most common way is to observe/analyse the results of achievement tests. In some cases, it is desirable to analyze an achievement test item by item and make a tally of those missed by each pupil. Items which are missed by a large number of pupils indicate areas where the class as a whole is doing poorly. The errors of each individual pupil can also be studied for clues to his/her particular learning difficulties. Informal classroom evaluation procedures can also be used to detect learning difficulties. Anecdotal records, day to day observations, and judgements of experienced teachers may also prove to be valuable in identifying pupils with learning gaps or difficulties.

11.9.2 Identifying the Specific Nature of Learning Difficulty

The diagnosis of learning difficulties is a matter of degree. In some instances, the general procedures for locating pupils with learning difficulties provide sufficient information for immediate corrective action. In other cases, it may be necessary to supplement this information by further diagnostic study before planning remedial work. In still others, the learning problem may be so persistent and severe that the pupil should be referred to a specialist for intensive diagnosis. When a pupil's learning difficulty is in one of the basic areas, a logical follow-up procedure is the administration of diagnostic test. Sometimes, an achievement test is administered and procedure of analyzing pupil's responses to each test item is followed. Another approach is to ask the pupils to describe aloud the mental process they follow as they answer each question. The 'thinking aloud' provides clues to the pupil's weakness in knowledge, skill and method of approaching problems. Clues concerning the specific nature of pupil's learning difficulties might also be inferred from his/her cumulative record.

11.9.3 Determining the Factors Causing Learning Difficulties

There are multiple factors causing learning difficulties. Those factors sometimes may be related to the curriculum, teaching-learning practices and school management whereas many a time socio-cultural setup of the learners, family and friend and also the learner him/herself becomes the cause of the learning difficulties. The methodology used in teaching, physical and emotional status of the learner, relation with teachers and other academic endeavours in the school also

become the reasons for learning difficulties. For determining the causes of learning difficulties pupils commulative records are analysed, special tests are taken, interviews to the parents, teachers peers, etc. are conducted.

11.9.4 Applying Remedial Measures

After identifying the causes of learning difficulties suitable remedial measures are provided to the learners. Providing remedial measures mean to take steps for solving the learning difficulties. Remedial measures can be in form of proper counselling of the students, remedial teaching, physical and mental treatment of the learners, studying the attitude and changing attitude of the students etc. This can also equally applicable for the teachers to re-design their teaching in terms of using suitable methods and techniques of teaching, dealing students cordially and developing good inter-personal relationship with the students.

Check Your Progress 5

Note : a) Write your answer in the space given below.

b) Compare your answer with the ones given at the end of the Unit.

6. List down the steps involved in diagnosing and remedying learning difficulties of students.

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11.10 AREAS AND CONTENT OF DIAGNOSTIC TESTING

The analysis, identification and measurement of abilities that underline and cause educational achievement unquestionably constitute the significant stage in the use of tests in educational practice. Some important areas that constitute the content of diagnostic testing and remedial teaching are discussed below:

Intelligence: Intelligence tests are incapable for securing a direct measure of capacity unaffected by experience and training. These tests provide the basis for inferences about the equipment from the amount of learning that has taken place under certain conditions. The value of the intelligence tests, carefully used and critically interpreted, constitutes an effective and useful instrument for classroom diagnosis.

Personality: Personality of an individual includes attitudes, interests and emotional adjustments, all of which are important considerations in the classroom. Personality inventories and scales afford evidence of types not realized from

intelligence or achievement tests which teachers should find valuable in the guidance and adjustment of their pupils.

Achievement in Specific Subjects: It is now possible to evaluate achievement and to diagnose difficulties with accuracy in certain subject areas like, arithmetic, spelling, reading, etc. These subject areas lend themselves well to analysis and identification of specific skills and thus ultimately to diagnosis. On the basis of such diagnosis, remedial work can be planned by the teacher to fill the learning gaps.

General Educational Achievement: While the emphasis is somewhat more on the measurement of the specific rather than the general aspects of school accomplishments. There is a recognizable need for the measurement of the latter. For general survey purposes, evaluation of curricular content, and for later individual detailed diagnosis, such general achievement tests are valuable.

Check Your Progress 6

- Note :** a) Write your answer in the space given below.
b) Compare your answer with the ones given at the end of the Unit.

7. Elaborate any one area connected with diagnostic testing.

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11.11 REMEDIATION

In the previous sections, we have learnt that the essential steps in educational diagnosis are; (i) identifying the students who are having trouble or need help, (ii) locating the errors or learning difficulties, and (iii) discovering the causal factors for learning difficulties. After locating learning difficulties and discovering their causal factors, the next crucial question is “what after this diagnosis?”. The follow-up after such educational diagnosis leads to actions that may help children make up their deficiencies. This step is generally termed as ‘Remediation’ or ‘Remedial Teaching’. During the process of remediation, a teacher is expected to devise some strategy to remove problems in learning and the causes due to which the learner has faced the difficulties. The strategy used by the teacher to remove the learning gaps of the learners is known as remedial teaching. Diagnostic testing leads to remedial teaching in which a teacher is required to prepare instructional material for quality learning and adopting different methodologies as per needs of the learner or a particular group. The ultimate aim of remediation or remedial teaching is to help pupils who have fallen behind to learn to the best of their ability and to bring them back into the mainstream of teaching-learning process as far as possible.

The word 'remedial' means 'to rectify, improve or remedy something.' Remedial teaching is teaching which is designed to bring students who are lagging behind up to the level of achievement realized by their peers. Remedial teaching means necessary learning support will be provided to pupils who need pedagogical or didactic assistance. There are often children who receive at a lower grade because of certain learning or behavioural problem/disorder. However, remedial teaching can also be offered to pupils who achieve at a higher than average level, but the nature of remediation differs.

Generally the following procedures are followed to do the remedial teaching. They are:

- Set objectives as per the nature of difficulties.
- Teach using specific methodology and techniques.
- Get feedbacks from the students and find out the weaknesses.
- Reteach the same with modification assessment.
- Assessing the final performances.

Principles of planning remedial teaching by the teachers:

- (i) Ensure good physical condition of the learners before remedial teaching.
- (ii) Discuss with the parents and seek their cooperation.
- (iii) Analyzing specific strengths and weaknesses of the child and accordingly deal each students as per their abilities.
- (iv) Discuss with the child about his/her problem and tell him/her to find out the solution.
- (v) Teach learners as per their standard and involve them in self, peer and group activities to solve their difficulties.
- (vi) Individualised remedial teaching may be provided subject to the need of the students.
- (vii) Feedback techniques need to be applied so that the learners will realise their improvement in learning.
- (viii) Teacher made or standardised tools can be used to know the progress of the students.
- (ix) Commulative records of the learners may be prepared to know the nature of difficulties, treatment given, and progress noticed.

As a teacher, one must keep in mind that most of the learning difficulties pupils encounter may not be within the pupil, but are relative to the context where the learning is taking place, such as the family background of the pupil, the physical and learning environment of the school, and the pupils' peer groups. Once this is understood by a teacher, he/she will begin to view the pupils from a different perspective and try to accept their learning difficulties as a transient and soluble problem.

11.11.1 Role of Teacher in Remedial Teaching

In remedial teaching, teacher's main duty is to work very closely with the principal, students, teachers and the rest of the staff. The teacher provides remediation for students who are struggling in certain specific academic areas. Teacher works cooperatively and create activities based on the curriculum that

will help the remedial students. In remedial teaching, teacher manages students' records in a timely and appropriate way. Teacher works with the students who have difficulty in learning and retaining the information. Before preparing for their lessons, teachers should identify pupils' diverse learning needs as soon as possible so that they may design appropriate teaching plans to facilitate pupils' effective learning. A teacher has to perform the following functions while planning and organizing a remediation programme for students with particular learning gaps:

To provide pupils systematic training to develop their generic skills, including interpersonal relationship, communication, problem-solving, self-management, self-learning, independent thinking, creativity and the use of information technology;

To devise various learning activities and design meaningful learning situations. Give concrete examples before proceeding to abstract concepts by way of simple and easy steps at a pace in line with the learning abilities of students;

Provide pupils clear instructions to avoid confusion, summarize the main points and encourage pupils' active participation in class activities;

Show concern for the performances of individual pupils;

While assigning home work, teacher should keep in mind that the homework should have clear objectives that can accommodate the level and needs of pupils;

Prepare a rich, pleasant and comfortable learning environment for pupils;

Display teaching materials of the week or the learning outcomes or products of pupils at prominent places to stimulate their motivation in learning.

Selecting instructional material for remedial teaching is also another important concern for the teachers. A major problem in remedial instruction is the dearth of effective instructional materials. Most of the published materials have been designed for group instruction. Only a small percentage can be adapted for individual instruction. If the material is graded carefully and provided for ample practice on each of the basic steps, the teacher can adapt it for individual use by providing self-directive instruction for pupils.

11.11.2 Strategies adopted for Providing Remedial Teaching

Following strategies can be employed by the teachers to provide remedial instruction to the students for removing learning difficulties:

Individualized Education Programme (IEP): Individualized educational programme aims to reinforce the foundation of learning, helps pupils overcome their learning difficulties and develop their potentials. Individualized educational programme should include short-term and long-term learning objectives, learning steps, activities and reviews to ensure that the programme is implemented effectively. Teaching can be done in small groups or for individual. Teachers should hold meetings regularly to evaluate the effectiveness of work and gather opinions for refinement.

Peer Group Learning: Teachers may train up students who perform better in a certain subject to become a trainer and will be responsible for helping

schoolmates with learning difficulties in group teaching and self-study sessions as well as outside class. Peer group learning helps pupils reinforce their knowledge, and develop their communication and cooperation skills as well as good interpersonal relationship.

Provision of Rewards to the Students to Enhance Pupils' Motivation:

The reward scheme has positive effect in enhancing pupils' motivation. It aims at guiding pupils to set their own objectives and plans, and positively reinforcing their good performance. The teacher should set clear and achievable objectives. The rewards should be changed and possess variability in order to maintain their acceptance and strength in sustaining the interest and motivation among students.

Apart from these, making close liaison and coordination with the parents and maintaining close contact with other teachers to discuss experiences need to be encouraged.

Check Your Progress 7

- Note :** a) Write your answers in the space given below.
b) Compare your answers with those given at the end of the unit.

8. Define remediation.

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9. List down any two strategies for providing remedial help to school children.

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**11.12 DIAGNOSTIC TESTS AND REMEDIATION :
A FEW EXAMPLES**

Because of learning differences, children absorb knowledge at different pace and grasp concepts in their own time frames. Some children learn mathematical, spelling and reading skills with very little teaching and others need remedial help with it. Diagnosis relates primarily to such questions like; Why Arti got a low score on a test of arithmetic? or, Why Ramesh got low score a test of spelling? What are the sources of difficulty? For getting answers to such questions, diagnostic testing is carried out by the teachers generally on an individual basis so that remediation could be planned. Decisions relating to remedial teaching constitute one subset of instructional decisions. The foundation upon which any

programme of diagnostic testing and remedial teaching is built is a thorough and precise analysis of the skills that are required to achieve the desired instructional objectives. In the following paragraphs, we will discuss diagnostic testing and remedial teaching in basic fields of mathematics, spellings and language reading.

11.12.1 Mathematics

Consider the performance of students on an informal test of subtraction administered to a group of seven years old. The teacher has marked all those items where a particular pupil has made mistakes and has concluded, after study of performance and questioning, that the child has been confused by the presence of noughts (number '0'). Similarly, at a more advanced level, an older pupil has reached a wrong answer when simplifying an algebraic expression which involves factors and fractions. Here the teacher observes that an error has been made when factorising the expression x^2+ax+b . If this type of error is to be repeated in similar items, a clear diagnosis with implied remediation would be made. At this stage, source of difficulty rather than interpretation of the problem is the goal of the analysis. In both these examples, teachers are likely to find skill analysis much easier to perform than task analysis since it is necessary to build a model of structure to carry it out. Skill analysis can be carried out most easily in school subjects where criterion of correct/incorrect can be applied or where the performance varies along a continuum of 'good to poor'. The principal purpose of this kind of analysis is to discover learning problems, followed by constructive attempts to remediate performance, not to 'bind the pupil down'. So, there is no real need to cover the pupil's work with actual 'corrections' to fulfil the aim of analysis. Below are five methods which the teachers, parents, and others can use to help students with mathematics.

Manipulatives: Mathematics skills, such as addition, subtraction, division, and multiplication are learned with good understanding through the use of manipulatives like blocks, marbles, abacus, discs, cards, cups or even beads.

Drawing: An effective way to learn mathematics skills is through the use of mathematical pictures that are drawn out by the child. One good exercise is asking the student to draw five circles on a sheet of paper. Then ask the student to cross out two circles or add two more. This visual exercise helps the students learn subtraction and addition.

Shopping: There is a plethora of learning while shopping in a market. Mathematical skills ranging from weighing produce, counting money, selecting products according to their weight and size, determining how much each item costs per kilogram can be learnt through shopping activities. Teachers can use project method in this regard to acquaint students with basic mathematical skills among students.

Structured Pattern in Teaching-Learning: Some children learn best by having a very structured pattern to follow for each problem. A remedial mathematics teacher can show the pupil, the steps for solving each problem one at a time. Many children enjoy this structured pattern of learning, as it is broken down into easy pieces.

Mathematical Games: It is no secret that children love to play games. Today, you can find many mathematical games in concrete form and also available in

the computers. Mathematical skills, such as time telling, addition, subtraction, multiplication, division and more engage the student's interest so that they are more likely to retain the knowledge that they have learned through such games.

11.12.2 Spelling

Spelling tests and scales offer valuable sources of material that may be used to determine both the students present status in spelling and their growth in accomplishment as a result of period of instruction. If scales based on a sound philosophy of subject matter content are used, they provide the most effective materials for the identification of spelling difficulties of individual pupils. Remedial procedure in spelling may be undertaken directly in connection with teaching. The words misspelled by pupils in their spelling lessons and tests are obviously the words to which they should give special attention. Each pupil should be encouraged to keep an individual list of such words and should be stimulated to master them. Occasional spelling periods should be put aside for studying and testing these individual lists. Written work in all subjects should be carefully checked for spelling errors. The important thing is that the learning situation be so manipulated that the pupil will want to learn to spell and to feel the need for learning the meaning and spelling of words that are pertinent to his/her written work. Any spelling test must reveal to the pupil his/her particular weaknesses that resulted in low score. This diagnosis of particular weaknesses in spellings should function as a basis for remedial instruction.

11.12.3 Reading

If a child has problem with reading, it is very essential to directly help him/her develop proficient reading skills. The following points should be taken into consideration while providing corrective measures to remove reading difficulties of the students:

Evaluate the student and identify the specific reading deficiencies.

On the basis of the study, prepare a suitable plan to address the reading difficulties.

Effectiveness is key to successful remediation. The students need to be helped to use proper phonetics, pronunciation, homophones, etc. In case errors noticed they should be practiced the some under observation.

The remedial treatment needs to be continued till the specific skills the students attend.

This can only be possible through direct interaction and instruction.

Model phonetics and audio-video materials on phonetics can also be used for validating and making the students learn the right phonetics.

Skill of reading is also associated with other language skills. It is therefore other skills are also necessarily to observe when practicing reading skills. That also comes in the purview of remedial instructing in reading.

Mostly, it should be practical through individualised instruction.

11.13 LET US SUM UP

In this Unit, we started our discussion with educational diagnosis and how this process is carried out for identifying learning difficulties and providing corrective measures. The concepts of diagnostic, formative and summative evaluation were discussed in details. In order to improve the learning levels of the students, the role of teacher in identifying learning difficulties, locating its specific causes and designing corrective measures is of vital significance. The teacher can adopt various methods and strategies in providing remedial instruction to the learners facing various learning difficulties. In the last part of the Unit, some illustrations of providing remedial teaching in the content areas of mathematics, spelling and reading were explained so that you may have certain basic understanding about implementation of remedial teaching in school situations.

11.14 REFERENCES AND SUGGESTED READINGS

Aggarwal, J. C. (2005). *Essentials of Examination System: Evaluation, Tests and Measurement*. New Delhi: Vikas Publishing House Pvt. Ltd.

Cook, W. W. (1958). *Educational Measurement*. Washington D.C.: American Council on Education.

Gronlund, N. E. (1976). *Measurement and Evaluation in Teaching*. McMillan, USA.

Nandra, I.D.S. (2011). *Learning Resources and Assessment of Learning*. Patiala, 21st Century Publications.

Ross, C. C. (1956). *Measurement in Today's Schools*. New York: Prentice Hall Inc.

Taiwo, Adediran A. (2005). *Fundamentals of Classroom Testing*. New Delhi: Vikas Publishing House Pvt. Ltd.

11.15 ANSWERS TO CHECK YOUR PROGRESS

1. The process of identifying specific weaknesses in the learning of the students is referred to as 'educational diagnosis'.
2. Educational diagnosis acts as a basis for providing remedial work and also acts as a base for undertaking preventive work so that learning difficulties may not occur in future.
3. Diagnostic tests are designed to identify strengths and weaknesses of learner's knowledge and use of language. Diagnostic tests are more likely to focus on weaknesses than on strengths. Diagnostic tests should lead to remediation in further instruction.
4. Self exercise (refer content section 11.5)
5. Formative evaluation focuses on the process while summative evaluation pays attention to the product. Summative test provides students with a score but they don't offer any diagnostic information about how to improve their study. On the other hand, students receive informative feedback from a formative test which can help them to improve their learning.

Learner's Evaluation

6. The steps employed in diagnosing and remedying learning difficulties are:
 - (i) Identify the students having the learning difficulties.
 - (ii) Identify the nature of problems.
 - (iii) Determine the factors responsible for the problem.
 - (iv) To provide suitable remedial measure.
7. One of the areas of diagnostic testing is personality. Personality of an individual includes attitudes, interests and emotional adjustments, all of which are important considerations in the classroom.
8. Remediation means to bring students who are lagging behind up to the level of achievement realized by their peers.
9. Self-exercise.

