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BESC-133
Curriculum, Teaching-Learning And Assessment

Block

4

ASSESSMENT AND EVALUATION

Unit 12

Basics of Assessment and Evaluation

Unit 13

Types of Assessment and Evaluation

Unit 14

Learning Environment

Unit 15

Organizing Learning Experiences

Unit 16

Trends in Assessment and Evaluation

BLOCK 4 ASSESSMENT AND EVALUATION

Introduction to the Block

The **fourth Block** discusses the most important decisions educators make on behalf of learners that is assessment. This Block addresses the basics of assessment and evaluation. While moving forward, you will develop a deep understanding about assessing different abilities, and the role of ICT in assessment. You will also become familiar with the recent trends in assessment and evaluation.

The fourth **Block** consists of five units.

Unit 12 helps you understand the basics of measurement, assessment and evaluation. This Unit provides an overview of the relationship between learning and assessment. Further, we concentrate on assessment as learning, assessment for learning and assessment of learning. You will come to know about the assessment at various levels.

Unit 13 discusses the types of assessment based on purpose, nature of data, domain and measuring standard. Further there is detailed information on authentic assessment, performance-based assessment, outcom-based assessment, alternative assessment, Continuous and Comprehensive assessment, and competency based assessment. This Unit also elaborates on various tools of assessment.

Unit 14 focuses on how to assess abilities. You know that we have both cognitive and non-cognitive abilities. In this Unit, assessing both abilities is well explained with the help of examples. In addition, this Unit throws light on how to assess aptitude, attitudes, personality traits and social skills.

Unit 15 deals with the role of ICT in assessment. You are aware about the major role played by ICT in teaching-learning process. This Unit also discusses Computer-Based Assessment (CBA), Computerized Adaptive Testing (CAT), Web Based Assessment, E-portfolio, and Digital rubrics by citing examples.

Unit 16 examines the increased importance of assessment and evaluation in education policy. By taking cognizance of various policy documents including NEP 2020, this unit will make you familiarize with the recent trends in assessment practices at the national and international levels.

UNIT 12 BASICS OF ASSESSMENT AND EVALUATION

Structure

12.1 Introduction

12.2 Objectives

12.3 Concepts of Measurement Assessment and Evaluation

12.4 Relationship between Learning and Assessment

12.5 Assessment of Learning, Assessment for Learning and Assessment as Learning

12.6 Assessment at various Levels

- 12.6.1 Assessment at Pre-primary Level
- 12.6.2 Assessment at Primary Level
- 12.6.3 Assessment at Secondary and Higher Secondary Level
- 12.6.4 Assessment in Higher Education

12.7 Let Us Sum Up

12.8 Unit-End Exercises

12.9 References and Suggested Readings

12.10 Answers to Check Your Progress

12.1 INTRODUCTION

'To measure or to learn that is the question.' (Broadfoot, 1996)

Let us have a look at two different situations.

Class VI A students is divided into five groups. Each group has six students all engaged in last minute preparation for their project presentation. The five teams can be seen making hectic efforts for completing their project for which they will be graded. In another situation, class X students are seen pouring over their books in a desperate effort to perform well in the Board examination.

Both the situations are related to student learning but with a difference. The first situation denotes assessment where each student will be assessed based on their content knowledge, skills of collaboration, communication and innovation by an expert or a teacher. The second situation is related to examination where students will be answering questions to a standardized test which will be evaluated by an external examiner. As you can see the terms measurement, assessment and evaluation are all used in the learning process, but each term has different connotations and implications.

12.2 OBJECTIVES

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

- define the concept of assessment and evaluation;
- differentiate among measurement, assessment, and evaluation;
- explain assessment and evaluation as a part of the teaching-learning process;
- discuss the relationship between assessment and learning;
- differentiate among Assessment of Learning, Assessment for Learning and Assessment as Learning; and
- explain the term assessment at various levels.

12.3 CONCEPTS OF MEASUREMENT, ASSESSMENT AND EVALUATION

To many, the word "assessment" conjures up images of testing, marks and grades. Assessment is much more than this. But then one needs to know the different terms like, assessment, measurement and evaluation which are used interchangeably but have different connotations. The figure 12.1 shows the relationship among test, measurement, assessment and evaluation.

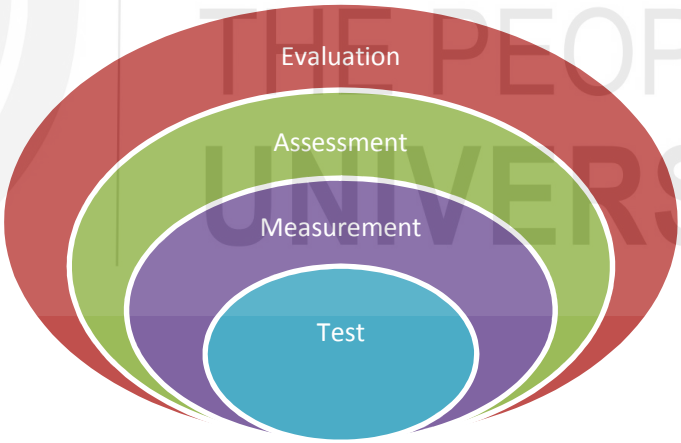

Fig.12.1: Relationship among Test, Measurement, Assessment, and Evaluation

Assessment is involved in everyday lives of learners. Assessment practices have a long history in our country. Discussions and debates were a regular practice to gauge the knowledge of pupils in the ancient Universities of Nalanda and Takshashila. Although there are several forms of assessment within our education system, one of the most visible of these are the formal examinations which is conducted typically at the end of key phases in education. Let us understand the terms measurement, assessment and evaluation in detail.

Measurement

Measurement has been the practice with teachers since a very long time. They have been testing their students and assigning numbers regarding the progress of their students in studies, and adopt corrective measures accordingly. According to Bradfield & Moredock (1957), 'Measurement is the process of assigning symbols to the dimension of phenomenon in order to characterize the status of phenomenon as precisely as possible'. Measurement is the process by which a characteristic of an object, person or activity is perceived and understood on specific standards and is described in standard words, symbols or definite units.

Assessment

The term assessment is gaining importance in the present day, because it is widely accepted that what is taught is assessed using various tools, and that the format of assessment influences the format of learning and teaching. In this Unit, the term assessment is used frequently to describe the basics of assessment practices.

The word 'assess' is derived from the Latin verb 'assidere' meaning 'to sit with'. This implies that it is something we do 'with' and 'for' students and not 'to' students. The importance of assessment cannot be undermined. High-quality assessment is at the very heart of quality education and is the key to raising learning standards. Assessment is invaluable to both the teacher and the taught. It enriches learning, enhances pupil motivation and at the same time enables teachers to reflect on the methods/strategies used and make modification if necessary. To quote Freeman and Lewis (1998), the five main purposes of assessment are "to select, to certify, to describe, to aid learning and to improve teaching" which give a balance to public judgment and personal development.

Some of the advantages of assessment practices are the following**:**

- Provides valuable data on the breadth and depth of student learning.
- Help to understand what children know and what they can do.
- Act as lens for understanding students' learning by identifying their strength and weaknesses.
- Provide educators, parents, and families with critical information about a child's development and growth. in all developmental areas- cognitive, physical/motor, language, social-emotional, and approaches to learning.
- Determine the needs of students for providing additional support.
- Help teachers to plan specific strategies of instruction for students based on their needs.
- Contribute in improving learning outcomes and promote learning.
- Identify the strengths and weaknesses within a program.

- Facilitate teachers to use the information obtained to modify the teaching learning process and improve pedagogical approaches.
- Facilitate collaboration among parents, teachers and educators to support their child.

As you can see, the purpose of assessment is to gather valid, reliable and useful information about student learning which can used for monitoring student progress and achievement with respect to learning outcomes and also for taking appropriate measures to facilitate the students to reach the set goals.

Evaluation

Unlike measurement, the concept of evaluation in the educational sector is comparatively new. Often the terms are used interchangeably leading to ambiguity. There are some major differences between the two terms. For e.g. by testing a child in Mathematics by administering a single test based on Algebra we may measure his/her mathematical ability in solving problems in Algebra and nothing else. But through evaluation we may get to know about the interests, abilities etc, of the child in Mathematics as well as his skills, competencies, his/her critical thinking and problem solving abilities also.

In education, **evaluation** is the process of using the measurements gathered in the assessments, analyze and interpret the data obtained and use this information to find out if the objectives of the instruction have been achieved and also use the information so gathered to determine what students know and understand, how far they have progressed and how their scores and progress stand in comparison with other students.

II) Types of assessment

Assessment can be categorized in different ways:

- Formative and Summative assessment
- Formal and Informal Assessment
- Qualitative and Quantitative Assessment
- Direct and Indirect Assessment

Formative Assessment

'When the cook tastes the soup that's formative, when the guest tastes that is summative'. This popular quote of Robert Stake sums up the major difference between the two types of assessment –formative vs. summative.

Formative assessment is an integral part of the instructional process with active evolvement by students. It provides scope for self and peer assessment besides teacher assessment. Active participation increases students' motivation to learn and the informal setting and unobtrusive techniques of assessment make learning an enjoyable experience.These type of assessments are carried out during a course of instruction and not confined to end of a

session or course by which continuous feedback is provided to both the teachers and the learners. This facilitates modification or adjustment of the transactional procedures and learning activities.

Types of Formative Assessments

Teacher observations, student record, questioning strategies, self and peer assessments, portfolios, anecdotal records, checklists and rubrics, quizzes and essays, diagnostic test etc. are some of the formative assessments carried out in schools.

Summative Assessment

Summative assessments conducted at the end of a course of learning are the most traditional way of evaluating student work. As the term suggests, it measures or 'sums up' how much a student has learned from the course/semester/unit. It is carried out at intervals or spread out and occur after instruction every few weeks, months, semester or once a year, when achievement has to be summarized. It is usually reported as graded test, marked according to a scale or set of grades. It is a means to measure, at a particular point in time, student learning relative to certain standards. Therefore, to rely solely on summative assessment is not advisable because of its unscientific nature. The overemphasis may also produce enormous stress and anxiety among the learners. To put it simply, formative assessment focuses on improving learning whereas summative assessment summarizes learning. Examples of summative assessment are as follows:

- Mid Term Examination
- End-of-unit or chapter tests
- End-of-term or semester exams

The ideal way is to balance formative and summative assessment so that a clear picture emerges about a student.

Formal and Informal assessment

Data from formal assessments are used to support the conclusions made from the test by using standardized measures. The data is mathematically computed and summarized. Scores such as percentiles, marks or standard scores are most commonly given when this type of assessment administered.

Informal assessments on the other hand are not data driven but rather content and performance driven. For example, a language teacher while assessing the pronunciation of a particular student uses scores such as 10 out of 15 words pronounced correctly, or rubric scores; such as not able to pronounce properly, pronounce properly to some extent, pronounces all words correctly are given from this type of assessment.

Quantitative Assessment

As the term indicates, **quantitative assessment** helps to collect data that can be analyzed using quantitative methods. There is much reliance on numerical scores or ratings. It uses values obtained by using an instrument based on a standardized system .The major limitation is that the data is derived from a selected or predetermined set of possible responses. Quantitative assessment approaches work by the numbers, collecting, analyzing, interpreting, and charting results, trends, and norms and is mainly concerned with scholastic achievement focusing on subject-based performance.

Qualitative Assessment

Unlike quantitative assessment, qualitative assessment does not rely on scores or numbers but on descriptions. It is more concerned with detailed descriptions of situations or performance; therefore, it can be much more subjective but can also be much more valuable in the hands of an experienced teacher. Qualitative is chiefly about evaluating the non-scholastic and mostly all-important aspects of the students personality including social, emotional, attitudinal and moral/ethical.

Apart from these types, there are other methods like direct and indirect methods of assessment. In direct methods of assessment, students are asked to demonstrate their learning while in indirect methods students are made to reflect on their learning. Tests, essays, presentations, etc. are generally direct methods of assessment, and indirect methods include surveys and interviews.

Continuous and Comprehensive Evaluation

Continuous and Comprehensive Evaluation **(**CCE) was introduced to redesign how assessments are formulated in our country. Under the RTE Act, CCE is envisaged as a programme of continuous evaluation of the student throughout the academic year. The assessment includes both scholastic and co- scholastic aspects thereby allowing for a comprehensive assessment. The Ministry of Education in its advisory on implementation of section 29 of the RTE Act, specifies that CCE should be built around five tools - child's engagement pattern, general observations, observations during group work, and individual work in class, child's written work, and an anecdotal record.

Diagnostic Assessment

Diagnostic assessment is generally used to diagnose the weakness/difficulties faced by a student. Tools are administered prior to instruction which will give a snapshot of what a student knows and modify or plan strategies accordingly. Students are given identical pre- and post-tests before and after the course. This method allows teachers and students to chart their learning progress by comparing pre- and post-tests results.

By now, you must have understood that the type of assessment activity and the way evidence of learning will be gathered are determined on the basis of

various variables like learning outcomes being assessed, the curriculum which is adopted, the teaching- learning activity being conducted, the learning level of students who are assessed, the social context, the learning needs of students, the class, the age group they belong to etc. Hence, 'one size may not be fit for all.' Instead a variety of activities may be considered. Also it is recommended that both formal and informal strategies are used for assessment of knowledge and skill from pre-primary to college/university level.

Check Your Progress I

Notes: a) Write your answer in the space provided after each item.

b) Compare your answer with the one given at the end of the unit.

1) List some of the major examination reforms in the recent years.

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2) Why is there a need to consider a variety of activities for assessment?

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3) How is measurement different from evaluation?

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12.4 RELATIONSHIP BETWEEN LEARNING AND ASSESSMENT

"What and how students learn depends to a major extent on how they think they will be assessed." (John Biggs1999)

The relationship between assessment, teaching and learning is dynamic and interactive. Assessment is an integral part of the teaching- learning process.

Before going into the details, it is worthwhile to understand the process of education. Education is conceptualized as a tri-polar process with its three poles being a) Educational Aims and Objecives b) Learning experiences c) Evaluation. The three are interrelated with mutual synergic, interdependence, and constitute the process of education.

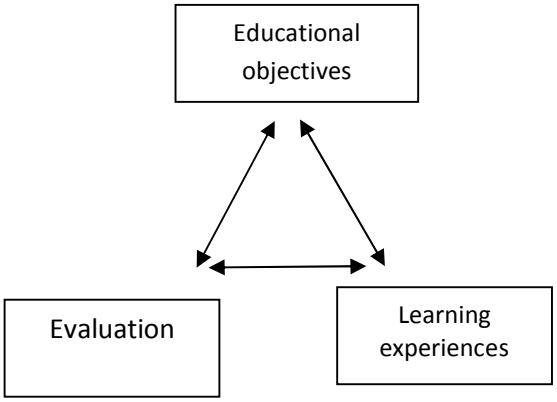

Fig: 12.2: Education as a tripolar process

The process of collecting, examining and using information about what student know and able to do, form the basis of effective teaching-learning process. The appropriate use of tools to gather data/ information, its proper analysis and interpretation contribute to a great extent in enhancing the learning outcomes of students. It plays an important role in the process of learning and motivation. Quality of education imparted in schools or colleges is shaped by the assessment practices administered there. Assessment furnishes the evidence needed to document and validate that meaningful learning has occurred in the classroom. It is vital to ensure whether students have learned what they have been taught, or that the teaching was relevant to the students' learning needs and interests.

The scope of assessment in learning is immense. When the information gathered from assessment is properly analyzed, interpreted and used, it would fetch innumerable benefits for all stakeholders be it the students, parents, teachers or the school authorities. Effective feedback would help build confidence among students and give motivation to make further progress. It helps teachers to modify/adjust their pedagogy and involve students as active participants in their learning. Parents and school authorities would be able to understand the strength and weakness of each student as well as monitor the progress closely. In this way, linking two variables would contribute in enhanced learning and improvement in learning outcomes.

12.5 ASSESSMENT OF LEARNING, ASSESSMENT FOR LEARNING, AND ASSESSMENT AS LEARNING

One question, which often pops up when we talk of assessment, is the assessment for the teacher or the student? This needs to be clarified at the outset .Very often the lack of clarity can lead to wastage of time, energy, and resources– for both the assessor and the assessed. In addition, we need to understand the different types of assessment i.e. assessment of learning, assessment for learning and assessment as learning. These terms are comparatively recent in the context of assessment and are related to the constructivist theory that children are not passive recipients rather they are active participants in the knowledge acquisition process. Central to this view of learning is the role of the teacher from that of a knowledge provider to that of a guide, facilitator and a counsellor.

The difference between assessment of learning and assessment for learning is a matter of function and purpose–a matter of 'who'; sometimes assessment is conducted merely as a kind of benchmark to see 'how well students can do', and then it is an assessment of learning. However, if the same is used for modifying the learning process for improved outcomes then it is considered as assessment for learning, In fact there is significant overlap between the two. The same test given in one situation would be considered an assessment of learning while in another context or situation it will be assessment for learning. Let us try to understand the characteristic features of each one of them.

Assessment of Learning

The 'traditional' reasons for assessment were mainly for communicating results of student achievement by teachers, as well as selecting, sorting and grading students for entry into various programmes, Assessment of learning is the predominant type of assessment in schools for such purposes. The intent of such assessment is to certify learning and report about students' progress in school. It is used to benchmark students' learning against criteria (Process/Skills/Learning Indicators and Learning Outcomes) based on identified curricular aims and objectives. It is a way to see what the students can do, mostly summative and usually convey students' relative position compared to other students.

Assessment of learning in classrooms is typically done at the end of something (e.g., a unit, course, a grade, a key stage, a programme and takes the form of tests or exams that include questions drawn from the material studied during that time). The results are expressed symbolically, generally as marks across several content areas to report to parents. The objective is to provide comprehensive information regarding the extent of student learning. For example, unit test is a commonly used form of assessment of learning.

Even today, this kind of assessment is most prevalent in schools. Teachers shoulder the major responsibility of creating, administering and marking the test. Teachers use the tests to assess the quantity and accuracy of student work, while comparing the performance with other students. The feedback given to the students is in the form of marks or grades with little scope for students to take corrective steps to improve upon their performance. These kinds of testing events would help discern which students are doing well and which ones are not. The efficiency of the assessment depends on its validity and reliability. The test content is generally limited to the prescribed syllabus and the scoring is, too, simplistic that it does not reflect the progress in other areas or skills.

The major features of Assessment of learning are as follows:

- collect evidence of student learning / achievement.
- provide those evidences/feedback to the wider community, including parents, educators and to the students themselves.
- grade /rank etc. on the basis of the assessment scores.
- plan future learning goals for students.

Role of Teacher

Teachers' role is pivotal. Her directedness is paramount in designing learning, collecting evidence, and judging what has been learnt (and what has not).The responsibility of reporting student learning accurately and fairly, also rests on the teacher. There is very little involvement by the students.

Assessment for Learning

The purpose of assessment is constantly changing. It is not restricted to reporting and sorting 'Assessment can improve student learning, teacher effectiveness, and increase the levels of student engagement with the material (Marzano, 2000; McMillan, 2004; Shepard, 2000).' It is widely acknowledged that assessment drives student learning. This type of assessment is **assessment for learning**. It is a type of formative assessment used by teachers to gain an understanding of their students' knowledge and skills and adjust the teaching learning process accordingly. The feedback is not only useful for students but also to the teachers themselves.' It is the process of seeking and interpreting evidence for use by learners and their teachers to decide where the learners are in their learning, where they need to go, and how best to get there .

It is rightly observed that improving the quality of learning in courses involves not just determining to what extent students have mastered course content at the end of the course but also how they have progressed throughout the course. Apart from providing valuable evidence about students' learning, assessment for learning assists students in assessing their own learning. The feedback is useful for both students as well as teachers.

While the learners would be able to diagnose their own learning, teachers, too, would be able to gauge their efficiency and effectiveness and design strategies for improvement .This helps teachers identify the learning gaps of each child, reflect, review and modify their teaching as per the need and learning styles of students. Yet another benefit is that since assessment for learning occurs continuously during teaching-learning process and is based on multiple evidence using multiple sources to collect information. It is used as a range of activities that the child participates in both inside and outside the classroom on all aspects of learning, scholastic as well as co-scholastic.

The main features of Assessment for learning are as follows:

- It is comprehensive as it covers scholastic and co- scholastic aspects, knowledge as well as skills.
- It is holistic in nature.
- It drives student learning and help them to learn better, rather than just achieve better marks or scores.
- It involves increased levels of student autonomy.
- It provides effective feedback throughout the course and not just at the end of the course.
- It is based on the belief that all students can improve.
- It encourages self-assessment and peer-assessment as part of the regular classroom routines.
- It helps teachers to gauge their own efficiency.
- It could be used as an effective tool in the teaching- learning process.

Teachers use focused observations, questioning, conversations, quizzes, computer-based assessments, learning logs, or whatever other methods are likely to give them information that will be useful for their planning and their teaching. Teachers' role is central here also but quite different from the previous approach. S/he is more of a guide and facilitator rather than an assessor.

Assessment as Learning

The teachers' role has been redefined in the present day. From the traditional role of knowledge bearers and keepers, they are now facilitators, mentors, and guides. Learners are becoming more and more self- directed in their search for knowledge. When learners themselves become their own assessors, it is termed as **Assessment as Learning**. There is major involvement by the students as they monitor their own learning, ask questions and use a range of strategies to decide what they know and can do, and how to use assessment information for new learning. This requires providing opportunities and space to students to critically assess, reflect and analyze their own work during the teaching- learning process and identify their strengths and weaknesses.

Assessment as learning is also a formative assessment which focuses on teaching students the metacognitive processes to evaluate their own learning and make adjustments. Students are the critical connectors between assessment and learning. Students become adept at personally monitoring what they are learning, and use what they discover from monitoring to make adjustments, adaptations, and even major changes in their thinking.

The main features of Assessment as learning are as follows:

- Teacher and student together create goals and co-construct learning;
- Encourage students to take responsibility for their own learning;
- Require students to reflect on their learning and plan accordingly;
- Provide ways for students to use formal and informal feedback and self-assessment to help them understand the next step in learning;
- Provide scope for peer assessment; and
- Foster metacognitive skills.

In Table 12.1, a comparison of Assessment of Learning, Assessment for Learning and Assessment as Learning is displayed.

Teacher's Role

Teacher's role though crucial is mostly for guiding the students to assess themselves and make such an environment that students get to work on themselves, take corrective steps for self improvement and acquire metacognitive skills.

In the traditional models, Assessment of learning used to be predominant. But with the changing times, assessment **for** and **as** learning are more widely used. It is recommended to have a balanced model including all three of the types of assessments.

Table: 12.1: Comparison of Assessment of Learning, Assessment for Learning, and Assessment as Learning

Criteria	Assessment of Learning	Assessment for Learning	Assessment as Learning
Why Assess?	To certify or inform parents or others of student's proficiency in relation to curriculum learning outcomes.	To enable teachers to determine next steps in advancing student learning	To guide and provide opportunities for self assessment and identify next steps

Assess what	The extent to which students can apply the key concepts, knowledge, skills, and attitudes related to the curricular outcome	What each student know and do, learning needs of students in relation to the curricular outcome	To find out each student's thinking about his or her learning, and the mechanisms used to adjust and advance learning
What Methods	A range of methods in different modes that assess both product and process	A range of methods in different modes that make students' skills and understanding visible	A range of methods in different modes that elicit students' learning and meta cognitive processes
Using the Information	Indicate each student's level of learning, give reports about student performance that can be used to decide the next steps in a student's learning	Provide each student with accurate descriptive feedback to further his or her learning •differentiate instruction • provide descriptive feedback to parents about student learning and ideas for support.	Provide each student with descriptive feedback that will help to develop independent learning habits • provide each student with ideas for adjusting, rethinking, and articulating his or her learning • provide the conditions for the teacher and student to discuss alternatives
Teacher's role	Very crucial role -Reporting student progress accurately	More of a facilitator and guide	Make students independent learners. Help develop metacognitive skills

You can understand the steps of the assessment cycle from the following figure:

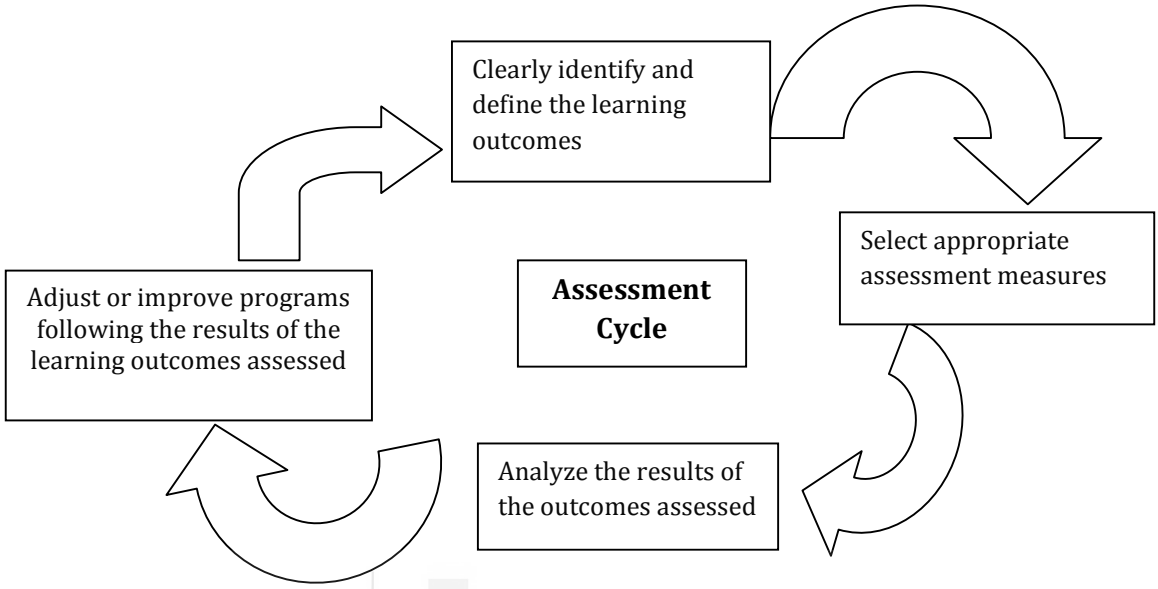

Fig.12.3: The Four Steps of the Assessment Cycle

Step 1: Clearly identifying and defining the learning outcomes

The first step is to formulate the learning outcomes that describe what students should be able to do (abilities), to know (knowledge), and appreciate (values and attitudes) following completion of the program/course.

Step 2: Selection of suitable assessment measures and assess the learning outcomes

Multiple ways of assessing the learning outcomes are usually selected and used. It is important to determine how the data will be using appropriate tools and techniques.

Step 3: Analyze the results of the outcomes assessed

The data/evidence is to be analyzed and the results reported in a meaningful way. Both quantitive and qualitative strategies may be used for result/data analysis and interpretation. Utmost care is required while analyzing and compiling the report.

Step 4: Modifying or adjusting programs following the results of the learning outcomes assessed

This step is a critical step of the assessment process. Assessment results are worthless if they are not used properly or those that do not help to modify the teaching learning process or lead to adjustments or improvements in programs. The results of assessments should be disseminated to all concerned.

Activity1

You have been asked to assess the performance of a task of your classmate. Which type of assessment you will employ? Give reasons.

12.6 ASSESSMENT AT VARIOUS LEVELS

Assessment methods are the strategies, techniques, tools and instruments for collecting information to determine the extent to which students demonstrate desired learning outcomes. Several methods should be used to assess student learning outcomes. Relying on only one method will only reflect a part of students' achievement. Therefore, a combination of direct and indirect assessment methods should be used. For example, responses from student surveys may be informative, however, when combined with students' test results they will be more meaningful, valid, and reliable.

12.6.1 Assessment at Pre- Primary Level

School Education is a continuum spanning pre primary to higher secondary classes. The early years are said to crucial in the growth and development of a child. Assessment at this stage has vital implications since it is a critical part of a high-quality, early childhood education.

However, the course of development in young children is uneven and episodic. In some children, learning will be rapid while others may not. Therefore, it is very important that the information is interpreted correctly. Also, the developmental characteristics of young children make it even more important that teachers and caregivers, be trained to think about and use assessment properly. Methods of child assessment at this stage may be mostly informal (conducting natural observations, collecting data and children's work for portfolios using teacher ratings) and some may be formal (using assessment tools). Both methods are effective and can help inform educators and parents about a child's progress. Some of the most commonly used methods are discussed below:

***Observation**:* When educators/teachers do an assessment, they observe a child to get information about what s/he knows and what s/he can do. Observation must cover all facets of development, including intellectual, linguistic, social-emotional, and physical development. A profile for each child may be maintained which can be used to compile the progress of child in comparison to her/his previous performance. These observations may be recorded (in her/his diary/log book/comments written on child's notebooks/worksheets/projects, etc.) as and when required, for her/him to monitor the learning progress of each child. It needs to be used meaningfully to help children improve their learning and progress. This assessment record is also a great tool to share with parents so they can follow their child's progress at school, understand their child's strengths and challenges, and plan how they can help extend the learning into their homes.

Portfolios: Portfolios are a record of data that is collected through the work children have produced over a period. This may include worksheets, creative drawings, craftwork, observations interests, abilities and problems of the child. It is a collection of not just the best but also all kinds of a child's work or activities done over a period.

Checklists and Rubrics

Checklists and rubrics are a more concrete way to evaluate young children. Checklist is a quick way to gather data of the relevant factors. A checklist has a list of skills that a child is expected to perform. From the list, teacher/ assessor checks off each item the child is able to do.

A rubric uses a scale to show the degree of mastery of a given task by a child. At least three levels for each task to be included. The lowest level means the child is unable to perform the task. The highest level indicates mastery of the task. The levels in between allow you to indicate the child falls somewhere in between. Rubrics outline the identified criteria for successfully completing an assignment and establish levels for meeting those criteria. Rubrics are used to score everything from essays to performances.

Inventory: It is another way to evaluate children. It contains a list of terms which a student is capable of performing at an age. Preschool teachers and early childhood development experts usually use some form of preschool assessment standards to evaluate how a preschool student is doing in various skill areas including gross motor and fine motor skills. One of the most difficult issues in early childhood assessment is to find the needs of children who want special assistance as a result of cognitive, emotional, visual, auditory, or motor impairments. Utmost care should be taken in the selection of tools and tests to assess them. Also, flexibility in the choice of assessment method should be considered for optimal results.

12.6.2 Assessment at Primary Level

The National Education Policy, 2020 highlights that assessment should mirror the full range of the child's learning, encompassing the cognitive, creative, affective, and physical and social dimensions of his/her development. This requires a broad continuum of modes of assessment in order to create a picture that will reflect the full range of the child's progress, attainment and development.

***Teacher observation*:** As with pre-primary children, teacher observation is invaluable to gather evidence about their progress and achievement Observing students while they are performing a task, demonstrating a skill, solving a given problem, interacting with peers/ others can provide insights into the student's learning progress and growth. Observations may be informal or incidental, structured or scheduled.

Question and Answer: Very often teachers resort to this technique for assessment of outcomes. Teachers use both verbal and written forms though verbal practices are more prevalent to test what students know or can do. This technique is easy to administer but care should be taken to provide adequate wait time for students to think before coming up with an answer. In addition, a variety of questions may be asked including open-ended questions. Students responses may be recorded and used for further planning to enhance learning.

Teacher designed tasks and tests: Teacher may assign tasks to be completed by the students within a period of time and the progress may be recorded.

Work samples/ portfolios: They are a record of multiple data of student learning performance, participation in co-scholastic areas, etc. Such data is highly useful in evaluating student's performance throughout the session.

E- Portfolio: In the present day with such tremendous advance in digitization, e-portfolios are replacing the conventional portfolios. E- portfolio is synonymous with digital portfolio or online portfolio. E-portfolio is a digitized collection of information, artifacts, presentations, demonstrations, accomplishments of an individual student, a group of students, or an institution. The data may be in the form of text in microsoft word, PDF or any other version, power point presentation, digital images, audio/video clips, blogs, comments etc. These digital contents are stored in digital formats. Such data is of immense value to the teacher for the purpose of evaluation. It helps students in doing self-assessment as well as peer assessment. Retrieval of information becomes very easy when data is stored in this way.

Projects*:* Project work is a method of providing a rich learning experience to students. In such assignments, students get an opportunity to synthesize knowledge from various areas of learning, and critically and creatively apply it to real life situations. Such engagements lead to holistic development by acquiring skills like collaboration, communication, cooperation and prepare them for lifelong learning.

Standardized tests: We all are familiar with standardized tests. They are tests administered to all students in a class to measure their progress. Such tests generate quantifiable data which can be further used for grading performance achievement etc.

Anecdotal Records: A teacher makes observation of his/her student on a day today basis. When his/her observation of an event or incident in a student's life, his/her behaviours, skills, attitudes, performance etc are noted in the form of a concise narrative it may be called anecdotal record. Such notes are highly useful to record qualitative information about students. Such records provide cumulative information. It helps in identification of individual needs of students so as to modify pedagogy accordingly. It is also an efficient way

to track their progress over a period of time and sharing information with parents.

Rubric: As discussed in pre-primary level, rubrics scoring outlines the criteria identified for successfully completing an assignment and establish levels for meeting the criteria.

Apart from the above methods, tests and assignments are also used for generating data on student performance.

12.6.3 Assessment at Secondary and Higher Secondary Level

Children belonging to Class IX &X constitute secondary level and those in XI-XII belong to higher secondary level. Most of the techniques used in primary are still relevant like observation, portfolio, anecdotal records etc. However, other means of measurement may also be used.

Presentation

In this strategy, students are expected to verbalize their knowledge, preset their thoughts and ideas about a topic and summary of their learning. It may provide the basis for assessment upon completion of a student's project or essay.

Exhibition/demonstration

An exhibition/demonstration is a public performance during which a student explains and applies a process, procedure, etc. in concrete ways. It would provide insight into to an individual achievement of specific skills and knowledge.

Interview

Interview is one of the common ways of assessment by a teacher. It is a face-to-face conversation in which teacher uses inquiry to assess the student's knowledge and understanding of a topic or problem. This is used by the teacher to explore the student's thinking, obtain clarification, and probe for motivations. However, mostly it is conducted in a face- to-face setting, ICT facilities like Skype, video conferencing, and online interviews are also gaining popularity now.

Performance task

During a performance task, students create, produce, perform, or present works on "real world" issues. The performance task may be used to assess a skill or proficiency, and also to gather information on the process as well as the product.

Quiz

A quiz requires students to respond to prompt in order to demonstrate their knowledge (orally or in writing) or their skills (e.g., through performance).

Quizzes are usually short and the results are available immediately. It is most commonly used for exceptional students.

Peer and self-assessment

Now-a-days more and more encouragement is given to peer and self-assessment strategies especially in the context of assessment as learning.

Peer assessment

This type of assessment draws upon the ability of students to observe, analyze and reflect on the progress/ task of their peers. Students may provide feedback to their peers about strengths of the task that has been completed and/or what aspects have been completed well. Feedback may be oral, written or digital. However, it is very essential that such feedback should be moderated by their teachers. Peer assessment provides an opportunity for students to develop their social, collaborative and reflective skills.

Self-assessment

It is a process by which the student gathers information about, and reflects on, his or her own learning. It is the student's own assessment of personal progress in terms of knowledge, skills, processes, or attitudes. Self-assessment leads students to a greater awareness and understanding of themselves as learners and their metacognition. The information gathered from peer and self-assessment can be used by both students as well as teachers. The strategies can be formal or informal giving ample scope for students to reflect on their learning in relation to the outcomes, and recognize ways to improve their learning.

Collaborative activities

Apart from individual activities**, c**ollaborative learning activities also provide scope for assessment. Collaborative activities are as a result of interaction between students engaged in the completion of a common task. Students work together, face-to-face and in or out of the classroom or within their school. Sometimes it may be between schools, locally or at national and international levels. Assessment activities in the collaborative node may take the form of group discussions, cooperative group work, team assignments and projects, group investigations, presentations, mixed-ability and differentiated group activities and paired tasks**.**

When collaborative activities are used for assessment purposes, it may produce a wealth of information pertaining to not only cognitive abilities of students but also those in the affective domain like attitude, team spirit, leadership qualities, empathy, compassion, cooperation and also higher order skills like problem-solving, creative thinking, critical thinking etc. These are used more and more at Senior Secondary level and in higher education.

12.6.4 Assessment in Higher Education

To keep pace with momentum for change and growth in the globalized economy of the present day, there is an urgent need to transform the existing practices of curriculum and assessment in higher education. The Government of India, through the Ministry of Education, is the controlling authority of the assessment systems and procedures. However, the Educational Boards and Councils in different states and union territories use their own strategies to assess and evaluate the learners still keeping the standard and norms of the central assessment system. Assessment is usually conducted through exams or continuous assessment taking into cognizance the knowledge or skills gained by the student within a specific field. Annual examination or the semester examination plays a pivotal role in matters of career choice, pursuit of higher education etc.

External examination: Currently much emphasis is laid on external University examination. It is held either at the end of a semester or year, In most institutes/ colleges, student assessment is still carried out as a single standardized exam It is based on this one test that the students are judged. The mark sheet and certificate becomes the entry ticket to the job industry. Since scores in these examinations are given so much priority and considered as deciding factors for employment or higher studies, the only aim of student is to score more and more marks which in turn causes undue stress and anxiety among them.

Grading System: This is followed in most higher education institutions. The mark obtained by a student is given a specific grade and grade point. The absolute grading system so followed has its limitations and do not reflect the whole picture of a student. This assessment procedure is quite ineffective, as it does not give a true picture of the potential, knowledge retention and its applicability in students.

Now- a- days, multiple assessments are making inroads in Higher Education level. The trend we witness now is to have on-the-job learning projects, presentations, case study discussions, frequent internships etc., as an approach to assessing exactly how much a student understands. Other modes of assessment administered in colleges and institutes in our country are:

- Assignments (Daily/Weekly/After end of topic)
- Quiz, self-study, seminar
- Panel discussion, case study
- Mid-term test, end-term test, Laboratory Assignment, Internship, etc.

Use of Technological interventions

Today, we witness technological advancement in all fields especially in education. The proliferation of digital devices, ICT enabled systems and gadgets are influencing classroom teaching-learning process. Technology has

the potential to revolutionize learning and evaluation methods also. Various modes of learning by integrating ICT like blended learning, synchronous learning, asynchronous learning, flipped classroom, etc. are deployed for enhancing the teaching- learning process. As schools become increasingly equipped with computers, tablets, and wireless internet access, the system of assessment is also subjected to change. Computer-based or online assessment is increasingly used along with paper-based tests and assessments. It becomes very clear that no single form of assessment is adequate in developing a comprehensive profile of the child. What is important is that the mode of assessment should match the purpose of the assessment.

Check Your Progress 2

Notes: a) Write your answers in the space provided after each item.

b) Compare your answers with the one given at the end of the unit.

1) How is the role of the teacher in assessment of learning different from assessment as learning?

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2) How does assessment contribute to enhanced learning?

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12.7 LET US SUM UP

In this unit, we have discussed the basic concepts of assessment and evaluation we have also discussed the different types of assessment and also the major differences among assessment of learning, for learning and as learning. We have also discussed the relationship between assessment and learning and the scope of assessment to enhance learning. You have also been introduced to the various methods of assessment and the tools used at different level from pre- primary to higher education. Use of technological interventions has also been explained. It is worthwhile to remember that all our attempts should be focused on improving the learning outcomes of students thereby improving the quality of education.

12.8 UNIT- END EXERCISES

1) What is Assessment? How is it beneficial?
2) Discuss the role of teacher in assessment of learning and assessment as learning.
3) Mention some of the methods used for assessment at primary and secondary level.
4) How can we integrate technology in assessment?

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12.10 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress 1

1) Some of the recent reforms are Semester system, Formative and summative assessment, Continuous and comprehensive evaluation.

2) Every child is unique. By assessing one aspect alone it is not possible to get a holistic picture. Therefore, a variety of activities needs to be considered. 'One size for all ' may not fit in.

3) Measurement comprises the observations that are expressed numerically. Evaluation covers all aspects both scholastic and co-scholastic, and includes qualitative and quantitative observations.

Check Your Progress 2

1) In assessment of learning teacher's role is central in designing, conducting and evaluating, but in assessment as leaning s/he is more of a facilitator, co-constructing knowledge and helping students to understand their metacognitive process.

2) Assessment is useful to gather valid, reliable and useful information about student learning which can used for monitoring student progress and achievement with respect to learning outcomes and also for taking appropriate measures to facilitate the students to reach the set goals.

UNIT 13 TYPES OF ASSESSMENT AND EVALUATION

Structure

13.1 Introduction

13.2 Objectives

13.3 Types of Assessment

- 13.3.1 Based on Purpose
- 13.3.2 Based on Nature of Data
- 13.3.3 Based on Domain
- 13.3.4 Based on Measuring Standard

13.4 Authentic Assessment

13.5 Performance-Based Assessment

13.6 Outcome-Based Assessment

13.7 Alternative Assessment

13.8 Continuous and Comprehensive Evaluation (CCE)

13.9 Competency Based Assessment

13.10 Peer Assessment

13.11 Assessing Individuals in Groups

13.12 Tools for Assessment

- 13.12.1 Portfolios
- 13.12.2 Rubrics
- 13.12.3 Learning Logs and Journal

13.13 Grading

13.14 Let Us Sum Up

13.15 Unit End Activities

13.16 References and Suggested Readings

13.17 Answers to Check Your Progress

13.1 INTRODUCTION

In the previous unit, we tried to brief you the concepts of measurement and evaluation. Teachers conduct different types of assessment activities to assess their students. But most of the assessment is done only on the basis of pen-paper test. Even there are different techniques of assessment, teachers are using same type of assessment for all the subjects at all levels. Through this unit, we are trying to familiarize you with some assessment techniques based on nature of data, purpose, domain, and measuring standard, etc. The unit also focuses on assessment techniques to assess different abilities and tools for assessment.

13.2 OBJECTIVES

After going through this unit, you should be able to:

- explain the types of assessment based on different criteria;
- identify different assessment techniques to assess different abilities;
- define continuous and comprehensive evaluation;
- discuss different assessment tools to assess various areas of learning; and
- describe the concept of grading.

13.3 TYPES OF ASSESSMENT

During school life, many decisions are made by teachers, principals and other concerned people about the students. The decisions are made on the basis of valid information collected on each student that helps the personnel to group the students on the basis of their excellence in different areas. Decisions can be drawn based on most relevant data which will increase the accuracy and unbiased decision.

In general, we can say that assessment is a process of gaining information about learning of a student and making value judgments on their learning progress. In order to collect details about the performances of students, we use different methods like observation, pen-paper test, projects, assignments, etc. Assessment includes qualitative and quantitative description about the learning process of students. The process of assessment determines nature and extent of student learning and development.

13.3.1 Based on Purpose

Periodic assessment of child's progress is an integral part of the teaching-learning process. Outcomes of learning should be assessed holistically. In order to maintain an honest, motivating, unique and distinct profile of a child, both scholastic and co-scholastic aspects should be given equal weightage. The assessment process can be classified according to the variety of procedures included in it. Depending on the purpose, the assessment is classified as follows:

i) Formative Assessment
ii) Summative Assessment
iii) Diagnostic Assessment

i) Formative Assessment

The purpose of Formative Assessment is to know the progress of students and teachers during the instructional process. It helps teachers and students monitor their progress in teaching- learning process. Any type of strategies and techniques like asking questions, unit test, class

test, observations, filling work-sheet, etc. can be used for formative assessment by a teacher. Continuous feedback on students' performance will help them encourage or strengthen their learning process and remove or correct their misconceptions. It is equally important in their success and failure. Based on the assessment a teacher can modify or change their instructional strategy that enhances the performance of the students. Since formative assessments are for improving the teaching-learning process, the results usually are not included in the final grade.

From the above discussion, it is clear that formative assessment is helpful to:

- diagnose and give appropriate remedy;
- provide scope for effective feedback;
- assure the active involvement of students in their learning;
- improve their teaching on the basis of the assessment results; and
- experiment various teaching-learning styles to determine what and how to teach.

ii) Summative Assessment

Summative assessment is used for assigning grade or certifying student's achievement at the end of the course or a unit. It is designed on the basis of pre-determined learning outcomes and used to check whether the students have achieved the instructional objectives or not. Teachers use different techniques for this purpose. It includes teacher made tests, standardized tests, project reports, oral tests, pen-paper test, performance of students in laboratory and various activities related to a particular subject. A teacher can record all the information from these different sources in a portfolio or some other way to summarize the performance of each student. Summative assessment aims at grade or certifying students' achievement. It also helps to review or improve suitability of instructional objectives and appropriateness of instructional strategies.

Table 13:1: Difference between Formative Assessment and Summative Assessment

Formative Assessment	Summative Assessment
Use throughout learning process to provide feedback	Use at the end of a learning process to assess learning against a benchmark or standard
It is an assessment for learning	It is an assessment of learning
Identifies gaps and misunderstandings in the learning process	Provides a numeric grade that summarizes how much a student has learned

Demonstrates evolving understanding of a topic	Gives overall results of classroom instruction
Diagnostic in nature	Evaluative in nature
Monitor student's learning	Evaluate student's learning
Aims at enhancing learning	Aims at measuring student's competency
Can assess more clearly what students have and haven't learned	No feedback on the learning process

Check Your Progress 1

Notes: a) Write your answers in the space provided after each item.

b) Compare your answers with those given at the end of the unit.

1) Differentiate between formative and summative assessments.

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iii) Diagnostic Assessment

Before starting any topic/ class, a teacher should know how much the students know about that particular topic. Ralph (1935) says *"A satisfactory diagnosis should be as specific as the desired outcomes permit and as the possibility of localization of symptoms allow, so long as the diagnosis is practicable."* If a student continuously faces learning difficulties, a detailed diagnosis is recommended. Diagnostic assessment is concerned with persistent learning difficulties. These difficulties can be in reading, writing, arithmetic or in any other subjects. If a student experience continuous failure, then teacher should understand that the student is facing learning difficulties. These problems should be analyzed and treated at the right time. A detailed and comprehensive diagnostic test can be conducted to locate the area where the student has problems. Various observation techniques also can be used for the support of diagnostic test. Services of educational, psychologists and counselors will be required for identifying serious learning disabilities. Thus, the primary function of diagnostic assessment is to locate the areas and causes of weaknesses of the students and formulate appropriate remedial actions.

Check Your Progress 2

Notes: a) Write your answers in the space provided after each item.

b) Compare your answers with those given at the end of the unit.

1) What are the different points to be considered by a teacher to prepare a diagnostic test?

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13.3.2 Based on Nature of Data

Over the years, researchers use multiple methods to collect and assess data. Data can be either quantitative or qualitative depending on what kind of information is required. Evaluation methods can be classified as qualitative and quantitative based on the nature of data obtained. One is more appropriate than the other in different situation. Both can be used in a variety of fields. Now let us reflect separately on quantitative and qualitative evaluation in detail.

Quantitative Evaluation

In quantitative evaluation, the results will be presented in numbers. Since different persons evaluate the same situation in the same way, human bias will be minimum in the process of evaluation. Using of different statistical techniques makes the results more reliable. It gives answer to the question like who, what, where, and when, etc. It effectively deals with learning outcomes related to knowledge and understanding objectives. Replication of results is easily possible in quantitative evaluation.

Qualitative Evaluation

Sometimes it becomes difficult to measure anything in number form. Evaluation based on collection and analysis of data not in number form is called qualitative evaluation. This type of evaluation gives answer to the questions 'why' and 'how'. The evaluation methods depend on the nature of the data obtained. Suppose a teacher has to give information about behavior, attitude and characteristics, s/he may use qualitative methods like observation (participant/non-participant), interviews, discussion, case studies, etc. Qualitative evaluation is more subjective as people perceive things in their own way and interpret in different ways. There are many subject areas where qualitative evaluation can be used. Therefore, it is very difficult to assure the accuracy of the results. It effectively deals with learning outcomes related to application, analysis, synthesis and evaluation.

Quantitative and qualitative evaluations are used in variety of fields. When quantitative evaluation is suited for some areas then qualitative evaluation would be better for some other areas. Sometimes both of these become equally important. Thus, according to the situation one will be more suitable than the other.

Check Your Progress 3

Notes: a) Write your answers in the space provided after each item.

b) Compare your answers with those given at the end of the unit.

1) Why is both qualitative and quantitative evaluation important?

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13.3.3 Based on Domain

Scholastic and Co-Scholastic Assessment

Education aims at all round development of a child. All round development means development in all dimensions, i.e., cognitive, affective and psychomotor. Cognitive abilities include knowledge, understanding, application, analysis, synthesis, creativity, and evaluation. These abilities are assessed under scholastic areas. Affective and psychomotor abilities comprise of life skills, co-curricular activities, attitudes and values assessed under co-scholastic areas.

Scholastic area, purely related to academic activities, is associated with different curricular subjects. Students are expected to achieve objectives of cognitive domain. It can be assessed by giving assignments, projects, observation, rating scale, written examinations, oral tests, debates, elocution, group discussion, etc.

The progress of achieving affective and psychomotor objectives is related to learner's life skills, attitude, interest, values, physical and health is termed as co-scholastic assessment. Observation, school interview, club activity and portfolio analysis are some of the techniques used for this purpose. Assessment of scholastic and co-scholastic areas help in developing the ability of each child and enable them to apply these abilities in real life situations.

Check Your Progress 4

Notes: a) Write your answers in the space provided after each item.

b) Compare your answers with those given at the end of the unit.

1) What are the different aspects of assessment in scholastic and co-scholastic areas?

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13.3.4 Based on Measuring Standard

Based on measuring standard, assessment can be classified as norm-referenced assessment and criterion-referenced assessment.

Norm- Referenced Assessment

The results obtained from different measurement are interpreted based on some standard already set. Norm-referenced assessment is designed to assess relative performance of each individual learner on the basis of the group in which the learner belongs. From this, we will get an idea of where the particular student stands. Each learner is compared with the members of the group. It does not give any idea of how far instructional objectives are attained by the individual learner. (e.g. Krishna did geometrical construction 80% better than that of his class students). This type of assessment is done for the purpose of ranking or ordering students in a class.

Criterion - Referenced Assessment

"Criterion-referenced assessment is deliberately constructed to yield measurements that are directly interpretable in terms of specified performance standards" (Robert Glaser).

In the case of criterion-referenced assessment, the performance of the learner is done without comparing others. Each student is assessed on the basis of pre-assigned criteria regardless to the relative performance of their group. It is carried out to determine the ability of the learner to perform a specific task or activity as per the prescribed situation or context. On the basis of ability, a minimum standard is set and there is no numerical marking. This type of assessment is used in competence-based courses and in the vocational assessment (e.g., Krishna did 80% of geometrical construction).

Self -Referenced (Ipsative) Assessment

In many cases, it is important to know whether the learners have made any improvement in their performance. The current behavior pattern compared with the earlier behavior of a learner is called self-referenced (ipsative)

assessment. The learners are compared with their own earlier performance. It can be done in different ways such as to engage the learner in the same test before and after undertaking a course or observe the progress in the overall (average) grade scores throughout the entire course. Improvement could be assessed for a particular subject as well as the whole course.

Check Your Progress 5

Notes: a) Write your answers in the space provided after each item.

b) Compare your answers with those given at the end of the unit.

1) Differentiate between criterion-referenced and norm-referenced assessments.

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2) As a teacher, which kind of assessment do you prefer? Why?

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13.4 AUTHENTIC ASSESSMENT

Authentic assessment is a form of performance-based assessment which measures meaningful, important and valuable cognitive achievements. Learner must be given opportunity to construct knowledge, manipulate different objects, experience and experiment beyond the classroom or school. It stresses contextualized tasks in real world settings. That means it involves methods or techniques for assessing achievement of students through activities requiring application of acquired knowledge and skills.

If a teacher desired to assess communication skill in a foreign language, it should involve the interaction of the student with foreigners of that country (Chinese, German, etc.), but as it is not possible in a typical classroom situation a simulated spoken interaction with teachers or between students can be observed to assess their communication skill. Since authenticity is a matter of degree, it is advised to give realistic contents to students which helps teacher assess whether the learner can solve problems in different situations.

13.5 PERFORMANCE - BASED ASSESSMENT

The meaning of this particular concept is revealed in the name itself, i.e. the assessment is being made based on performance. The performance is assessed by measuring to what extent or how the learner applies their knowledge and skills that they learned from a unit or units during the classroom instruction. Measurement of the useful and necessary learning outcomes are assessed on the basis of performance only. For example, if you want to assess student's speaking skill you cannot do it through pen-paper test.

Performance based assessment helps a teacher check the effectiveness of both process and product of a task. Some of the chief attributes of the performance like originality, problem formulation, manipulation of ideas, etc. cannot be assessed by using only pen-paper test.

13.6 OUTCOME-BASED ASSESSMENT

Many of us ask a number of questions regarding teaching-learning process. As everybody knows assessment is a process which gives answer to the questions like "How effective was the method used? To what extent was a program successful? "Does the new strategy make any changes?" etc. These questions are related to the outcomes of a method/strategy and a programme.

Outcome-based assessment is a procedural way of assessment. It assesses to what degree the education system has achieved the pre-designed (intended) result. Outcomes can be in many forms. It depends on how the teachers/ stakeholders formulate the desirable changes in the learners at the end of a programme. It can be in the form of changes in skills, knowledge, attitude, behavior, etc.

For teachers OBA means:

- Concentrate on the key factors of curriculum;
- Making sure that all the activities inside and outside the classroom match with pre-determined aims;
- Creating situations for demonstration;
- Balancing the gap between the upper and lower grade levels; and

Let us see what it means for a student:

- Know what are the expectations of teachers;
- Be ready to demonstrate what they know; and
- Try to achieve the minimum.

13.7 ALTERNATIVE ASSESSMENT

All the existing assessment techniques that we use normally will give an idea of what students learned so far. It focuses on continuous progress of an individual student. Alternative assessment goes beyond the knowledge acquired by learners and gives information about to what extent they are able to apply their knowledge. Alternative forms of assessment allow seeing what the learner can and cannot do rather than what they do or do not know. It focuses on applied proficiency, problem solving, and reflection. Instead of giving factual knowledge to a specific question, it demands the learner to make judgment regarding what knowledge and skills they need to solve a specific problem.

Alternate assessment includes written and performance-based tests which enable to measure how the knowledge they have attained rather than 'what' they acquired. Examples of alternate assessments are debate, case analysis, reflective diary, portfolio, and multimedia presentation. Alternate assessment is identified as a formative assessment tool since it gives feedback to the students' ongoing progress.

Check Your Progress 6

Notes: a) Write your answers in the space provided after each item.

b) Compare your answers with those given at the end of the Unit.

1) Cite some examples for alternative assessment.

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13.8 CONTINUOUS AND COMPREHENSIVE EVALUATION (CCE)

The scheme of Continuous and Comprehensive Evaluation was introduced by CBSE in 2010 with an aim of making children productive, responsible and useful citizens of a society. It was formulated to reduce the burden of board exams and make students learn stress free. CCE is exclusively a school-based evaluation targeting holistic development of students. Holistic development ensures not only the development of child's cognitive abilities, but also gives equal importance to co-cognitive abilities.

In Continuous and Comprehensive Evaluation, the word 'continuous' means the regularity, periodicity in the evaluation process. Students development is a continuous process and progress on various aspects should be assured from

the beginning and continue through the entire span of academic session. Number of unit tests, formal and informal way of assessment during classroom instruction, regularity of assessment, identification of strengths and weaknesses, diagnosis of learning problems, suggestions of preventive measures and testing and retesting will help teachers and students for self-evaluation.

The word "comprehensive" means evaluation of student consists of both scholastic and co-scholastic areas. Scholastic area includes subject specific area in the cognitive domain like remember, understand, apply, analyze, evaluate, and create. Co-scholastic area comprises affective and psychomotor abilities like life-skills, attitudes, habits, interest, values and co-curricular activities, etc. Thus, the scheme emphasizes on holistic learning rather than testing. Evaluation is done for learning enhancement. It made a transformation to produce citizens with good health, appropriate attitude, different practical skills, and with desirable qualities along with academic excellence.

What we learned about CCE can be summarized as:

- CCE comprised of two aspects 'continuous' and 'comprehensive'.
- 'Continuous' aspect has two components 'continual' and 'periodicity'. It means evaluation takes place during classroom instruction to diagnose learning gaps and weaknesses. It is mainly for improvement in learning. Teachers can use different techniques like short time written test, oral tests, quizzes, observation, discussions, assignment, projects, peer group discussions, etc.
- This informal assessment is called formative assessment.
- The term 'comprehensive' refers to evaluation based on the performance of learners in both scholastic and co-scholastic areas.
- Performance in curricular subjects (cognitive abilities) is evaluated under scholastic area and affective, psychomotor abilities are evaluated under co-scholastic area.
- One academic year is divided into two terms. Two formative evaluations and one summative evaluation are carried out in one term. Formative evaluations are conducted during classroom instruction with remedial measures. At the end of each term, there will be one summative evaluation.
- Marks will be converted into grades and each formative and summative assessments are given appropriate weightage.

Check Your Progress 7

Notes: a) Write your answers in the space provided after each item.

b) Compare your answers with those given at the end of the Unit.

1) 'Evaluation should be continuous'. Comment.

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2) What does the word 'comprehensive' mean in CCE?

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13.9 COMPETENCY BASED ASSESSMENT

Assessing learner's performance based on some predetermined competency framework is called competency-based assessment. Well-defined competencies and its behavioural indicators are the preliminary condition for this type of assessment. Competency framework is bounded with long- term educational goals and its vision and mission. These competencies should be interpreted and contextualized according to the level of the learners. Let us consider an example of a reality show. In a reality show a minimum group of participants are competing for a period of time to become the winner. All the competitors are selected as per some basic skills. At each level of competition, one or two will be eliminated on the basis of their performance. This will be continued till one becomes winner.

The main advantage of CBA is that it gives opportunity to each learner to learn new things from experts. CBA is trying to find out whether a person is able to do a task or group of tasks and how effectively they can do. Thus, it is an ongoing & learning process which includes continuous construction of knowledge and skills, assessment, learning and re-assessment.

13.10 PEER ASSESSMENT

A student judging their peers' performance is termed as peer assessment. It can be used as a collaborative learning technique because students not only give feedback but also give suggestions for further improvement in their work. It helps students improve the quality of their performance. Before applying the peer assessment, some criteria should be framed on the basis of object of assessment, product, form of assessment (formation/ summative), scheme of assessment (marking/grading) and training of assessors. Effective use of peer assessment helps teachers save time and it can be used for

classroom instruction. Students get quick feedback and it helps learners increase their performance level. Everybody gets a chance to correct his or her mistakes that helps in getting higher grade in teacher assessment. The following are some of the statements which can be considered as the assessment criteria.

- You consider you are delighted with the presence of a particular individual.
- Neutral reaction.
- S/he is not your first choice.
- Last choice.
- Never have you liked to work with that individual.

13.11 ASSESSING INDIVIDUALS IN GROUP

Group work has become an inevitable part of our educational programme. It can be in the form of an assignment, project work or group discussion, presentation, collage, poster, etc. Assessment is done on the basis of how the groups are performed. In group work the final product is assessed, not the process. It is a debatable issue that how we judge an individual's performance in a group work. Final grade/marks we gave to the group actually reflect the result of teamwork. This is the time to think whether this assessment does justice to the development of an individual who participated in the group work. The grade obtained by the group indicated that each individual's grade is identical. By getting identical scores it cannot be assured that each member of the team contributed equally towards the work. This will benefit the free riders from an excessive worker in the group. Therefore, even if it is a group work, each individual should be assessed in a group and contributions of each individual should be identified.

Peer assessment combined with teacher assessment is found to be effective technique to assess individuals in a group work. For this, the participants should be cleared about well-defined criteria/rubrics. It will help in minimizing bias in evaluation.

Following are some of the points to be kept in mind by the teachers while doing group work assessment:

- Frame a task according to the capacity of the group;
- Size of the group (Minimum number and minimum free riders);
- Specific learning objectives with assessment criteria;
- Proper guidance by the teacher (Opinion and advice of skilled and experienced experts can also be provided if it is necessary);
- Periodical/formative assessment for improvement;
- Differentiate / highlight individual performance to discourage free rider student;

- Consider student feedback; and
- Behaviour/attitude, attendance and creativity of individual participants.

Table 13.2: A blank format for peer assessment

Overall impression about the individual:

Indicators	Outstanding (5)	Good (4)	Average (3)	Bears Some Importance (2)	Makes no Difference in the Group (1)
1. Quantity of work done					
2. Quality of work					
3. Attitude					
4. Creativity					
5. Technical control					

Deep and vast knowledge about the criteria for assessment make each learner prepare their task accordingly.

Check Your Progress 8

Notes: a) Write your answers in the space given below.

b) Compare your answers with those given at the end of the Unit.

1) Explain how peer assessment helps to assess individuals in a group work.

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13.12 TOOLS FOR ASSESSMENT

Well-planned and systematic collections of students' works into portfolios, learning journals and learning logs serve as various assessment tools which can be used on any level of teaching- learning process. The value of each assessment tool depends on the purpose and nature of the task to be assessed. A clear and well-defined criteria or guidelines make the assessment more transparent and unbiased. Teachers can use these in their daily classroom instruction as well as to assess the day-to-day progress of their learners.

13.12.1 Portfolios

Portfolios were used as an assessment tool since 1990. In earlier days, it was used by visual and performing artists to show their skill abilities in the field. Nowadays portfolio has become a prominent tool to assess students' work. Many teachers use portfolios in their respective curriculum areas. Portfolio is a systemic and well-planned collection of student works which serve for various instructional and assessment purpose. It can provide information about student's performance during a particular academic period related to any subject. Care should be taken to include best pieces of work according to the purpose, guidelines and criteria of assessment to get maximum value. It can be a basis to provide information about a student's short span of academic year or more than that. Selected significant samples of work can serve as a three-way communication among teachers, students and parents. It gives clear-cut evidence of their child's effort and progress of achievement.

A portfolio includes:

a) Well stated objectives

b) Criteria to be used

c) Guideline for inclusion of materials

d) Wisely selected pieces of work

e) Evidence of students' role in selection of content and self assessment

Based on useability, portfolios are distinguished mainly as

1) Working Portfolio

It contains works in progress as well as finished work. Working portfolio works as a 'holding tank' because it is a project and it is 'in the works'. This is the primary stage before display or assessment. It is prepared over a structured content area with a major purpose of diagnosis. It intended to demonstrate current accomplishments and progress that is useful for formative assessment.

2) Best works (Display Showcase) Portfolio

This is the documentation of the best pieces of works of students. Students experience the highest-level achievement by exhibiting their significant creations. Contents in this portfolio usually include completed products that are useful for summative evaluation.

3) Assessment portfolio

Assessment portfolio focuses on what a student has learned. It is used to elicit mastery in any subject/ curriculum area. Contents of the portfolio collection may range any period of time.

13.12.2 Rubrics

Rubric is a scoring tool which includes set of criteria to assess students' work. It contains performance expectations for a piece of work. The whole

work will be divided into different components and each component is clearly described according to the characteristics of the work. It is an assessment process based on performance which reflects process skills, contents skills, working habit and learning outcomes. It can be used for assessing any kind of performance because rubrics are very comprehensive in nature.

Different components in the rubrics enable teachers to recognize the strength and weaknesses of learners formatively. It makes the expectations of the assessor clear to the students and also helps the students meet these expectations successfully. It is very easy for the students to channelize their efforts accordingly after the feedback from the instructors.

Rubrics are comprised of four components:

1) A description of the assignment/assessment;
2) Criteria that will be assessed;
3) Descriptions of what is expected for each assignment component; and
4) Performance levels indicating mastering of various components.

On the basis of purpose of assessment, mainly two types of rubrics are used.

i) Holistic rubrics

Holistic rubric is used when there is only one attribute to be assessed. It gives a single rating score on overall performance of the learner. Quick scoring will be done without any detailed feedback. When there is not a single right answer or opinion, overall performance or quality and proficiency of the work is assessed by using holistic rubrics.

ii) **Analytic rubrics**

Analytic rubric is used when different attributes are to be assessed. Scores will be given for each criterion with detailed feedback. A carefully designed rubric can offer a number of benefits to instructors and students.

A sample of holistic, analytic and blank rubrics are given in table 13.3, 13.4 and 13.5.

Table 13.3: A Sample of Holistic Rubric

(Group Project Work)

Criteria	Exemplary (5)	Advanced (4)	Proficient (3)	Developing (2)	Limited (1)
Overall participation of the individual					

Table 13.4: A Sample of Analytic Rubric

(Assessing Prose Reading Skill in English)

Criteria	Performance level			
	Attempted (1)	**Acceptable (2)**	**Admirable (3)**	**Awesome (4)**
Decoding				
Fluency				
Vocabulary				
Sentence Construction and Cohesion				
Pronunciation				

Table 13.5: A Sample of Blank Rubric

Criteria	Performance level			
	Level-1 (1)	**Level-2 (2)**	**Level-3 (3)**	**Level-4 (4)**
C1				
C2				
C3				
C4				
C5				

13.12.3 Learning Logs and Journals

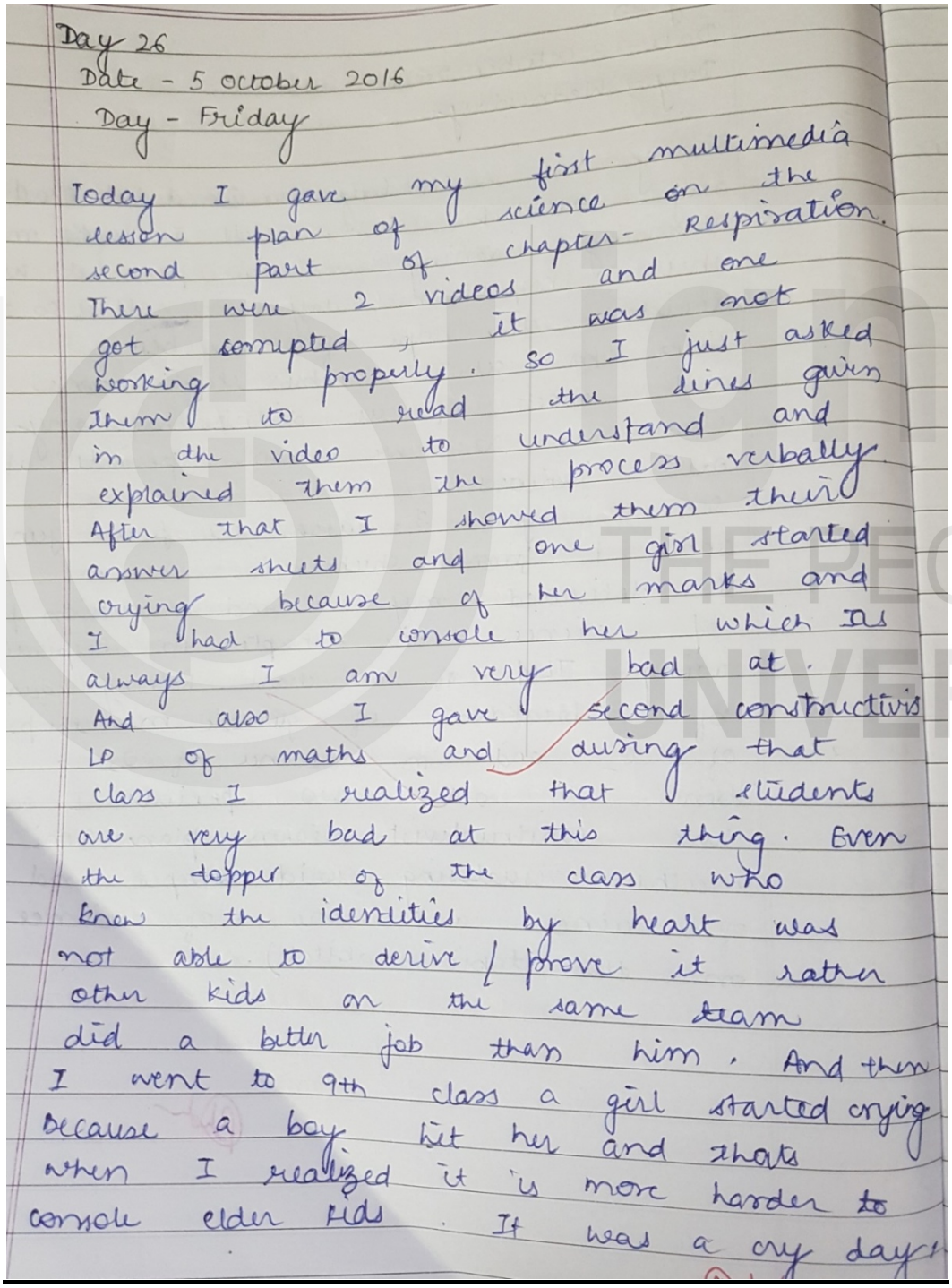
Learning logs are a personalized learning resource for children. In the learning logs, the children record their response to learning challenges set by their teacher. Each log is a unique record of the child's thinking and learning (Wikipedia).

Learning journals is a collection of notes, observations, thoughts and other relevant materials built-up over a period of time and usually accompanying a period of study, it is personal and will reflect your personality and expressions (Wikipedia).

Learning logs and journals are the record of personal experiences of learners during the teaching- learning process. Learning logs and journals give emphasis on personal experience, reflections and reactions about what they have learned. It is used as a medium of reflection. Learning logs focus on recording the step by step activities accompanied with questions and ideas. It will be helpful to the learners for self-assessment by correcting their mistakes. Writing learning logs and journals help the learners to strengthen the quality of their learning and integrate theory and practical.

Importance of writing learning logs and journals:

- It is a record of experiences. These experiences facilitate learning.
- Developing problem-solving skills, questioning attitude and critical thinking.
- Enhancing inter-cognition and reflection.
- Improving the ability of self-expression and self-empowerment.
- It works as a means of communication between one learner and the other.



Day 26
Date - 5 October 2016
Day - Friday

Today I gave my first multimedia design plan of science on the second part of chapter- Respiration. There were 2 videos and one got corrupted, it was not working properly. So I just asked them to read the lines given in the video to understand and explained them the process verbally. After that I showed them their answer sheets and one girl started crying because of her marks and I had to console her which is always I am very bad at. And also I gave second constructivis LP of maths and during that class I realized that students are very bad at this thing. Even the topper of the class who know the identities by heart was not able to derive / prove it rather other kids on the same team did a better job than him. And then I went to 9th class a girl started crying because a boy hit her and thats when I realized it is more harder to console elder kids. It was a cry day.

Fig. 13.1: Format of journal writing

Check Your Progress 9

Notes: a) Write your answers in the space provided after each item.

b) Compare your answers with those given at the end of the unit.

1) Write any two purposes that might be served by a portfolio.

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13.13 GRADING

Grades are standardized measurement of varying levels of comprehension within a subject area. Grades can be assigned in different ways such as a letter (A,B,C,D, etc.), in percentage, as a scale (5.0-1.0), as description (excellent, very good, good, average, satisfactory, needs improvement, etc.). Most of the time it was found that evaluation stressed only cognitive aspects of learning and numerical marking. Therefore, National Curriculum Framework (NCF) 2005 introduced grading system in schools to reduce examination pressure and negative assumptions about marking 0-100.

Grading is a system of assigning a degree using symbols of measurement of achievement of students. Care will be taken to define each symbols used uniformly and precisely so that all the concerned people can understand the meaning of each symbol communicate meaningfully. The grading pattern will be different for different departments/institutions. As far as school and educational institutions are concerned, a general pattern of grading system can be adopted. The grading pattern followed by CBSE for scholastic achievement is given in table 13.6.

Table 13.6: Grading pattern by CBSE for Scholastic Achievement

Marks range	Grade	Grade Point
91-100	A1	10
81-90	A2	9
71-80	B1	8
61-70	B2	7
51-60	C1	6
41-50	C2	5
31-40	D	4
21-32	E1	Fail
00-20	E2	Fail

Suppose we specify a grade to a particular student. What function does it do?

i) Compares student's performance with some absolute standard or a relative standard of the specified group already defined.

ii) Quality of performance on the basis of effort and achievement.

iii) Quality of knowledge or learning attained at the end of any instructional process.

Check Your Progress 10

Notes: a) Write your answers in the space provided after each item.

b) Compare your answers with those given at the end of the Unit.

1) Mention some of the academic areas where grading is better than marking for assessment.

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13.14 LET US SUM UP

In this Unit, you have studied the basic concepts of assessment and evaluation. Assessments can be classified on different criteria. Based on purpose, assessments can be categorized as formative, summative and diagnostic. Nature of data is the basis for qualitative and quantitative evaluation. Scholastic and co- scholastic abilities should be assessed to get a complete profile of a child. In self-referenced assessment, the learner compared his/her own present performance with earlier performance. Performance based assessment helps a teacher to check the effectiveness of both process and product of a task. It assesses to what degree the education system has achieved the pre-designed (intended) result. When you deal with alternative assessment, it goes beyond the knowledge acquired by learners and gives information about to what extend they are able to apply their knowledge. CCE comprised of two aspects 'continuous' and 'comprehensive'. CBA is trying to find out whether a person is able to do a task or group of tasks and how effectively they can do. When students judge their peers' performance, it is termed as peer assessment. Peer assessment combined with teacher assessment is found to be effective technique to assess individuals in a group work. Well-planned and systematic collections of students' works as portfolios, learning journals and learning logs can be used on any level of teaching- learning process. By coming to the end, you have

come across with grading which is a system of assigning a grade using symbols of measurement of achievement of students.

13.15 UNIT-END ACTIVITIES

1) Construct a scoring rubric for an essay question in any subject of your choice.
2) Classify each of the following into formative, summative and diagnostic assessment:
   a) A term end examination.
   b) A class test to locate difficult area in solving linear equations.
   c) Conducting science quiz by a science teacher during the instructional process.
   d) Preparation of a portfolio at the end of a course.
   e) Teacher conducts reading test to find out errors in reading skills.
   f) Giving surprise test on any topic/unit.
3) If possible, try to get two or more portfolios used by students during their course with guidelines, purpose, scoring criteria, given by their teacher educators(student self-evaluation and reflections are also recommended). Analyze and discuss with colleagues about strengths and weaknesses of these portfolios and suggest changes if required.
4) Imagine that pen-paper tests are going to be abolished at all educational levels, discuss its direct and indirect consequences on students, and teachers.

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13.17 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress 1

1) Refer table 13.1

Check Your Progress 2

1) Areas of learning difficulties.

   Different learning points

   Time available

   Remedial techniques

Check Your Progress 3

1) Quantitative and qualitative evaluations are used according to the nature of data available. To assess different aspects of learning and development both are important.

Check Your Progress 4

1) Scholastic assessment-Assessing cognitive abilities which includes knowledge, understanding, application, analysis, synthesis, evaluation, and creativity objectives. It is related to academic activities associated with different curricular subjects.

   Co-scholastic assessment – Assessing affective and psychomotor abilities include lifeskills, co-curricular activities, attitudes and values.

Check Your Progress 5

1) Norm referenced Criterion referenced

✓ Covers large domain of learning tasks. ✓ Emphasizes discrimination among individuals in terms of relative level of learning. ✓ Interpretation requires a clearly defined group.	✓ Focuses on a delimited domain of learning tasks. ✓ Emphasizes description of what learning tasks individuals can and cannot perform. ✓ Interpretation requires a clearly defined and delimited achievement domain.

2) Write your own argument.

Check Your Progress 6

1) Case analysis, debates, projects etc.

Check Your Progress 7

1) Learner's development is continuous and progress on various aspects should be assessed from the beginning and continue throughout the entire span of academic session.

2) Comprehensive evaluation means evaluation of both scholastic and co-scholastic areas. All the domains are to be assessed.

Check Your Progress 8

1) A well-designed peer assessment criterion removes the bias in the assessment process and reduces the number of free riders.

Check Your Progress 9

a) Students assessment and instruction.

b) To display current accomplishments and demonstrate progress.

Check Your Progress 10

1) Manipulative skills, social skills, socio-emotional aspects, and individual and group projects.

UNIT 14 ASSESSING ABILITIES

Structure

14.1 Introduction

14.2 Objectives

14.3 Difference between Ability and Skill

14.4 Types of Abilities

14.4.1 Cognitive Abilities

14.4.2 Non-Cognitive Abilities

14.5 Why to Assess Non-Cognitive Skills/Abilities?

14.6 Assessing Aptitude

14.7 Assessing Attitudes

14.8 Assessing Personality

14.8.1 Purpose of Personality Assessment

14.8.2 Tools for Assessing Personality

14.9 Assessing Social Skills

14.10 Let Us Sum Up

14.11 Unit-End Exercises

14.12 References and Suggested Readings

14.13 Answers to Check Your Progress

14.1 INTRODUCTION

Assessment is an integral part of teaching-learning process. It can be described as a pedagogical behavior in which knowing and understanding of learners is a constant feature. Having read about the basics of assessment in Unit 12, you might have understood the meaning of assessment. From Unit 13, you might have acquainted with various types of tools used in assessing students. The process of assessment is meaningful when the purpose, modes and effect of it is reflected on the learning outcomes of students. Educational institutions are considered as primary institutions to nurture cognitive and non-cognitive abilities among learners. Therefore, assessing social and personal development of students besides cognitive abilities is essential. Social and personal developments play a major role in fostering interaction among students and between students and teachers that help in shaping their behaviours, attitudes, and personality traits. You know that teachers spent a vast amount of time in assessing cognitive abilities. On the other hand, they may feel uneasiness in assessing non-cognitive abilities. This unit provides extensive information on how to assess different abilities. In this Unit, you will come to know the various cognitive and non-cognitive abilities included in each task. This Unit will also make you aware about the need to assess

non-cognitive abilities. Our discussion then turned to a description of assessing different non-cognitive abilities such as aptitude, attitudes, personality traits, and social skills.

14.2 OBJECTIVES

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

- define the term ability;
- explain the differences between ability and skill;
- classify the types of abilities;
- describe the need to assess non-cognitive skills;
- explain the why and how of assessing aptitude and attitudes;
- explore the methods and techniques to assess personality; and
- elaborate the need to assess social skills;

14.3 DIFFERENCE BETWEEN ABILITY AND SKILL

Read the following case:

Case 1

A teacher observed that children of Class 1 are collecting objects and putting them in different cardboard boxes during their free time. There are various boxes containing pencils, pens, sharpener, erasers, books etc. The different boxes are arranged in a way as if it resembles a shop exclusively for kids.

While going through the above case, the following questions are pertinent to ponder over:

What do we understand from the activity of children?

Why do they collect and arrange the objects similar to a shop?

What are the abilities possessed by children in performing this task?

The above case illustrates an example of how a teacher is able to identify children's interest in demonstrating a real shop experience in a contrived setting. We can assume that the teacher might teach about the term 'shop' in classroom. After understanding the settings of a shop, the children themselves try to optimize opportunities to demonstrate their learning. The abilities that children possess in performing the task are interest, positive attitude and ability to express through a demonstration. How do we perceive the activity of children in case 1? Is it the ability or skill of children? This question leads us to think about the terms 'ability' and 'skill'. Are these terms alike or have any differences? You may also sometimes face difficulty to differentiate these two terms precisely. Though they seem to be the same but in real sense they are different.

A **skill** is the learned ability to perform an action with determined results with good execution often within a given amount of time, energy, or both (https://en.wikipedia.org/wiki/Skill). **Ability**, on the other hand, is enduring attributes of an individual that influence his/her performance. Ability is the common make up of an individual that is inherited. Skills help an individual to perform a task at a higher standard. We may say that they are more goal-oriented. Conversely, abilities are more stable and enduring than skills. It is significant to note that abilities are core to bring out the skills of an individual. Moreover, one's physical attribute is directly linked to the abilities. Learning style describe your preference to learn and interact with information. By knowing your preferred learning style helps you to develop the skills to be an effective learner. The table 14.1 displays the difference between ability and skill.

Table 14.1: Difference between Ability and Skill

Ability	Skill
1. Abilities are inherited.	1. Skills are learned.
2. Abilities may not necessarily lead to higher level of performance.	2. Skills lead to higher level of performance.
3. Abilities are much stable and enduring.	3. Skills are not much stable and enduring.
4. Abilities cannot be acquired through training.	4. Skills can be acquired through training.
5. Abilities can be cognitive, perceptual and psychomotor.	5. Skills can be cognitive, perceptual and psychomotor.

Having understood the differences between ability and skill from the above table, you might be eager to know whether both ability and skill are necessary in performing a task. Let us try to understand the different abilities and skills needed in doing a task.

Read the following case:

Case 2

Mathew has taken admission for Class V in a new school. His school uses a spiral math curriculum, in which students must discover and explain the process they use to solve problems. He faces difficulty in using the basic whole number processes such as addition, subtraction, multiplication, and simple division. Moreover, he fails in doing fractions and decimals. Though his teacher and peers assist and guide him in solving the basic number problem, Mathew couldn't make any noticeable improvement.

After reading the above case, the following question you might have developed in your mind:

What are the abilities and skills Mathew lack in solving the basic number problem?

Some of us might have faced difficulty like Mathew in solving mathematical problems while we were at school. Let us analyze the various skills and abilities needed in solving mathematical problems. The table 14.2 classifies the various skills and abilities that Mathew should acquire in solving the basic number problem.

Table 14.2: Skills and Abilities needed in Solving Basic Number Problem

Skills	Abilities
1. Numeracy skills- ability to use, interpret and communicate mathematical information to solve real-world problems 2. Skill to recognize numerals 3. Skill to calculate problem 4. Skill to understand the relationship between numbers 5. Skill to interpret mathematical information	1. Number Facility: Ability to rapidly and accurately manipulate and deal with numbers, ability to count verbally. 2. Manage time (rapidity)-Ability to solve problems within the stipulated time. 3. Information Ordering — The ability to arrange things or actions in a certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, pictures, mathematical operations)

From the table 14.2, you might have understood that ability is a part of skill. Without having the ability, one cannot attain the skills. We may conclude that skill is a composite of abilities, techniques and knowledge. From the table 14.1 you may notice that both abilities and skills can be cognitive, perceptual and psychomotor. Let us elaborate this statement on the basis of Case 2. For recognizing numerals and finding the relationship between numbers, Mathew uses his thinking power which comes under cognitive criterion. Next, he has to calculate the problem where the importance of psychomotor criterion is highlighted. After calculating, he has to interpret the mathematical information which denotes the perceptual criterion. If Mathew has the inherent ability to recognize numerals and interpret the information, this does not imply that he is going to become a skilled mathematician. For becoming a skilled mathematician, he needs training.

Let us discuss another illustration to differentiate the terms ability and skill. Suppose a teacher wants to measure the attending skill of a learner. Five abilities are included in attention. They are the following:

i) ability to focus

ii) ability to sustain focus

iii) ability to alternate or coordinate attention

iv) ability to discriminate

v) ability to divide attention to have multiple thoughts

Thus we have seen that ability to coordinate attention alone will not lead to a skill. When all the five abilities are combined together, the output is attending skill. Let us move on to another illustration.

We know that intelligence consists of many different skills and abilities. Intellectual abilities can be treated as groups of related skills such as memory or spatial ability organized into hypothetical constructs known as primary mental abilities. In turn, related groups of primary mental abilities can be clustered into broader skills called secondary mental abilities. Horn (1982) had suggested five primary mental abilities as listed below:

- Number: the basic skills, underlying our mathematical reasoning;
- Word fluency: how easily we produce verbal descriptions of things;
- Verbal meaning: our vocabulary ability;
- Inductive reasoning: our ability to extrapolate from particular facts to general concepts; and
- Spatial orientation: our ability to reason in the three-dimensional world.

Thus from the above illustrations, we have examine that all skills contain abilities. But ability alone is not a skill. Having understood the difference between ability and skill**,** let us now attempt to learn about **t**he types of abilities.

Check Your Progress 1

Notes: (a) Write your answers in the space provided after each item.

(b) Compare your answers with those given at the end of the unit.

1) Differentiate between skill and ability.

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14.4 TYPES OF ABILITIES

We know that in the 21st century holistic development of a learner has become more significant than in the last century. What do we mean by holistic development? Holistic development means the development of intellectual, mental, physical, emotional, and social abilities in a learner so that s/he is able to face the demands of everyday life. These abilities are essential to succeed in their career too. A holistic approach to education facilitates the total development of a child by providing him/her the positive

learning environment where the learner develops self-concept, self-esteem, sense of worth and self-identity apart from academic achievement. Abilities can be classified into two i.e. cognitive abilities and non-cognitive abilities as shown in figure 14.1.

Fig. 14.1: Classification of Abilities

In the forthcoming sub-sections, we will explore the cognitive and non-cognitive abilities in detail.

14.4.1 Cognitive Abilities

You may agree with us that for performing any task cognitive and non-cognitive abilities are essential. What do we mean by cognitive abilities? Cognitive abilities are associated with an individual's knowledge and intelligence. It involves conscious intellectual effort, such as thinking, reasoning, or remembering. Or we may say that cognitive abilities are the abilities to think and process information, and to apply that information. The assessment of language competence should include evaluation of a student's ability to process, both in comprehension and in expression, language in a spoken and written format. From figure 14.2, you will understand the different types of **cognitive abilities** of an individual.

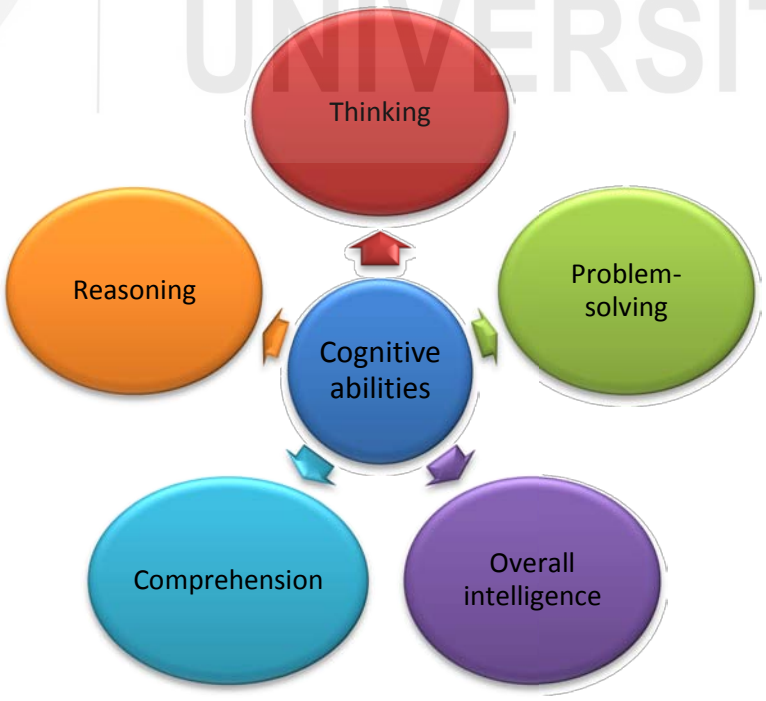

Fig.14.2: Different types of Cognitive Abilities

The 21st century learning skills consists of 4 C's such as critical thinking, creative thinking, communicating, and collaborating. These skills help students learn, and so they are importance to success in education and beyond. Let us try to have a deeper understanding about cognitive abilities with the illustration of reasoning which is a component of critical thinking (fig.14.3).

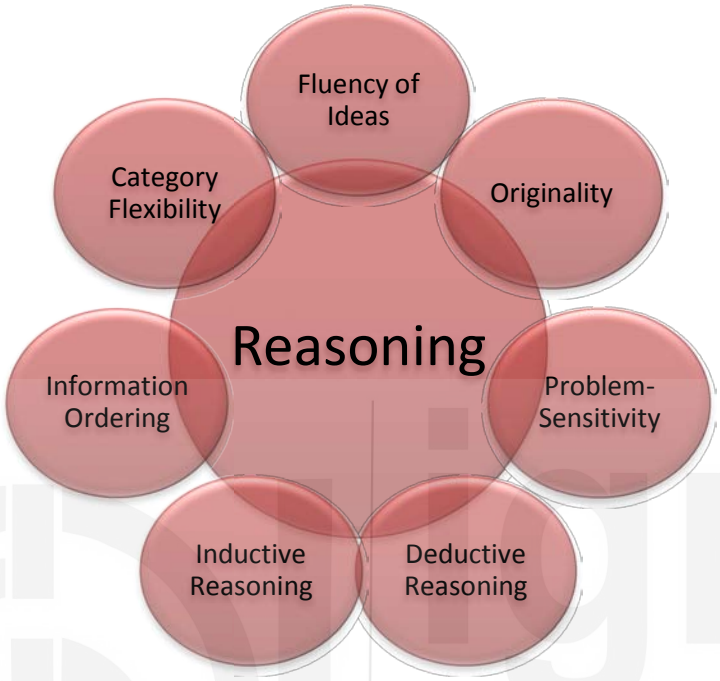

Fig.14.3: Cognitive Abilities in Reasoning

You know that reasoning is an ability that helps the manipulation of ideas in critical thinking. The sub-components are the following:

- *Fluency of Ideas* - *The ability to come up with multiple ideas.*
- *Originality* - *The ability to come up with novel idea.*
- *Problem Sensitivity* - *The ability to recognize a problem.*
- *Deductive Reasoning* - *The ability to apply general rules to specific problems.*
- *Inductive Reasoning* - *The ability to combine different information to generate conclusion.*
- *Information Ordering* - *The ability to arrange things or actions in a certain order based on rules.*
- *Category Flexibility* - *The ability to combine or group things in different manner.*

When you examine the components of reasoning, you might have noticed that information ordering and category flexibility come under both cognitive and non-cognitive abilities. Let us now turn our attention to **non-cognitive abilities**.

14.4.2 Non-Cognitive Abilities

You know very well that in the present examination system, we give more importance to cognitive abilities. Assessing non-cognitive abilities is equally important in a classroom that follows constructivist approach. It is an undeniable fact that each task contains both cognitive and non-cognitive abilities. Therefore, we cannot categorize cognitive and non-cognitive abilities in water-tight compartments. Defining non-cognitive ability is not an easy task. Non-cognitive abilities are associated with the personality, temperament, interest and attitudes that contribute to the competencies of an individual. They may also involve intellect but more indirectly. The affective and psychomotor domains come under the non-cognitive abilities. You are aware that non-cognitive factors include affective, personal, and social variables that predict the performance of an individual; for examples, self-identity, emotional intelligence, cooperativeness, sense of responsibility, and conscientiousness. You will get clear notion of this term with the help of the description of spatial ability as given below:

Spatial Abilities *mean the abilities related to the manipulation and organization of spatial information. It has two categories such as spatial orientation and visualization.*

Spatial Orientation *is the ability to know your location in relation to the environment.*

Visualization *means the ability to imagine how something will appear when its parts are moved or rearranged.*

To have more conceptual understanding about non-cognitive abilities, let us take the concept of 'Social and Emotional Skills.' It refers to one's abilities to regulate thoughts, emotions and behaviour. In this skill, the focus is upon how individuals manage their emotions, perceive themselves and interact with others, instead of their ability to process information. Social and emotional skills measure the ability of individuals to adjust with the environment and the way they achieve in their lives. The development of these skills is essential in every aspect of life, irrespective of individual and social levels. You may agree with us that all places are considered as learning places, so the relevance of this skill extends to wider communities and societies collectively. The ability of citizens to adapt, be resourceful, respect and adjust with others and to take responsibility personally and collectively is more and more becoming the totem of a learning society. Now let us analyze the categories of social and emotional skills-The Big Five Model which is arranged hierarchically and developed by Organization for Economic Co-operation and Development **(OECD)**:

The broad categories of the Big Five are:

- *openness to experience (open-mindedness)*
- *conscientiousness (task performance)*
- *emotional stability (emotional regulation)*
- *extraversion (engaging with others)*
- *agreeableness (collaboration)*

Source: *OECD, Social and Emotional Skills- Well-being, Connectedness and Success. Rerieved from https://www.oecd.org/education/school/UPDATED%20Social%20and%20Emotional%20Skills%20-%20Well-being,%20connectedness%20and%20success.pdf%20 (website).pdf*

While analyzing each category, it is evident that they are reflected generally in non-cognitive abilities. Each of the categories encloses a cluster of mutually related social and emotional skills. For example, emotion regulation includes abilities such as stress resistance, optimism and emotional control.

In the light of above discussion, let us try to understand the need to assess non-cognitive skills.

Check Your Progress 2

Notes: (a) Write your answers in the space provided after each item.

(b) Compare your answers with those given at the end of the unit.

1) Give an example of a task where cognitive and non-cognitive abilities are involved.

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14.5 WHY TO ASSESS NON-COGNITIVE SKILLS/ABILITIES?

Levin (2012) refers to non-cognitive skills as "those that are generally viewed as attitudes, behaviors and values that contribute to adult competencies" (p. 4). Today's classroom is challengeable and demanding a lot of skills to meet the diverse needs of learners. Therefore, learners need a balanced set of abilities such as cognitive, social and emotional. Various learning strategies in classroom demand learners to acquire social and emotional skills. Learners have to face multiple demands, practice inhibiting control (ability to control one's thoughts, behavior and emotions), and effectively engage with others. Moreover, with the introduction of 21st

century skills, both cognitive and non-cognitive abilities are important for learners. We know that providing academic skills alone is not enough to achieve success in one's life. For well-being, connectedness and positive life outcomes, social and emotional skills such as mindfulness, empathy, tolerance, sociability, emotional stability, collaboration etc. are essential. In order to develop perseverance, attitudes, and to do better academically and better in work force, non-cognitive skills are essential. Skills and attitudes can be developed through learning experiences and opportunities created for learners in schools and colleges.

As discussed in section 14.4, the major objective of education is the all-round development of a child in all dimensions i.e. physical, socio-emotional, intellectual, moral, and spiritual. This holistic development is perceived as a comprehensive approach to learning that aims to develop multiple abilities of a learner. In order to ensure the occurrence of holistic development among learners, you have to adopt the approach of holistic assessment, which includes assessment of cognitive and non-cognitive abilities. Education is meant to teach two things-i) how to earn livelihood and ii) how to live. These remind us the concept of four pillars of learning mentioned in the 'Learning: The Treasure Within- Report to UNESCO of the International Commission on Education for the Twenty -First Century' (1996). The four pillars denote four skills that an individual must acquire. They are:

- Learning to know – learning skills
- Learning to do – performance skills
- Learning to live together – interpersonal skills
- Learning to be – personal development skills

The above mentioned four pillars of learning emphasized the need to acquire and assess both cognitive and non-cognitive abilities. That is why in higher education curriculum (CBCS), skill enhancement courses are included along with other compulsory subjects which provides the holistic development of learners.

Having understood the types of abilities and the need to assess non-cognitive skills let us now attempt to understand how to assess aptitudes, attitudes, personality and social skills in the forthcoming sections.

14.6 ASSESSING APTITUDE

Before the discussion on assessing aptitude in detail, let us glance through the various ways that are used to assess cognitive and non-cognitive abilities. You might have understood that the overall abilities are divided into abilities related to cognition (brain), psychomotor, affective and physical abilities. These abilities can be assessed through achievement tests, aptitude tests, intelligence tests, attitude scale and personality tests. Psychomotor abilities influence the capacity to manipulate and control objects. While assessing this

ability, the sub areas of psychomotor ability such as ***manual dexterity*** (ability to grasp, manipulate or assemble objects), ***finger dexterity*** (ability to coordinate movements of the fingers) and ***wrist-finger speed*** (ability to make movements of fingers, hands and wrists repeatedly) are also assessed. You are well familiar with achievement tests that assess cognitive abilities. Now let us turn our attention to the detail description on how to assess aptitude.

The term 'aptitude' means natural ability or skill. In aptitude test, we try to assess the innate and acquired skills of individuals. Aptitude tests are constructed to measure the cognitive skills, abilities, and knowledge that individuals have accumulated as the result of their overall life experiences. Hence these tests can be conceptualized as tests of developed cognitive abilities that can be ordered along a continuum in terms of assessed abilities are to specific learning experiences. Aptitude test is not meant to test knowledge rather it tests a particular skill.

Different Types of Aptitude Tests

You might have heard about different types of aptitude tests and sometimes you might have undertaken an aptitude test in your school days. From the table 14.3, you can understand the different types of aptitude tests and their purposes.

Table 14.3: Different Types of Aptitudes Tests and their Purposes

Sl.No.	Types of Aptitude Tests	Purpose
1.	Abstract Reasoning Test	Assess the ability to think laterally and to make logical connections of various information
2.	Spatial Reasoning Test	Assess the ability to understand and visualize an object's spatial distribution and movement
3.	Verbal Reasoning Test	Assess the ability to use words
4.	Logical and Critical Reasoning Test	Assess the ability to make logical inferences
5.	Visual Reasoning Test	Assess the ability to create mental image of an object to find solution and for drawing technological designs
6.	Problem-Solving Ability Test	Assess the ability to use available information to deal with a problem
7.	In-tray and E-tray Exercises	Standardized psychometric tests to assess an individual's general ability to manage and respond to a series of different tasks, to negotiate conflicts and analyze different priorities

8.	Mechanical Reasoning Test	Assess the ability to deal with mechanical concepts
9.	Situational Judgement Test	Assess the ability to judge the most appropriate approach to solve problems related to situations
10.	Numerical Reasoning Test	Assess the ability to make correct inferences from numerical or statistical data

You will also study in detail about mental ability test incorporated in competitive examinations and different types of mental ability tests in sections 16.4.4 and 16.6 of Unit 16 of the Course, BESC-133: Curriculum, Teaching-Learning and Assessment. Now let us understand the thrust of National Policy on Education, 2020 with regard to aptitude test. The National Testing Agency (NTA) will offer a high-quality common aptitude test, as well as specialized common subject exams in the sciences, humanities, languages, arts, and vocational subjects, at least twice every year. These exams shall test conceptual understanding and the ability to apply knowledge and shall aim to eliminate the need for taking coaching for these exams. This will help university to admit students in various programmes based on their interests and talents. (NEP, 2020, section 4.42, p.19).

Check Your Progress 3

Notes: (a) Write your answers in the space provided after each item.

(b) Compare your answers with those given at the end of the unit.

1) Which test is used to assess the ability to make logical inferences?

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14.7 ASSESSING ATTITUDES

Attitudes are learned positive or negative reactions to a person, object, or idea. You know that there are affective components in learning process. The outcome of schooling is to develop positive attitudes toward self and society as well as to attain freedom of choice, equality of opportunity, free and open inquiry. In pursuit of being a lifelong learner, the development of positive attitudes may be more important than mastery of knowledge. Because of their importance, it is essential to assess learner's attitudes toward the subject area

and their ability to perform well in examinations. Due to this importance, we know that along with scholastic areas, co-scholastic areas are also stressed in curriculum. How do we assess the component of attitude? This is possible through observation, questionnaires and interviews. In planning how to use these techniques properly in assessing attitudes, you should keep in mind the following procedures (Johnson, D.W. & Johnson R.T. (2002) :

1) **Determine the attitude you want to measure**: In this procedure you have to determine attitudes toward the subject, learning experiences, peer group, academic self-worth and so on.

2) **Preparation of a Questionnaire:** While preparing a questionnaire, you have to decide the types of questions, sequence of questions, forms of response and scoring procedure.

3) **Select the standardized attitude measures:** The selection of standardized attitude measure depends on your instructional goals and expertise in using the results to improve instruction.

4) **Administer the questionnaire in the beginning and at the end of an instructional unit:**

   When you administer the same questionnaire in the beginning and at the end of an instructional year for a few years, you can assess the attitudes and can build norms based on the response of learners.

5) **Analyze and organize the data to make instructional decisions:** You can analyze the data to get feedback and can present the results in graphic forms.

6) **Provide timely feedback to learners:** Timely feedback to learners motivates them to change their attitudes.

7) **Use the data to modify the teaching strategies:** You can change your instructional methods and curriculum to inculcate positive attitudes toward teaching-learning process.

For example, suppose you want to assess learners' attitude toward the classroom life, you may include the following criteria in your questionnaire:

- *Positive goal interdependence*
- *Teacher academic support*
- *Teacher personal support*
- *Peer support*
- *Learning Environment*
- *Academic self-esteem*
- *Teaching strategies*
- *Classroom climate*
- *Fair assessment*

- *Classroom cohesion*
- *Alienation*

Based on the above criteria, you may construct a questionnaire either in open-ended form /closed- ended form /semantic differential form. In open-ended questionnaire, there is chance to give free responses of respondents. Closed-ended questionnaire require the respondent to indicate the alternative answer closest to his or her internal response. A semantic-differential questionnaire consists of a series of rating scales of bipolar adjective pairs describing a concept. For example,

Effort

Worthless	1 2 3 4 5 6 7	Valuable
Unproductive	1 2 3 4 5 6 7	Productive

The teacher then added the response to obtain an overall indication of attitudes toward the concept. Each concept is listed separately accompanied by the same sets of adjectives.

Activity 1

Prepare an open-ended questionnaire to assess learning environment in your class. The questionnaire should contain 10-15 items. Apply it in your class and prepare a report.

14.8 ASSESSING PERSONALITY

We all engage in the assessment of personality while interacting with others. We may call some persons as *introverts* and others as *extroverts* which stated that you are making a judgement about personality. Each individual has different personality traits, states and interests. Your personality will influence relationships with your family, peers and contribute to your health and well being. Before proceeding into the details of how to assess personality, it is beneficial to clarify the term 'personality' in the context of assessment. Gray (1999) defines personality as 'the relatively consistent patterns of thought, feeling, and behaviour that characterize each person as a unique individual.' Personality assessment means the procedures adopted to identify the similarities and differences among individuals in their traits, types, states, attitudes, cognitive styles and personal features. Let us consider the difference among traits, types and states. Traits mean any distinguishable, relatively enduring way in which one individual varies from another (Guildford, 1959, p.6). The term 'distinguishable' denotes the behaviours that are linked with different traits which differ from person to person. 'Relatively enduring' indicates the relative consistency of traits throughout the life-span but based on the context the evidence of traits may differ. Personality type refers to the psychological classification of different types of individuals. Or

we may say the traits denote characteristics whereas types are descriptions of individuals. Coming to personality state, it indicates the temporary condition that an individual experience for a short period of time. Now let us turn our attention towards the purpose of personality assessment.

14.8.1 Purpose of Personality Assessment

The purpose of personality assessment is always linked with the context in which it is used. The contexts may be clinical, educational, health care and organizational settings. In clinical settings, personality assessment is done to diagnose psychological disorders in persons. It also contributes to identify the attitudes of individuals towards themselves and others, their own strengths and weaknesses, their needs and concerns, and their coping styles which are used in treatment planning and outcome evaluation. In educational settings, the results of personality assessment are used to provide proper guidance and counseling to students and to provide educational services to students with special needs. In health care settings the results of personality assessment are used to find out the adaptation to chronic illness, mental illness and stress of individuals and to provide appropriate treatment for them.

14.8.2 Tools for Assessing Personality

The tools used to assess personality in educational settings are rating scales, self-report inventories and projective techniques. There are generally two types of personality assessment methods-i) objective methods and ii) projective methods. In this section, our focus is upon self-report inventories and projective techniques.

Self-Report Inventories (Objective Methods)

Self-report inventories are a kind of **objective** test used to assess personality. They mainly assess thoughts, feelings and psychological disorders of individuals. The items are framed in the format of multiple-choice which represent a range from 1 (strongly disagree) to 5 (strongly agree). They often are called Likert scales after their developer, Rensis Likert (1932). The self-report inventories have proven their usability in assessing internal disorders such as depression and anxiety that are not directly observed. They are well-suited to identify personality states as they ask individuals to describe their own subjective experiences, including emotional, motivational, interpersonal, and attitudinal characteristics. Hence, it is not possible to identify personality traits and behavioural dispositions. The most commonly used self-report inventory is the **Minnesota Multiphasic Personality Inventory (MMPI)**. It is a psychological test used to assess individuals who are having mental health issues. Some of the popular self- report inventories are displayed in the table 14.4.

Table 14.4: Popular Self- Report Inventories

Sl. No.	Name of Self-Report Inventory	Purpose
1.	Beck Anxiety Inventory (BAI)	Measure the severity of anxiety in children and adults
2.	Beck Depression Inventory (BDI)	Measure severity of depression among children
3.	Myers-Briggs Type Indicator (MBTI)	An introspective questionnaire indicating differing psychological preferences in how people perceive the world and make decisions
4.	Eysenck Personality Questionnaire (EPQ)	Assess the personality traits of an individual
5.	Revised NEO Personality Inventory (NEO PI-R)	Assess a person's five factors (five-factor model) of personality traits such as openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism

Projective Techniques (Projective Methods)

Projective techniques include the presentation of ambiguous images or other ambiguous stimuli to assess an individual's unconscious thoughts, fears, desires, needs and conflicts. The core of this technique is that the examinees could interpret ambiguous stimuli in a manner that reveals unconscious aspects of their personality. The ambiguous stimuli may be pictures, words, inkblots or sounds. For example, Thematic Apperception Test use pictures as projective stimuli. In Word Association Test and Sentence Completion Test, words act as projective stimuli. Rorschach Inkblot Test used inkblots printed on cards as projective stimuli. In Auditory Inkblots, sounds are used as projective stimuli. It provides a deeper understanding of a person. The advantage of projective technique is that they are free of response sets unlike self-report inventories. This is because the examinee is not aware about the expected responses. Table 14.5 shows the commonly used projective techniques to assess personality.

Table 14.5: Common Projective Techniques

Sl.No.	***Name of Projective Technique***	***Purpose***
1.	***Projective Drawing Techniques***	
	a. Draw-A-Person Test (DAP)	*Reflect how children feel about themselves and also while interacting with their environment*
	b. House-Tree-Person (H-T-P)	*Reflect unconscious and conscious aspects of the self*
	c. Kinetic Family Drawing (KFD)	*Provide children's view of their family and their interactions*
2.	***Apperception Tests***	
	a. Thematic Apperception Test (TAT)	*Reflect an individual's perception of interpersonal relationships*
	b. Children's Apperception Test (CAT)	
3.	*Sentence Completion Test*	*Reflect attitudes, beliefs, motivations and other mental states*
4.	*Rorschach Inkblot Test*	*Reflect an individual's personality, emotional functioning and thinking patterns*

Till now, we have discussed how to assess one's own feelings, attitudes, emotions and thoughts. We are interacting with others in our daily lives. Therefore, assessing social skills is an inevitable component which is discussed in the next section.

Check Your Progress 4

Notes: (a) Write your answers in the space provided after each item.

(b) Compare your answers with those given at the end of the unit.

1) Distinguish between self-report inventories and projective techniques.

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2) List some of the projective techniques used to assess personality.

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14.9 ASSESSING SOCIAL SKILLS

'From the standpoint of everyday life…there is one thing we do know; that man is here for the sake of other men-above all, for those upon whose smile and well-being, our own happiness depends , and also for the countless unknown souls with whose fate we are connected by a bond of sympathy. Many times a day I realize how much my own outer and inner life is built upon the labours of my fellow men, both living and dead, and how earnestly I must exert myself in order to give in return as much as I have received.' – ***(Albert Einstein (scientist and philosopher)***

Social skills are necessary to make connections among people. Any time learners are interacting with teachers, peers and engage in group work which demands the necessity of social skills. This skill involves abilities such as co-operation, connectedness, communication, and coordination. You know that an individual's success in life depends on social skills. Acquiring social skills lead to gain social competence. Social competence is the extent to which the consequences of a person's actions equate with his or her intentions. Individuals who are socially competent acquire a wide range of interpersonal skills. According to Johnson, Johnson, and Holubec (1998a) social skills can be classified as follows:

1) **Forming skills** : This includes the skills require to form a cooperative learning group where the individuals learn to work together with team spirit.

2) **Functioning skills** : This includes skills to manage group activities, share ideas, maintain working relationships in groups and encourage the participation of all group members.

3) **Formulating skills** : This means to have a deeper understanding about the material and to adopt reasoning strategies.

4) **Fermenting skills** : This include the skill to stimulate reconceptualization of the material being studied and enter into cognitive conflict to get more information.

Having understood the classification of social skills, let us attempt to learn the basic assumptions underlying the assessment of social skills of learners. According to Johnson, Johnson, and Holubec (1998a), the following are the **basic assumptions** that underlie the assessment of social skills:

1) **Social skills are learned:** Social skills are not inborn, they should be taught. While in group activity, learners will learn the interpersonal skills.

2) **Every cooperative lesson is a lesson in social skills:** Learners will learn both task work (subject matter) and teamwork (group skills) while they

are engaged in cooperative learning. If all the members contribute equally, the higher is the quality and quantity of their learning.

3) **Teach teamwork skills:** While in teamwork, learners should learn how to respect others' viewpoints, participate actively, stay on task, control one's behavior and motivate each other to contribute for the success of the task.

4) **Follow the rules of teamwork skills:** There are three teamwork skills such as:

   i) **Be specific**: Define each social skill in operational terms

   ii) **Start small**: Begin with one or two skills

   iii) **Emphasize overlearning**: Keep emphasizing the practice of each skill until the learners incorporate them in their behavioural pattern habitually.

The best technique which can be used to assess social skills among learners is observation. It can be either direct observation or indirect observation. Here is an example to observe social skills among learners.

Sl.No.	Descriptors	Score out of 5
1.	I like to work in a group than individually	
2.	I try to understand the viewpoints of others.	
3.	I keep away from others' personal space	
4.	I adapt my behavior according to the situation	
5.	I follow the rules that framed in group activity	
6.	I admit the mistakes done by me in a group	
7.	I maintain self-control when others teased me	
8.	I listen to others without any interruption	
9.	I expressed my ideas openly and frankly	
10.	I control my tune when enter into disputes with others	
	Total	
	Average Grade	

You can also develop such observation schedule which will help you to assess the social skills of your classmates in an effective manner.

Activity 2

Prepare an observation schedule for assessing social skills among your friends. The schedule should consist of 10-15 descriptive indicators. Apply it in your class and prepare a report.

14.10 LET US SUM UP

In this Unit, we began our discussion by explaining the term ability as an enduring attributes of an individual that influence his/her performance. Then we have identified the various abilities needed to perform different tasks. We have clarified the difference between a skill and ability by providing sufficient examples. Then we attempted to distinguish the cognitive and non-cognitive abilities with the help of illustrations. We came to the conclusion that we cannot categorize cognitive and non-cognitive abilities into water-tight compartments. Then we turn our attention to the need of assessing non-cognitive skills/abilities. A holistic approach to education facilitates the total development of a child where we have to assess both cognitive and non-cognitive abilities. By the end, we have delineated the procedures of how to assess aptitude, attitudes, personality and social skills.

14.11 UNIT-END EXERCISES

1) Identify a topic in your subject area that could be the focus for a Cooperative Learning. Categorize the cognitive and non-cognitive abilities needed to do the task.
2) How do we assess cognitive and non-cognitive abilities by administering aptitude tests?
3) How do we assess personality?

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14.13 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress 1

Refer table 14.1

Check Your Progress 2

Give your own answer.

Check Your Progress 3

Logical and Critical Reasoning Test

Check Your Progress 4

1) Self-Report Inventories mainly assess thoughts, feelings and psychological disorders of individuals whereas projective techniques include the presentation of ambiguous images or other ambiguous stimuli to assess an individual's unconscious thoughts, fears, desires, needs and conflicts.

2) Apperception tests, Sentence completion test, Projective Drawing Techniques, Rorschach Inkblot Test.

UNIT 15 ICT AND ASSESSMENT

Structure

15.1 Introduction

15.2 Objectives

15.3 Concept of Assessment

15.4 Role of ICT in Assessment

15.5 Web Based Assessment

- 15.5.1 Tools for assessing objective items
- 15.5.2 Online/Web based assessment in subjective tests

15.6 Electronic support as a tool in the assessment process

15.7 Computer Adaptive Testing

15.8 E-Portfolios and E-Rubrics

- 15.8.1 Meaning of e- Portfolio
- 15.8.2 Meaning of e-Rubrics

15.9 Use of Blogs for Assessment

15.10 Advantages and Disadvantages of ICT Based Assessment

15.11 Let Us Sum Up

15.12 Unit- End Exercises

15.13 References and Suggested Readings

15.14 Answers to Check your Progress.

15.1 INTRODUCTION

Information Communication Technology (ICT) is technology that provides access to information. It includes diverse technological tools and resources used to transmit, store, create, share and exchange information. ICT such as smart phones or tablets or computers with internet, plays a pivotal role in assessing students' achievement and performance. Teaching-learning process integrated with technology requires that students acquire higher-order thinking skills such as drawing inferences, analyzing, synthesizing, predicting, comparing, evaluating, etc. Use of multiple teaching strategies demands multiple forms of assessment. Various digital devices can be used in construction of assessment activities for students. ICT helps to report the feedback of learners' achievement through electronic reporting systems. The present unit focuses on the use of ICT as an assessment tool for learning. The learners will develop understanding about the various ICT tools that are used for assessing learning outcomes.

15.2 OBJECTIVES

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

- define the term assessment.
- explain the meaning of 'ICT based assessment'.
- identify the role of ICT in student assessment.
- categorizes the various software used for assessing objective and subjective items;
- describe how e-portfolio and e-rubrics can be applied as an assessment tool; and
- analyze the advantages and disadvantages of ICT based assessment.

15.3 CONCEPT OF ASSESSMENT

Before going into the details that how ICT can be used as an assessment tool let us recollect the concept of assessment. The term assessment is used in education to mean any activity or procedure that is used to evaluate, measure and document about the academic readiness, learning progress, skill acquisition or educational needs of a learner. The word assessment is derived from the Latin word 'assidere' meaning 'to sit down' or 'beside the learner'. According to AFT, NCME and NEA, 1990, assessment is:

"the process of obtaining information that is used to make educational decisions about students, to give feedback to the student about his or her progress, strengths and weaknesses, to judge instructional effectiveness and curricular adequacy and to inform policy"(AFT, NCME and NEA,1990,p.1).

From the above definition, one can make out that assessment is related to the appraisal of individuals' performance. There are various ways to carry out assessment: oral, aural, written and performance based. Formative assessment requires a systematic and planned approach that assesses learning and displays what students know, understand, and do. It is used by both teachers and students for improvement of learning.

15.4 ROLE OF ICT IN ASSESSMENT

In this Unit, we will discuss the role of ICT (Information and Communication Technology) in assessment in detail, particularly the various types of ICT tools used for assessment. Burkhardt and Pead (2003) opined that though the use of computers as a tool for assessment are in the minds of educators for years, but its practices in classrooms are meager. Preparation of assignments, doing projects, webinars etc. are possible by using ICT. The following are the advantages of using computers for assessment:

- Delivery of on-demand test.

- Able to present test tasks that are like the real life-tasks by combining sound, graphics, text, animation etc.
- Immediate declaration of results thereby saving time and energy of human resources.

There are mainly two major forms of ICT based assessment. These are:

- Computer-Assisted assessment or Computer-Aided Assessment (CAA); and
- Computer-Based Assessment (CBA).

Computer-Assisted Assessment (CAA) refers to the use of computers to manage or support the assessment process and evaluate assignments. CAA is mostly used for scoring multiple-choice questions and questions with short-answer responses using optical mark reader. Through Computer-Assisted Assessment, it is possible to provide timely feedback to learners. It can be summative when feedback is given at the end of a course.

Computer-based assessment is generally made through a computer. Computer-Based assessment means the use of digital tools for assessment-related activity. Computer-Based assessment can be done using laptops, tablets, and even smart phones. The most common ways of computer-based assessment are the following:

Assessment embedded within e-learning modules: This type is most similar to the original computer-based training. Here, online assessments are embedded within larger e-learning modules so that students' learning activities could take place on the computer. For example, a student may complete a full e-learning module that culminates in a final test.

Standalone online assessments: In this, an instructor uses an online assessment creator to develop quizzes and tests, which students then take using an online platform. Online assessment can also be used to boost student engagement and measure retention on continuous basis. For example, a teacher after completion of his/her teaching may conduct a short quiz that students take on their smart phones.

Today, evaluation is possible through online and web-based tools. You might be thinking about the difference between online and web-based tools. A web-based tool is something that runs from a browser, on an outside server using the Internet whereas online tool is something that uses an internet connection to access the needed information. Computers are not only used as an educational tool but also as form of socializing. It can be assumed that today's generation is more familiar with working in an online environment than ever before. As discussed by Duffy & Bruns (2006), most students are highly socially active in internet-based environments such as myspace.com, flickr.com and the blogging space blogger.com. In these online spaces they are already writing reflectively and commenting on their friends' writings. The terms "computer-adaptive testing" and "web-based assessment" are used

interchangeably with "computer-based assessment". But in fact, they are different. That is, computer-adaptive testing has a stronger emphasis on nonlinear item selection by rapidly estimating the examinee's ability based on his/her previous responses. Web-based assessment refers to computer-based assessment that is typically delivered via online learning management systems. Let us discuss in detail about the web-based assessment.

Check Your Progress 1

Notes: (a) Write your answers in the space provided after each item.

(b) Compare your answers with those given at the end of the unit.

1) Differentiate between Computer-assisted Assessment and Computer-based Assessment.

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15.5 WEB-BASED ASSESSMENT

In web-based assessment, digital technologies are used in planning and delivery of assessments, automatic marking and in all processes of reporting, storing and transferring of data associated with assessment. The existing evaluation system in many institutions consists of two components i.e. continuous and term-end evaluation. Online and web-based tests can be used in both components. There are several online objective and subjective type tests that are used for formative and summative assessment. In the subsequent paragraph, we will discuss some of objective and subjective tests that are delivered through online mode.

15.5.1 Tools for Assessing Objective Items

Technology mediated learning environment prompted educators to apply computer in students' assessment. Computer-Based Assessment (CBA) may be treated as the use of digital technology to collect, process, and report the results of that assessment. The four components of CBA may be categorized as (1) assessment generation, (2) assessment delivery, (3) assessment scoring and interpretation, and (4) storage, retrieval, and transmission. The University of Nottingham developed an e-Assessment management system known as **Rogō** to create and deliver online assessments. E-assessment uses computer and information technology to make the assessment process more efficient by automating functions. Objective questions like multiple-choice, fill in the blanks, multiple response, text box and matrix can be developed

through online. The format of each objective type question is framed as follows:

Objective type questions: There are various types of objective type questions such as multiple-choice, fill-in-the blank, multiple response and text box. The format of each type of objective items is detailed below:

Multiple-choice question type

A question with three or four options is presented where only one option is correct. Options can be text, images or a combination of both. It consists of four parts as given below:

- STEM - question or incomplete statement
- OPTIONS - suggested answers or completions
- DISTRACTORS - incorrect responses
- KEY - correct response

For eg. See the following question:

1. The IT capital of India is } **Stem**

Key a. Bangalore

Distractors { b. Mumbai, c. Delhi, d. Chennai } **Options**

The full list of presentation option in multiple-choice type question is:

- Vertical Option Button
- Vertical Option Button (with 'other' text box)
- Horizontal Option Button
- Dropdown list (text only)

The question setter can also set the order that the options are displayed in:

- Display Order- All the options are displayed either in vertical manner or horizontal manner.
- Alphabetic - This option will automatically sort the answer choices or rows in alphabetical order.
- Random - The order of choices will be randomized for each respondent that accesses the question.

Fill- in- the blank question type

A paragraph of text is presented with some words removed. The blank can be completed either by typing the correct text or by selecting from a randomized dropdown list. The mode of question completion is created by the question

setter. Asking students to type the missing text relies on correct spelling for marks to be given. Where acronyms are often used in place of a full term, the question can be set to accept both.

For example, ---------- is the capital of India.

Multiple response question type

When there is more than one correct option that needs to be selected for a Multiple-Choice type question, the Multiple Response question type is used (see figure 15.1). The scoring method can be selected to give marks for correctly selected options or to give a mark for the whole question. The options can be displayed in the following manners:

- Display Order
- Alphabetic
- Random

You can see an example of display order option of multiple response question item below:

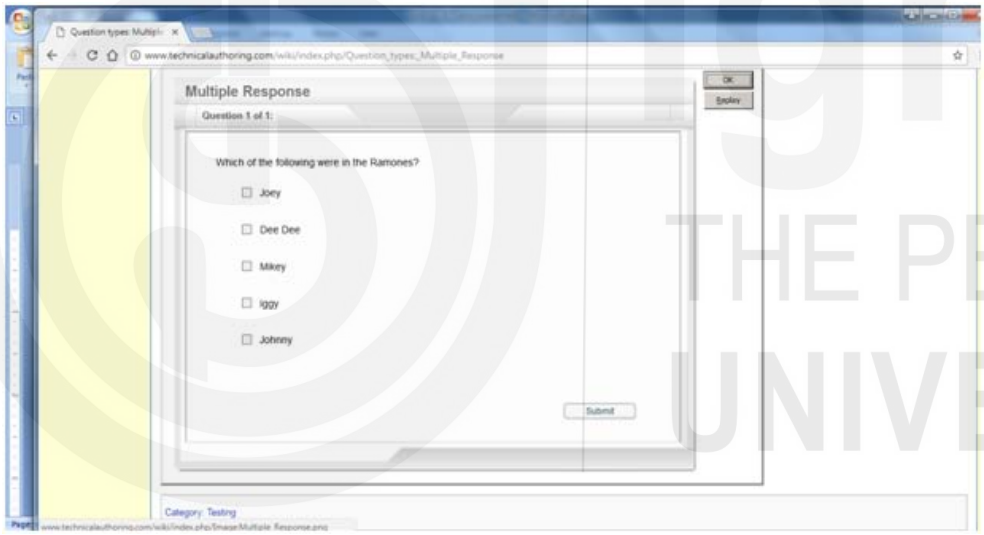


Fig.15.1: Format of multiple response question

Text box

In text box, questions that require answers to be typed into a text box are mainly used. Such questions need to be marked manually. Student responses are presented anonymously to the marker and there is an option for these to be second marked. If second marking has been used, the assessment system highlights the discrepancy of greater than one mark between the first and second mark for any question. The final mark is then manually selected.

The size of the text box is set by the question setter by selecting the number of rows and columns for the box. Textboxes have a maximum of 65,535 characters. A formatting toolbar can be included above the textbox by selecting the Editor mode as given in figure 15.2.

1. How could safety measures in school be improved?

Fig.15.2: Format of a text box

Quizzes

There are various software that can be used to assess objective test items in the form of quiz. Quizzes which contribute to students' end of module marks (i.e. are 'summative') are referred to as **e-examinations**; quizzes which are designed to help students check their understanding and identify areas to focus on, and which do not contribute to their end of module marks are referred to as 'formative'.

Quizzes have several potential benefits such as follows:-

- Inter-scorer reliability(the reliability and internal consistency among two or more individuals) – It gives a score of how much homogeneity there is in the ratings given by different raters. Computer marks quizzes objectively.
- Speed of marking for quizzes – results are available immediately without manual staff marking.
- Flexible provision of feedback – Feedback may be provided both at individual question level for correct and incorrect responses, and overall, for the test as a whole.
- Reports – Each question can be scrutinized via an automatically-generated report enabling examiners to check for any errors.
- Re-usable questions – A question bank can be built up and test items can be added and removed. Questions and answers can be randomized.

You would come to know the various software that can be used to develop quizzes from the box given below:

Learning pod *is an online quiz bank with 48,000 questions from trusted names like Kaplan. Teachers can remix, assign, and even print quizzes for their students.*

Socrative *is a smart cloud based student response system that empowers teachers to engage their classrooms through a series of educational games and exercises via smart phones and tablets. Teachers control the questions and games on their laptop, while students respond and interact through their smart phones/laptops.*

QuestBase *gives you the freedom to create quizzes, tests, assessments, exams or get feedback from surveys and polls.*

Moodle provides *a quiz tool that can be used for formative and summative assessment. It includes multiple choices and multiple response, true-false, short answer, and calculated questions. These questions are kept in a categorized database and can be re-used within courses and even between courses. Quizzes can allow multiple attempts. Each attempt is automatically marked, and the tutor can choose whether to give feedback or to show correct answers.*

QuizPedia *is a digital tool for quizzes in the classroom. Easy to add text, pictures, and sound. Use quizzes to assess your student's level of understanding or make the students co-creators of their own learning by preparing quizzes themselves and then share them with their peers.*

The Hot Potatoes *suite includes six applications, enabling you to create interactive multiple-choice, short-answer, jumbled-sentence, crossword, matching/ordering, and gap-fill exercises for the World Wide Web. (For developing quizzes with hot potatoes go to the link.(https://www.nacs.k12.in.us/cms/lib07/IN01906695/Centricity/Domain/46/Moodle%20IV.pdf)*

QuizStar is a web-based quiz maker. Quizzes can be created, administer and grade automatically through QuizStar. It allows you to have a media repository which stores all your images and lets you attach them to multiple questions or quizzes.

(Source:https://www.slideshare.net/skpulist/design-and-development-of-quizzes-with-hot-potatoes)

Practice on your own

Develop online quizzes based on any topic by using one of the softwares given in the above box.

15.5.2 Online/Web Based Assessment in Subjective Tests

Technology has made it possible to conduct subjective tests through online. It provides a complete score for an essay as well as feedback about grammar, usage, mechanics, style and organization, and development. Essay tests are an example of a constructed-response task where students reflect about a particular topic. The essays are generally evaluated for their writing quality. For assessing subjective items, there are various online assessment tools such as question mark perception, e-rater, Calibrand Marker and intelligence essay assessor. In the next paragraph, we will discuss the various software used for assessing subjective tests.

i) **Question Mark Perception (QMP)** is software used for formative and summative purposes. QMP provides scope for submission of long answer type questions. Students can type their long answers in a text box

and upload the file. Teachers can write, administer, and report on assessments using computers.

ii) **Electronic Essay Rater (e-rater)** is a prototype automated scoring system which uses discourse structure analysis, syntactic features, and topical content analysis to assign essay scores. It is built at Educational Testing Service (ETS) and uses a hybrid feature approach for scoring the essays. **Syntactic structures** in essays are identified by Natural Language Processing (NLP).The different types of clauses and verbs used in a sentence are parsed with the help of Microsoft Natural Language Tool (MNLT). Ratio of syntactic structure types used in an essay and in each sentence was computed as possible measures of syntactic variety.

Discourse structure analysis refers to analyzing written, spoken, and signed language use or any significant semiotic event. It is an effort to interpret what the writer or speaker intended to communicate within a social context. In discourse analysis, 'cue words and structures' are identified and then kept for computer- based discourse analysis. For example, surface cue words such as 'in summary' and 'in conclusion' are classified as conjuncts used for summarizing. Cue words such as 'perhaps' and 'possibly' are treated as belief words to express the belief of a writer to an argument given in an essay. For discourse analysis you can use various tools such as *cohesion, coherence, parallelism, speech events, background knowledge, conversational interaction,* and *co-operation principle*. Let us discuss in brief about these tools.

Cohesion: It refers to the connections that exist within texts in the form of linking different parts of a sentence. It is grammatical and lexical relationship within a text or sentence.

Coherence: Coherence is grammatical and semantic interconnectedness between sentences that form a text. It is the semantic structure, not its formal meaning which create coherence.

Parallelism: It means the comparisons or contrasts that go side by side in a literature is known as parallelism. It helps to interpret the whole text.

Speech events: It is mainly concerned with the sayings of people in different contexts. Debates, discussions, quiz, interview etc. constitute speech events.

Background knowledge: It consists of two things- schema and script. Through background knowledge, one can tell the real situation and interpret actions.

Conversational interaction: It aims to understand how people manage interactions and how social relationships are developed through interactions.

Co-operation principle: According to Grice (1975) in conversational exchanges, the participants are co-operating with each other based on four maxims. They are:

1) **Maxim of quantity**: The conversation must be as informative as is required but not more or less than is required.
2) **Maxim of quality**: While speaking, say only facts which are either true or have evidence.
3) **Maxim of relation**: Use relevant words.
4) **Maxim of manner**: Be clear, brief and orderly.

Topical content analysis

A good essay relates to other good essays in its vocabulary use patterns. E-rater evaluates the topical content of an essay by comparing the patterns of words it contains to those found in manually graded essays. It uses two different measures of content similarity for computation. First one is based on vocabulary use in the essay as a whole and other based on the specific vocabulary content of the argument units found in the essay.

iii) **Calibrand Marker** is an internet or intranet-based workflow application through which assessment process is possible at all stages-formative, continuous and summative. It is mainly used for assessing essays and case studies.

iv) **Automated Text Marker (ATM)** is developed for assessing text contents and is particularly suitable for assessing short answers to closed-ended questions. A student's answer is automatically separated into smaller concepts. It mainly assesses basic grammars and text contents.

v) **Intelligence Essay Assessor (IEA)** is an internet-based tool for scoring the quality of electronically submitted essays. The text is analyzed through a combination of **Latent Semantic Analysis** (LSA) which is a powerful matrix algebra-based approach pioneered by Pearson principals. This package permits students of a course to log on the web and submit their essay for evaluation. LSA analyzes essays by representing their meaning and comparing them with high quality similar texts. There is possibility of resubmission of essay after the comments given by the experts. Thus, this software permits formative and summative evaluation.

With Latent Semantic Analysis (LSA), IEA analyzes essay semantics. LSA is a statistical model of word usage that compares the semantic similarity between texts. It assumes that there is some 'underlying' or 'latent' structure in the manner of word usage across documents and statistical techniques are used to estimate the latent structure. It generates a matrix of occurrences of each word in the essay and then decomposes

the word-by-document matrix into a set of factors. Through an analysis of association of words and documents, the method produces a representation of words that are used in similar contexts and are more semantically associated.

vi) **eWrite** is an online writing assessment for students in classes 5 to 8 (between 10-13 years). It provides immediate diagnostic feedback on students' skills on the following categories:

- Narrative
- Descriptive
- Report
- Persuasive writing

Students type plain text into the online system. Students do not have any access to dictionaries. Planning and editing time are built into the assessment. eWrite automatically marks the students' writing and then produces a detailed report highlighting the strengths and weaknesses of everyone's answers. If assignment is submitted by a group, then interactive group reports will be generated.

vii) **eMarking Assistant:** You could mark students' assignments and grade papers in Microsoft Word using eMarking Assistant. **eMarking Assistant** helps you to provide comprehensive feedback when marking assignments or grading papers by using any version of Microsoft Word for Windows. It helps you to:

- provide easier and quicker detailed feedback using reusable comment;
- possibility for using and sharing of reusable comment banks;
- recording and embedding audio comments in the assignment;
- do repetitive tasks using your own detailed automated analytic e.g., rescaling, totalling, and converting marks;
- providing tools to do Google searches on highlighted phrases in Word;
- helping markers to download and upload graded assignments and marks; and
- recording and embedding audio comments in the assignment.

viii) **Automated Analytic Rubrics:** Word document contains several examples of grading rubrics for marking essays and projects. It allows you to create detailed automated analytic rubrics and marking sheets using any version of Microsoft Word for Windows. After adding your marks, images, sounds or hyperlinks in Word, then press buttons on a floating toolbar or pressing function keys to highlight performance standards. After calculating the weighted marks, then calculate the total and rescaled mark. Find the percentage and then convert it to a grade. Once

you have completed the rubric or marking sheet, you can copy and paste the rubric into another document or online system to return to the student. There are different websites such as Rubi Star (see fig. 15.3), Rubric Maker (see fig.15.4) and iRubric for developing rubrics by teachers.

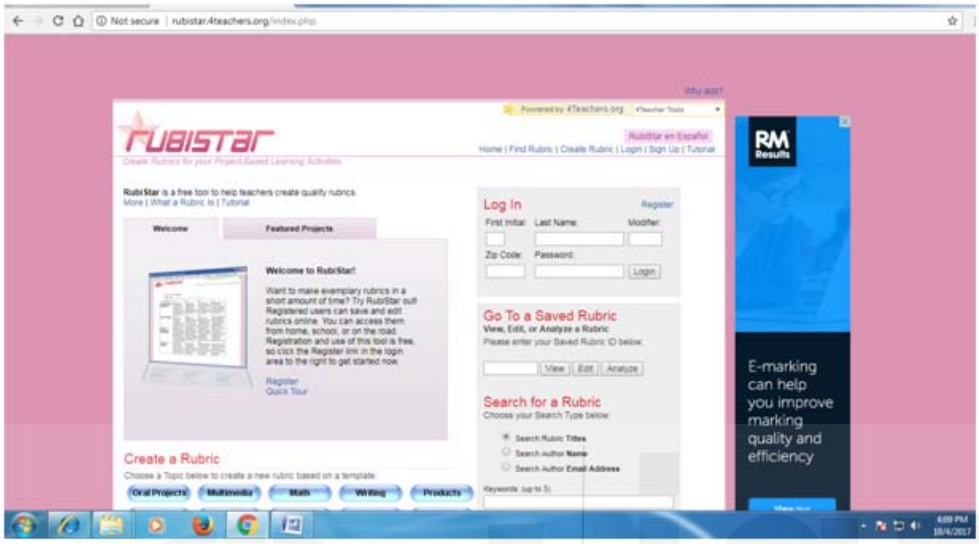


Fig.15.3: Homepage of rubistar

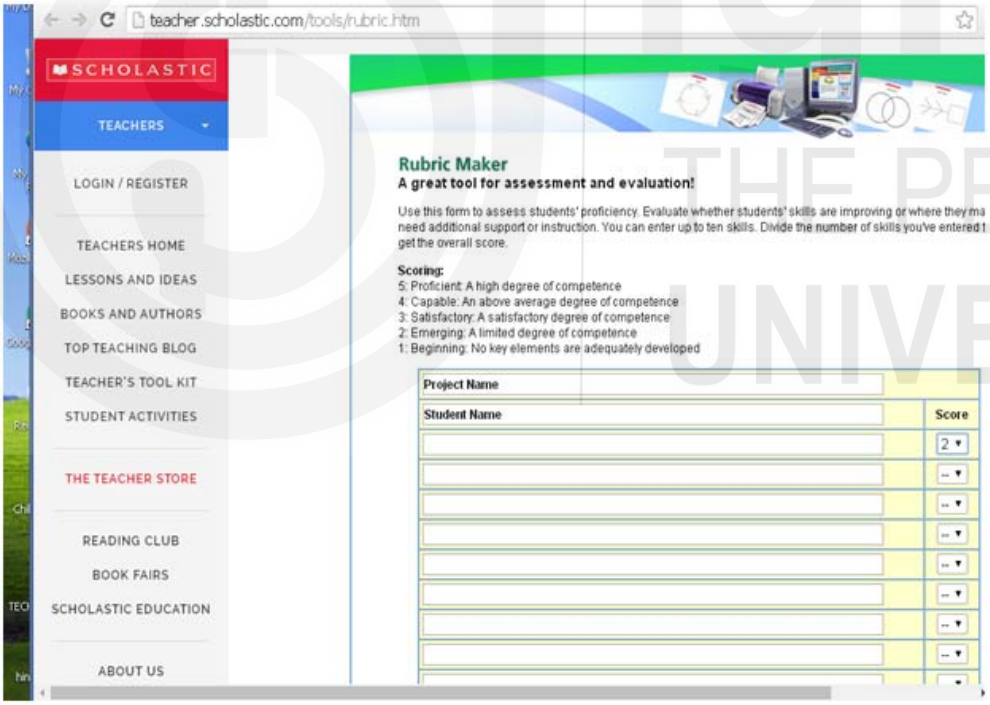


Fig.15.4: Homepage of Rubric Maker

ix) Marking Mate gives an overall evaluation of your assignment. Instead of marks, figures of happy, normal or unhappy face are awarded for each area that marking mate has assessed. Your total scores are calculated by assigning 2 points for each happy face, 1 point for each normal face and 0 point for each unhappy face. At the bottom of the report card, a summary comment regarding the areas to improve (in highlighted text) will be given. A format of Marking Mate is given in the figure 15.5.

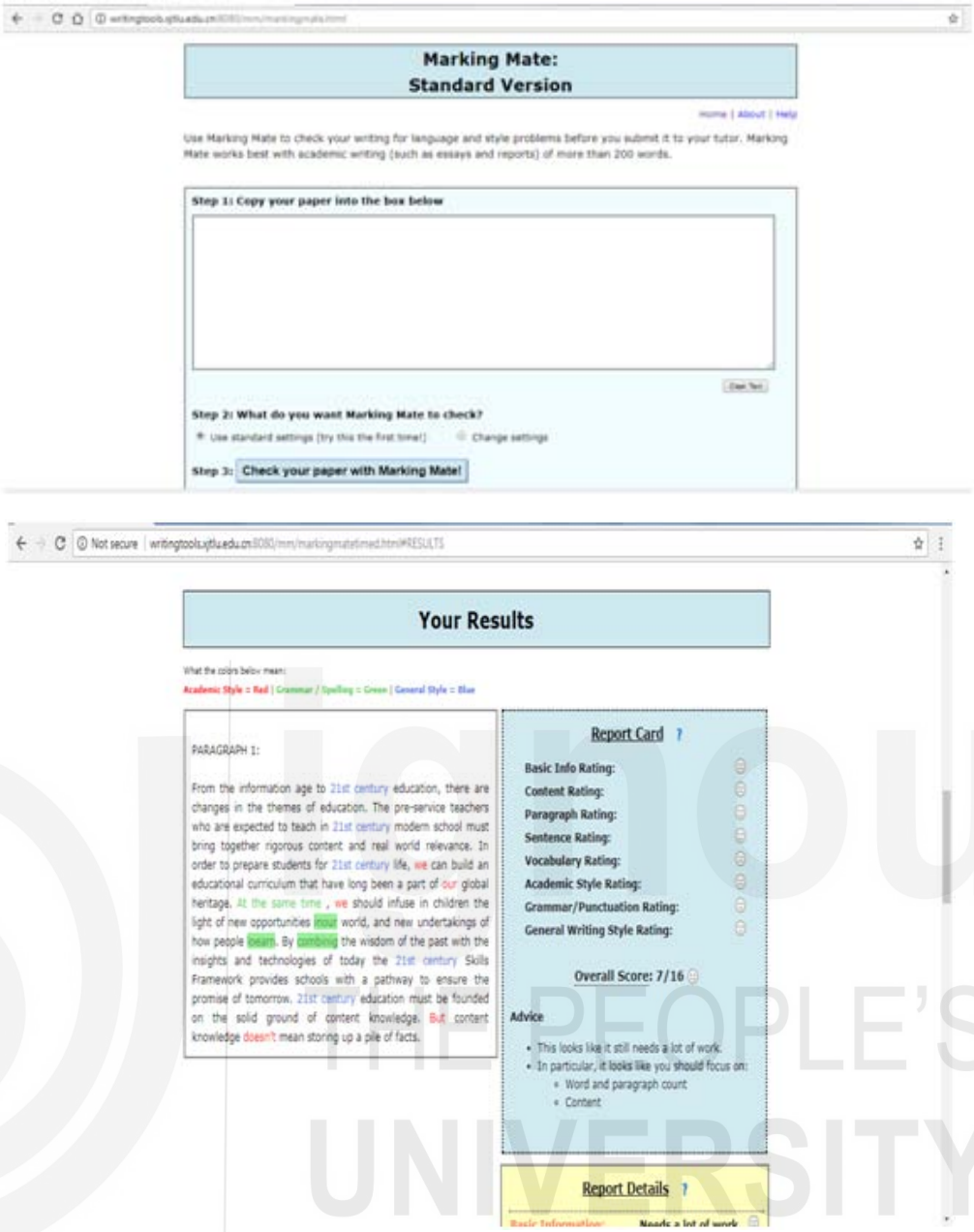
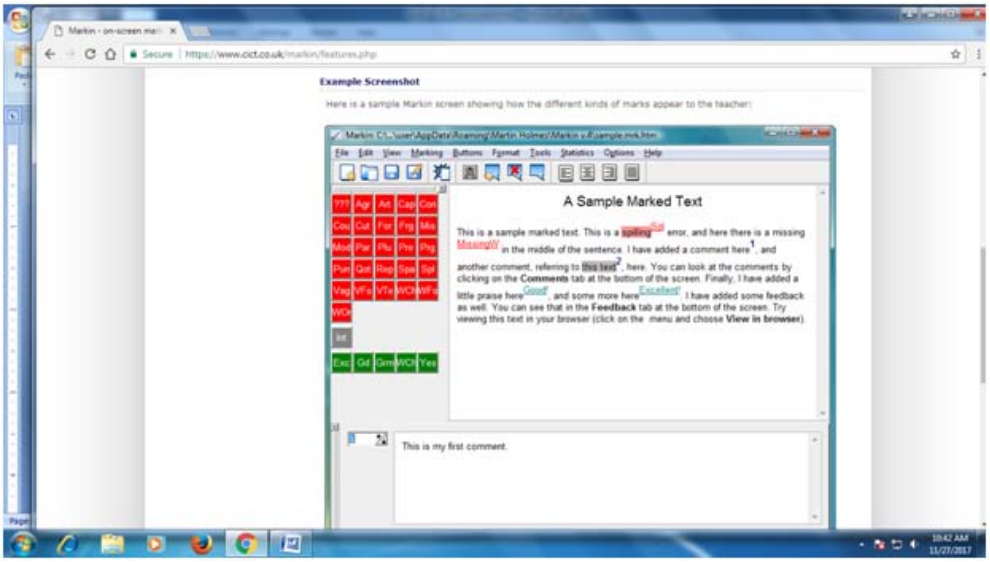


Fig.15.5: Homepage of Marking Mate

Practice on your own

Evaluate an essay answer in marking mate and prepare a report on the results you received.

x) Markin is a Window's program that import a student's text for assessing directly from a document file. It provides a comprehensive set of tools that enable the teacher to mark and annotate the text. After assessment, the document is saved as an XHTML document, in which the teacher's marks and annotations are in coloured text. When the student opens this document in a web browser and click on the marks, s/he could see the detail about the nature of teacher's comments. Below is given a sample markin screen in figure 15.6.



A Sample Marked Text

This is a sample marked text. This is a spilling error, and here there is a missing {*} in the middle of the sentence. I have added a comment here[1], and another comment, referring to this text[2], here. You can look at the comments by clicking on the **Comments** tab at the bottom of the screen. Finally, I have added a little praise here{*}, and some more here{*}. I have added some feedback as well. You can see that in the **Feedback** tab at the bottom of the screen. Try viewing this text in your browser (click on the menu and choose **View in browser**).

Content

This is some feedback about the content of the essay. You can include hyperlinks in your feedback if you want to. In the output, hyperlinks will be normal Web links; in the Markin editing environment, you can Control+Click on them to go to the URL of the link.

Language

This is some more feedback, this time about the language used in the essay. You can write any kind of styled text you like in the feedback box. Text can be in **different colours** if you want to distinguish one kind of feedback from another.

85%

1. This is my first comment.
2. This is my second comment.

Statistics

Instances	Annotation	Explanation	Help link	Categories	Value	Points lost	Points gained
					Totals	**-2**	**2**
1	MissingW	Missing word or words		Grammar	-1	-1	
1	Spl	Spelling		Spelling	-1	-1	
1	Excellent!	Excellent! Well done.		Content	1		1
1	Good!	Good!		Content	1		1

Source: https://www.cict.co.uk/markin/sample.mrk.htm

Fig.15.6:A sample Markin screenshot

xi) WebPA

Technology can be used for assessing group work by peers. In group work, there is possibility of getting same team mark for each student regardless of individual performance. In this context, introduction of WebP Aas a group assessment tool makes a different to the criticism of acquiring equal marks to team members without considering their individual performance.

WebPA is an online peer assessment tool that allows each student in a team to score individual contributions to group work. It allows each team member to assess the contribution made by their group members towards the final group mark based on the indicators decided by the teacher. Individual mark for each member will then calculated by the system. It allows students to assess their own and others' contribution thereby leading to increased engagement in group work.

Procedure of WebPA

The following is the procedure of WebPA:

- Create a form that contains different questions and assessment criteria that your students can use to mark their team members. Once developed, this form can be re-used further.
- Create the groups you need and allot students to each group.
- Create an assessment schedule when it starts.
- You can assess your peer group now.
- Each student gets a weighting and the weighting is then multiplied by the group mark to finalize the actual mark.

- You can also put limit to peer assessment mark of a group. For example, you may want only 50% of the group mark to be done by the peer group, in that case the mark is calculated as follows:

  Suppose the weightage of each student in a group is 1.1.

  Actual mark of the group = 1.1x 80% = 88%

  If 50% of the group mark should be peer assessed then, 1.1 x (50% of 80%) + (50% of 80%) = 84%

Benefits of Peer Assessment

Through peer assessment students will develop deep self-evaluation skills.To assess others, students must have a good understanding of the assessment criteria and the assignment task. This promotes a positive approach to learning. Through this, students learn the variety of ways a work could be done thus leading to greater engagement in learning process.

Frequent formative feedback is possible through peer assessment and this may positively influence the work of students.Peer assessment will reduce the workload of you by giving some responsibility to students. In some cases, it helps to reduce the pressure upon you to manage larger class and to give feedback to them.

Benefits of WebPA

The following are the benefits that student gained by using WebPA:

- It saves time of teachers.
- It gives a picture of contribution of each group.
- Storing of records in a central place.
- It helps you to provide timely feedback to learners.
- It helps to provide an opportunity to reflect upon the group work process.
- It increases interpersonal skills of students such as communication, reflection, team-spirit.
- It gives students an opportunity to express their views within a comfortable environment; and
- It affected the behavior of students as they come to know that they are assessed by teachers.

How to Log into WebPA

In the login screen, enter you ‘username’ and ‘password’ before clicking on the ‘login’ button. Once you have logged into WebPA you will be taken through to the WebPA Home page. Among the list of all the open assessments, if you want to take one of the assessments, you need to click on the button next to the assessment labelled ‘Take Assessment’. If you follow the ‘My Assessments’ link, then you can access a list of all the assessments that have been set for you to take and all the finished assessments. If you submitted marks to an assessment, then it will show ‘Completed’. If you failed to complete an assessment, then it will be mark ‘Did not submit’. The

'view feedback' link only appears once the assessment's deadline has passed.

Taking an Assessment

When taking an assessment, you will be presented with a screen. At the top of the page is a link back to your assessments list. Clicking this link will cancel the assessment and return you to that screen. Any marks you entered will be forgotten. The assessment can be viewed or taken at any time until the closing deadline. But remember if you do not take the assessment you may be punished when the marks are calculated.

After the link to return to the assessments link, is an explanation as to how the assessments work. Take time to read this line and if you do not understand then seek advice from your teacher.

Under the explanation of the assessment system there may be some introductory text from your teacher. If your teacher has decided to provide further information about your assessment it will be displayed in this section.You must enter a mark for every member of your team, including yourself. If you have missed some marks out, you will receive a warning when you try to submit the assessment.

How to mark your team members

The rest of the assessment screen is taken up with the assessment form. This form is to be broken down into different assessment criteria. Each criterion will examine certain aspects of your group's performance, and the key skills you should have employed.

Below the name of the criterion, there may be a description of this criterion, to help you understand what is being assessed. The description of the criterion is optional. Every criterion can have descriptions of what the different scores mean. Different teachers may use different marking schemes, so these scores and their descriptions may vary. The score descriptions are optional. If there are descriptions, you should always take time to read them for clarification of how to score the criterion.

Finally, there is the marking area. Each member of your team, including you, has their own row. Across the top are the different scores you can allocate for this criterion. For every member of your team, click the appropriate radio-button to assign them the mark you want.Typically, the scoring range will be something like 1 to 5 or according to the range fixed by the teacher.

You repeat the marking process for every member and for every criterion or skill. You must give everyone a mark for your scores to be accepted. If you miss out a mark, then you will be warned and asked to check your assessment. When you have completed the assessment and are ready to submit, click the 'save marks' button.

Once you have clicked the 'save marks' button you will receive an on-screen confirmation of the submission. You have now completed the assessment and can return to the assessments list or log out of the WebPA system.

Feedback

Your teacher can select for all to receive feedback on how you have done in the assessment. If feedback is available for an assessment, then a 'view feedback' link will be displayed next to the finished assessment on the 'My Assessments´ page. 'Finished Assessment' will only happen after the deadline for the assessment submission has passed.

The WebPA system compares the marks that you received, with the marks that your team members received, and report on your performance. This feedback is only descriptive, if you want the grade, then you need to contact your teacher.

Source: http://webpaproject.lboro.ac.uk/student-guidance/)

Check Your Progress 2

Notes: (a) Write your answers in the space provided after each item.

(b) Compare your answers with those given at the end of the unit.

1) What are the benefits of quizzes?

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15.6 ELECTRONIC SUPPORT AS A TOOL IN THE ASSESSMENT PROCESS

Having dealt with objective and subjective tests, you might be thinking about other uses of computer for assessment purposes. In addition to using electronic packages to create unique tests, it is possible to use the computer to generate different tests automatically.

Question banks: Electronic selection of questions from a bank is one possibility for the electronic generation of tests. Creation of a question bank is done by several staff members from different institutions who collaborate to share questions in the form of question bank. From this, a huge number of different tests can be generated.

Electronic recording and analysis of results*:* Recording, analysis, general storage, and management of results is another area where technology offers a tool for assessment practices. A wide range of spreadsheets, statistical packages and database packages are available (e.g., Excel, Lotus 1-2-3, Dataease, SPSS, Minitab, Access), into which it is easy to enter data

manually if results are not already in electronic form. But care must be taken while generating data files.

Results from several assessments, entrance tests, courses or modules can be collated quickly, easily, and accurately for discussion at examination boards, and the volume of paper required for long term storage can be reduced. Further, any trends within the data can be fully explored, which in turn provides valuable feedback for the academic team.

Electronic seminars and Conferencing: Computer and web-based technologies are used for presenting seminar/conference papers. Students who are participating in the seminars/conferences submit their papers through e-mails or online discussion forum. A teacher can work as the moderator of the discussion group and offer comments to the group members. There is possibility of peers to give their comments in online discussion forum.

Diagnostic tools of assessment: Varieties of diagnostic tools are used for student and teacher use and information. In the next paragraph, we will discuss about two diagnostic tools i.e., i) diagnosys and ii) thesys that are used for assessment.

DIAGNOSYS is a knowledge-based package to investigate mathematics skills on entry to university. Teacher will identify the areas relevant for test. The test is adaptive, that is, every student get different set of questions and they cannot alter them. The students attempted the test in computer. As students answer correctly or incorrectly the computer selects a new question from its bank to check more fully on the specific skills of that student. Hence, it is not necessary to attempt the whole series of questions. The diagnostic report can be made available for either the student or the teacher. Individual or class profiles can be provided.

THESYS is another diagnostic tool used for assessment. It is a package designed as a formative self-assessment tool for students preparing a project report. It contains a series of questions examining the structure and content of their report. It also provides detailed suggestions on where additional information would be required to achieve a higher grade. An estimate of the grade that this project would attain is also provided.

Check Your Progress 3

Notes: (a) Write your answers in the space provided after each item.

(b) Compare your answers with those given at the end of the unit.

1) List the two diagnostic tools used for assessment purpose.

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The portions under Sections 15.4,15.5 and 15.6 are adapted from Unit 11: ICT and Assessment of the Course BESE:135: Information and Communication Technology with minor changes.

15. 7 COMPUTER ADAPTIVE TESTING

Computer Adaptive Testing (CAT) is a tailor-made test to assess the ability level of each individual. According to Wainer (1990), “an adaptive test is an attempt to copy the examination techniques of a wise examiner...if an examiner asked a question that turned out to be too difficult for the examinee, the next question asked would be considerably easier" (p. 1 0).This test is known as adaptive testing in the sense that CAT can adapt or adjust the difficulty level of a test item based on the response of students. When compared to regular tests, CAT is more effective and targeted. By using technology, CAT can collect more data for highly reliable results. In addition, it is time-consuming and resource intensive. CAT has high discriminating power which means that it is easy to distinguish between high and low performing examinees.

For preparing test items in CAT, a set of competencies in different subject areas and several indicators for each competency is required. Competencies can be classified into three levels as given in figure 15.7.

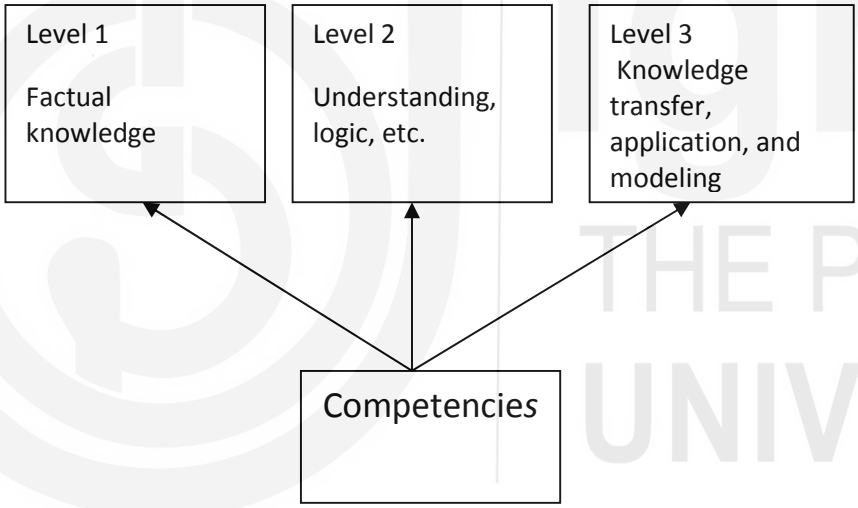

Fig.15.7: Categories of Competencies

From the above figure, you have understood the three categories of competencies as Level 1, Level 2, and Level 3. It is easy to measure lower-level competencies and it becomes difficult to measure higher-level competencies. Moreover, lower-level competencies include selected response (closed) items whereas higher-level competencies involve constructed response (open-ended) items. The technique of item cloning is used to increase the availability of test items and to reduce the cost of item writing. When the test items are designed to assess the exact same construct but with the substitution of random elements (names, locations, etc.), it is known as item cloning. It provides scope for generating item pools so that it results in cost-effective implementation of CAT. You may agree with us that it is difficult to develop test items as well as to develop items for each indicator. For example, we cannot test some indicators in written form, and some can

be tested only by using mathematical tasks. For scoring test items that have more than one correct answer, use of rubrics is essential.

It is also important to know the purpose of CAT whether the test is diagnostic, formative, or summative. If the purpose is diagnostic, then multiple items with one operation (diagnosing mistakes and addressing needs) is needed. On the other hand, if the purpose is summative, multiple items that are complex in nature are required to measure competency. Regarding the type of test in CAT, multiple-choice tests need more items whereas fewer items are required in constructed-response items.

Check Your Progress 4

Notes: (a) Write your answers in the space provided after each item.

(b) Compare your answers with those given at the end of the unit.

1) Why is CAT known as adaptive testing?

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15.8 E-PORTFOLIOS AND E-RUBRICS

You are aware that in National Education Policy 2020, there is emphasis on the design and implementation of portfolio and rubrics to assess learning outcomes of students. In the forthcoming section, you will come to know how e-portfolio and e-rubrics are used as assessment tools.

15.8.1 Meaning of e-portfolio

Portfolio is used as a popular term in educational contexts by the early 1990s. It was first defined as a systematic collection of learned material (McLean, 1990). In simple term, a portfolio is a purposeful collection of process, artefacts and products that involves selection of evidence to demonstrate achievement over time and reflection on the process and value of the learning itself. The portfolio has also been described as "expansionist" (Mabry, 1999) because of the possibility of submitting varieties of collections for the assessment of student achievement of knowledge, skills, attributes, or competencies.Authentic assessment presumes that students will be graded on their abilities to demonstrate behaviours that have relevance for real life. At present, portfolios are used in all phases of education from early childhood through to higher education. Both students and teachers use portfolio for purposes ranging from improving learning, acquiring, and demonstrating new

knowledge and skills, to preparing professionally for employment. You know that the use of the portfolio for assessment offers the potential for the process and progress of learning.

An electronic portfolio (e-portfolio) is a digitized collection of artifacts, resources, and accomplishments of an individual or group that form part of personal online spaces called as digital learning platforms. This collection can be text-based, graphic or multimedia elements archived on a CD or DVD or on a web site. The feature that distinguishes e-portfolio from the paper-based portfolio are electronic access and digitization. E-portfolio is also referred as digital portfolios, or webfolios. The EDUCAUSE National Learning Infrastructure Initiative (NLII, 2003) defines E-portfolio as:

"a digital collection of authentic and diverse evidence, drawn from a larger archive representing what a person or organization has learned over time on which the person or organization has reflected, and designed for presentation to one or more audiences for a particular rhetorical purpose."

E-portfolios are generally used as a means of supporting the formative and summative assessment of the collections of work produced by students. The digital nature enables the adoption of a range of structures, reduces administration, and allows secure access from a range of locations. E-portfolios are considered as powerful tools for communication in various languages and for cultural awareness and expression. They can also act as powerful tools for encouraging online collaboration and for both self and peer assessment. As a learning and assessment tool, an e- portfolio may comprise artefacts and expresses a reflective dimension. When used as a learning tool, e-portfolio contains the following:

- reflects on what the learners understand.
- encloses the main learning points.
- proposes their future for learning.

An e-portfolio can be seen both as a product and as a process. As a product, it displays the collection of work documents of a learner in their learning environment. Whereas, as a process-oriented tool, e-portfolios allows learner to supervise their own learning continuously, get feedback of their learning and reflect on their learning performance.

15.8.2 Meaning of e-rubrics

The word rubric is derived from the Latin word "Rubber", which means "Red'. Rubric is a set of instructions connected to the law and was written in red (Renjit, George, Renu, & Souza, 2015). An electronic rubric (e-rubric) is a digitized alternative assessment tool that indicates pre-established performance criteria related to the assessment of student work. Wolf and Steven (2007) defines rubrics "as a scoring tool that is used to evaluate students' performance in a task based on a list of criteria describing the

characteristics of products or performances at varying levels of accomplishment". It can be used for both formative and summative assessments. In a rubric each task is divided into separate components and provides clear criteria for performing each component. Therefore, the criteria and performance-level descriptions in the rubrics make students to understand what they had to perform (Brookhart, 2013). Rubrics can be used to mark assignments, or to assign overall grades.It can be used as a critical tool as it serves the following functions:

- Provide scaffolding for improving work;
- Showcase the progress of students according to the set standards of each tasks;
- Help teachers to grade subjective work fairly;
- Help parents to understand the grading and standards of each work; and
- Make students to know in advance the criteria of each task.

You may be eager to know how rubrics can use as an instructional tool. For this, students must be involved in the learning process as well as in self-assessment and peer assessment processes. It is desirable that students could also be engaged in the design of rubrics. In such cases, rubrics will serve as a guideline for evaluation. The advantage of e-rubrics over traditional rubrics is that e-rubrics provide more scope for interactivity among students, and they will enjoy more autonomy in evaluating their competencies. In addition, teachers will get detailed information on the performance of students. Rubric is divided into two types as given in figure 15.7.

Fig.15.8: Types of Rubric

Let us discuss the use of each type of rubric.

i) Holistic Rubric

In holistic rubric, different assessment criteria will be grouped together under achievement levels. Holistic rubric is uni-dimensional and is used to assess the overall achievement of learners in an activity. The performance indicators are written in paragraph in this type of rubric. In holistic rubrics, there is no single correct answer to a task. The assessment is done based on overall quality and it is summative.

ii) Analytic Rubric

Analytic rubric is a two-dimensional rubric consisting of achievements as columns and assessment criteria as rows. In this tabular form rubric, a

student's achievement can be assessed on multiple criteria by using a single rubric. It is designed with a grid of 'criteria' (columns) and 'levels' of achievement (rows). Points or weights are assigned to criteria and then the evaluation is done. Analytic rubrics are also called as 'teaching rubrics' as this rubric help teachers to adjust their instruction.

How to Use Rubrics Effectively

The following points state how to use rubrics effectively:

i) Develop a separate rubric for each task.

ii) Provide a rubric along with the task to students.

iii) Inform students to attach self- developed rubric along with the assignment. This will help in self-assessment.

iv) While evaluating assignment, circle the achieved level of performance for each criterion on the rubric so that students will come to know the drawbacks of their own performance.

15.9 USE OF BLOGS FOR ASSESSMENT

Paquet (2003) refers to the term 'blog' which was initiated by Barger in 1997, as a log of the web — or weblog. It is a like a website with reflective entries. It can be used as a noun and a verb. In its simplest form it is a website with dated entries, presented in reverse chronological order and published on the internet. The word 'blog' is both a noun and a verb. People who maintain a blog are called bloggers. The act of posting to a blog is called blogging and the distributed, collective, and interlinked world of blogging is the blogosphere. A blog allows individual students to keep a record of their learning progress. It is a record of what they have learnt, with reflective comments about their learning effectiveness and forms a narrative of their self-assessment. As the teacher, we can follow each student's blog, adding supportive comments as appropriate. This can of course be done at any time, and in any place where there is internet access.

A blog offers interaction with reflective comments and the ability to interlink to related ideas. Also, other members of the community can comment on blog entries to suggest additional considerations and explorations of the idea presented and promote further reflection and thought regarding a stated viewpoint.

The **advantages** of using blogs as an assessment tool are:

- Able to assess critical and analytical thinking.
- Can promote creative, intuitive, and associational thinking (creative and associational thinking in relation to blogs being used as brainstorming tool and also as a resource for interlinking, commenting on interlinked ideas).
- Can promote analogical thinking.

- Potential for increased access and exposure to quality information.
- Combination of solitary and social interaction.

Within a **pedagogical perspective** a blog can support:

- comments based on literature readings and student responses;
- a collaborative space for students to act as reviewers for course-related materials;
- an online gallery space for review of works, writings, etc. in progress, making use especially of the commenting feature;
- teachers encouraging reactions, reflections, and ideas by commenting on their students' blogs; and
- development of a student portfolio of work.

15.10 ADVANTAGES AND DISADVANTAGES OF ICT- BASED ASSESSMENT

Till now, we have discussed the various software that can be used to assess objective and subjective items. Next let us examine the advantages and disadvantages of ICT based assessment. As suggested by Harvey and Mogey (1999), the advantages for using computer in assessment are:

- Quick and accurate assessment of large numbers of assignment
- Monitoring of student responses
- Offering assessment in an open access environment
- Saving assessment in a folder for longer time
- Reuse of assessment when and then required.
- Assessment can be stored and reused.
- Immediate feedback can be given.
- Peer assessment and group assessment can be done by using chatrooms and discussion boards
- Participation of students in online discussions can be evaluated from the transcript.

The disadvantages of ICT based assessment are the following:-

- Interruptions occurred in hardware and software system may affect the continuous assessment of learners.
- Control of access to both questions and student data may result in security issues.
- Accessibility to computers may lead to equity issues in ICT based assessment.
- Familiarity with screen-based work and variations in speed of internet connections will affect student performance.

Check Your Progress 5

Notes: (a) Write your answers in the space provided after each item.

(b) Compare your answers with those given at the end of the unit.

1) Differentiate between e-portfolio and e-rubrics.

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2) What are the advantages and disadvantages of ICT based assessment?

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15.11 LET US SUM UP

In this Unit, we began our discussion on the concept of assessment and the differences between computer-assisted assessment and computer-based assessment. Until now, you might have become familiar with various online tools that are used for assessing objective and subjective types of questions. You might have developed understanding on how to prepare test items in CAT and how to use e-portfolio as well as e-rubrics for the purpose of assessment. WebPA that is an online peer assessment tool allows each student in a team to score individual contributions to group work. Peer feedback leads to deeper learning due to the evaluative processes used. There is also content coverage on e-portfolios and e-rubrics. You may understand the need of using multiple means of assessment in teaching-learning process. You have come across in the unit that all type of questions that exists in conventional testing can be converted to online. By doing so, this will enhance the learning opportunities of students on the one hand and help teachers to assess their students easily and effectively without wasting time on redundant assessments.

The portions under Sections 15.9, and 15.10 are adapted from Unit 11: ICT and Assessment of the Course BESE:135: Information and Communication technology with minor changes.

15.12 UNIT- END EXERCISES

1) Discuss various online tools that are used to assess objective items.
2) How could you use e-portfolios and e-rubrics effectively to inform the assessment process in an online class?
3) Discuss various online tools used for assessing subjective type questions.

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15.14 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress 1

1) Computer-Assisted Assessment (CAA) refers to the use of computers to manage or support the assessment process and evaluate assignments. CAA is mostly used for scoring multiple-choice questions and questions with short-answer responses using optical mark reader. Through Computer-Assisted Assessment, it is possible to provide timely feedback to learners.Computer-based assessment is generally made through a computer. Computer-Based assessment means the use of digital tools for assessment-related activity. Computer-Based assessment can be done using laptops, tablets, and even smart phones.

Check Your Progress 2

1)
- Inter-scorer reliability(the reliability and internal consistency among two or more individuals) – It gives a score of how much homogeneity there is in the ratings given by different raters. Computer marks quizzes objectively.
- Speed of marking for quizzes – results are available immediately without manual staff Marking.
- Flexible provision of feedback – Feedback may be provided both at individual question level for correct and incorrect responses, and overall for the test as a whole.
- Reports – Each question can be scrutinized via an automatically-generated report enabling examiners to check for any errors.
- Re-usable questions – A question bank can be built up and test items can be added and removed. Questions and answers can be randomized.

Check Your Progress 3

1) Diagnosys and thesys.

Check Your Progress 4

1) CAT can adapt or adjust the difficulty level of a test item on the basis of the response of students.

Check Your Progress 5

1) An electronic portfolio (e-portfolio) is a digitized collection of artifacts, resources, and accomplishments of an individual or group that form part of personal online spaces called as digital learning platforms. This collection can be text-based, graphic or multimedia elements archived on a CD or DVD or on a web site.

   An electronic rubric (e-rubric) is a digitized alternative assessment tool that indicates pre-established performance criteria related to the assessment of student work.

2) Advantages: - Quick and accurate assessment of large numbers of assignment

- Monitoring of student responses
- Offering assessment in an open access environment
- Saving assessment in a folder for longer time
- Reuse of assessment when and then required
- Assessment can be stored and reused
- Immediate feedback can be given
- Peer assessment and group assessment can be done by using chat-rooms and discussion boards
- Participation of students in online discussions can be evaluated from the transcript

Disadvantages:- Interruptions occurred in hardware and software system may affect the continuous assessment of learners

- Control of access to both questions and student data may result in security issues.
- Accessibility to computers may lead to equity issues in ICT based assessment
- Familiarity with screen-based work and variations in speed of internet connections will affect student performance.

UNIT 16 TRENDS IN ASSESSMENT AND EVALUATION

Structure

16.1 Introduction

16.2 Objectives

16.3 Increased Importance of Evaluation and Assessment in Education Policy

16.4 Online and On-Demand Examination

16.5 Creating a Dedicated Agency to Govern Assessment and Evaluation (National Board of Accreditation)

16.6 Mental Ability Test

16.6.1 Meaning of Mental Abilities

16.6.2 Different Types of Mental Abilities

16.6.3 Some Prominent Competitive Examinations to Assess Mental Abilities

16.7 Greater Emphasis on Learning Outcomes

16.8 Internationalization of Assessment

16.9 Relying More on Educational Standards

16.10 Let Us Sum Up

16.11 Unit-End Exercises

16.12 References and Suggested Readings

16.13 Answers to Check Your Progress

16.1 INTRODUCTION

In the previous units of this block, you have learnt about the basic concepts of assessment and evaluation, purpose of evaluation and various tools and techniques of evaluation. You also must have learned that how assessment is carried out for different domains of learning viz; cognitive, affective, and psychomotor. In this unit, you will be exposed to recent trends in assessment and evaluation. You will be learning about the manner in which issues related to assessment and evaluation were looked into by various Educational Commissions, Educational Policies, National Curriculum Frameworks and more recently addressed in National Education Policy-2020. You must have noticed that duringCOVID-19 pandemic when schools and colleges were shut down, during that time teaching-learning process was transformed to a large extent. Even assessment was transformed and was shifted to online mode. These days lot of importance is being given to learning outcomes and educational standards. Much is talked about national and international achievement surveys. Many new institutions and organizations are being established for carrying out assessment. Several agencies are working in the

area of accountability and accreditation. Computer based technology is being used in teaching-learning process and now it is being used effectively for assessment. By taking cognizance of these developments, through the present unit you will be made familiarized to some of the recent trends in assessment practices at the national and international level.

16.2 OBJECTIVES

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

- recognize the increased importance of evaluation and assessment in education policy;
- describe the features of online and on-demand examination;
- appraise the role of dedicated agencies to govern assessment and evaluation;
- describe the importance of mental ability test in assessment;
- emphasize the relevance of learning outcomes in assessment;
- summarize the assessment practices at the international level; and
- estimate the role of educational standards in education.

16.3 INCREASED IMPORTANCE OF EVALUATION AND ASSESSMENT IN EDUCATION POLICY

The assessment and evaluation had always remained a prime concern in the policy documents due to its potential to improve the teaching-learning process, certification, accountability and maintaining quality standards. In common parlance examination remains synonymous with assessment and evaluation. Right from the very beginning, there are debates like use of external verses internal assessment, one-time examination verses continuous and comprehensive evaluation and so on. In different periods, these issues were matter of concerns for different commissions and national educational policies. We may begin tracing the importance of examination reforms in educational policies and commission from the quote:

"If we have to suggest one single reform in University Education, it should be that of examination."

-Radha Krishan Commission, 1948.

One of the major recommendations of **Mudaliar Commission (1952-1953)** was improvement in the examination system. The commission laid stress on reduction of external examination, the use of objective type tests, internal assessment, and maintenance of record of each and every student. The Commission further recommended evaluating students on 5-point scale (A-Distinction, B-credit, C-pass and D & E failure & re-exam) and provision of compartment examination.

Education Commission (1964-66) too repeated these reforms and recommended the 10+2+3 structure of education envisaged the need to define national standards at the three levels- end of primary, secondary and higher secondary stage. Further, it advised each state government to prescribe the standards to be attained at each of these levels in view of local conditions and stage of development reached. It also recommended the steps to be taken at the national level. The commission also suggested that certificate of the student should reflect the complete performance and not just remark to reflect that s/he has passed or failed in the whole examination.

National Policy on Education, (NPE, 1968) stated that major goal of examination reforms to improve the reliability and validity of the examinations and to make evaluation a continuous process aimed at helping the students to improve their level of achievement, rather than at certifying the quality of their performance at a given moment of time.

National Policy on Education, (NPE, 1986) emphasized on the Continuous and Comprehensive Evaluation(CCE) that incorporated both scholastic and non-scholastic aspects of education, spread over the total span of instructional time and the introduction of semester system at the secondary stage. The examination system policy recommended examination a mean to bring qualitative improvement in education. The policy focused on improving examination by elimination of excessive element of chance and subjectivity, de-emphasize on memorization, effective use of evaluation process by teachers, students and parents, improvement in conduct of examination, the introduction of concomitant changes in instructional material and methodology and the use of grades in place of marks. These goals were relevant for external as well as internal examination. The policy recommended reducing the predominance of external examinations. Further, the policy recommended preparing National Examination Reform Framework (NERF) to serve as a set of guidelines to the examining bodies which would have the freedom to innovate and adapt the framework to suit the specific situations.

The Programme of Action (POA, 1992) suggested several specific short term and long term measures for carrying out examination reform at the school as well as at the University level. Some of the strategies of POA at the elementary stage included development of Minimum Levels of Learning (MLL), evaluation to be diagnostic at this stage as there is no detention envisaged at primary stage, for CCE flexible scheme to prepare by concerned agency in each state. At the secondary level, there were strategies like laying down expected levels of attainments at class IX to XII, flexible scheme of CCE to prepare at the state level by the designated agency. At the higher education stage, there were strategies like selection tests for admission to all professional and technical courses to be conducted on all India basis, each university to prepare broad guidelines for grading to be followed by individual colleges/institutions and departments under its jurisdiction.

National Curriculum Frameworks: At the national level, National Council of Educational Research and Training (NCERT) develops curriculum frameworks for school education. NCERT had come out with four such frameworks in 1975, 1988, 2000 and 2005, respectively. There has been several recommendations made by each framework for streamlining assessment practices in the area of school education.

National Education Policy (NEP-2020)

The implementation of previous policies has left some unfinished agenda. In order to fill these gaps, and to meet the educational aspirations of the people, the country had National Education Policy 2020 after more than three decades. This policy has certain key principles that include:

- Respect for diversity and local context in all curriculum, pedagogy and policy;
- Equity and inclusion of all educational decisions;
- Use of Technology in teaching and learning;
- Emphasize conceptual understanding rather than rote learning and learning for exams;
- Unique capabilities recognizing, identifying them in each students;
- Critical Thinking and creativity to encourage logical decision-making and innovation; and
- Continuous review based on sustained research and regular assessment by educational experts.

Taking clue from the guiding principles, NEP-2020 emphasis on transforming assessment for optimizing learning and development of all students with a focus on the following:

- Assessment must be regular, formative and competency based;
- Promote learning and development of students;
- Focus on ‘assessment for learning’;
- Test higher-order skills (analysis, critical thinking and conceptual clarity); and
- Help entire schooling system in revising continuously teaching- learning processes to optimize learning.

The policy further advocates for 360-degree, holistic, multi-dimensional report card that reflects in details the progress as well as the uniqueness of each learner in all domains. It will include self-assessment, peer-assessment besides teacher assessment. It has provided several recommendations for public examination, like students will be given freedom to choose range of subjects in which they take board exams, depending on their individualized interests. The Board exams will be made easier in the sense that they will test primarily core-competencies rather than content memorization. To reduce

pressure and coaching culture boards may come up with viable models like annual/semester/modular exam or in a certain subject question paper may be redesigned to have two parts- objective and subjective.

NEP-2020 further proposes to set up National Assessment Centre/**PARAKH** (Performance, Assessment, Review and Analysis of Knowledge for Holistic Development) with the basic objectives of setting norms and standards and guidelines for student assessment, and evaluation of all recognized school boards in India. It also recommends National Testing Agency (**NTA**) to offer a high quality common aptitude test, as well as high quality common subjects exams in science, humanities, languages arts and vocational subjects, at least twice a year. NTA will serve a premier, expert autonomous testing organization to conduct entrance exams for undergraduate and graduate admission and fellowship in higher education. Universities to use these common entrance exams, rather than to have their own entrance exams. In the domain of assessment in higher education, the policy proposes setting up of General Education Council under National Higher Education Regulatory Council (NHERC) for framing of expected learning outcomes for higher education programme.

Thus, we have seen the journey of students' assessment go a long way over the years. Several policies had suggested significant changes in assessment and the National Education Policy 2020 is another important landmark for providing orientation towards assessment of students in the country.

Check Your Progress 1

Notes: a) Write your answers in the space provided.

b) Compare your answers with those given at the end of the unit.

1) Why assessment has been given importance in the policy documents?

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2) State any three recommendations on assessment suggested by New Education Policy 2020.

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16.4 ONLINE AND ON-DEMAND EXAMINATION

Most of the students in conventional school set up express that school system is very rigid when it comes to examination as they have a little or no choices at all to appear in the examination. They also complain about not getting sufficient time for preparation for examination. Some unfortunate ones are not able to cope up with the undue stress and anxiety caused by examination, and ends up losing their lives. Parents sacrifice their time and resources in helping their children in coping with examination, and try their best to ensure success of their wards. Teachers often voice their words that much of their time is utilized in setting the test papers and conducting the tests. They, too, have almost no say in decision- making and adhere to the prescribed guidelines issued by the authorities. Policy makers in consideration with views of all these stakeholders are constantly engaged in exploring ways to make the examination system flexible.

In higher education, the examination system is very rigid and with little chance for flexibility. Conventional Universities and colleges are more rigid than universities offering education through open and distance mode. Since the examination system is very rigid with respect to time frame and time schedule, it offers limited time for preparation for examination by the candidates. This ultimately leads to either low score of the learners or a situation where learner must drop out or s/he clears part of the course and needs to wait for some more months to get another chance.

In this regard, the position paper of Focus Group on Examination Reforms (NCF-2005) has clearly recommended providing flexibility to students to select date and time as per their convenience. Moreover, with the advent of ICT in education the concept of online and on demand examination came into existence and is practiced all over the world. Let us read an excerpt from the Focus Group Position Paper on Examination Reform in the light of Online and On Demand Examination.

Flexibility in when exams are taken: *If it is accepted that learners learn at different paces, there is no reason, other than administrative convenience, to test them after two years of higher secondary course in all subjects simultaneously. We recommend that students be allowed to clear some (up to two, perhaps) subjects at the end of the XIth (or the IXth grade for the secondary exam). This would not only reduce stress a year later, but also make for better long-term learning—and cause very little inconvenience to exam boards. Allowing students to take another two exams in the middle of the XIIth (or the Xth for secondary exam) would require boards to depart from their once-a-year schedules (barring re-takes) but would lead to a more learner-friendly system. In general, every student should be given a three-year window within which all the subjects must be passed (or scores improved). In any one exam session students should have a choice of taking no exam, all exams, or a few exams. This reform besides allowing for*

learning and testing to take place when a student is ready for it (rather than when the board decrees it on a one size- fits-all principle), also works towards social justice. A large number of exam candidates are trying to hold down a fulltime or part-time job while doing their exams. A large number of these students do not get through, because they do not get more than a week off before the exams— hardly sufficient time for preparation for all subjects. Allowing them, for instance, to do two subjects in each of the three sessions would greatly enhance their performance.

In the long run, the system must gradually move toward on-demand exams (they are usually done online, internationally) taken when the candidate is ready, rather than at the convenience of the system. We suggest a small beginning of this in computer science exams as a pilot project and its future extension to maths and physics exams.

(NCF-2005 Position Paper in Examination Reforms)

We notice that, there is strong recommendation by the policy makers to make the examination system flexible. Therefore, students may not be tensed, stressed due to examination. They must learn at their own pace and enjoy learning process; and get them assessed when they are actually ready. Here comes, two important innovations introduced online and on-demand examination. Let us have further insights to these concepts.

Online and On-Demand Examination: These are the two innovations in assessment evolved in last two decades. Let us try to understand these two innovations and relationship between these two. **Online examination** is computer-based examination that requires internet connection and browser. Students can appear using their devices or devices arranged by the agency/organization at a designated place. **On-demand examination** allows the learners to take the examination when s/he is ready. Readiness depends on the learner and not on the institution. On-demand examination are generally carried out in online mode.

However, there was a strong recommendation from policy makers for introducing online and on-demand examination. There was little percolation of this idea in the conventional system. Whereas at the national level, the National Institute of Open Schooling (NIOS) On- Demand Exam System (ODES) is a unique feature of NIOS, similarly Indira Gandhi National Open University (IGNOU) also provides opportunity to learners through On-Demand Examination for several courses. In order to gets deeper insight let us read an announcement on on-demand examination from the pioneer university working in the area of open and distance learning.

On-Demand Exam in IGNOU expands further

18 July, 2011

Starting with two-certificate level programmes nearly one and half years ago, the scheme of On-Demand Examination has, now, been extended to more than 135 courses covering more than 30 programmes in Indira Gandhi National Open University (IGNOU).

The students can take benefit of the scheme of On-Demand Exam in all courses of Bachelor Preparatory Programme (BPP); all elective courses of Bachelor in Tourism Studies (BTS), Bachelor of Commerce(B.Com), Bachelor of Social Work (BSW), Bachelor in Arts (Economics) (BA-Eco), Bachelor Technology in Mechanical Engineering (BTME), Master of Commerce(M.Com), Masters of Arts- Tourism Management (MTM)(Cat-2) five foundation courses of and eighteen Application Oriented Courses of Bachelors Degree Programme (BDP).

IGNOU started a flexible and learner friendly scheme of examination, called "On – Demand Term End Examination" nearly one and half years ago. The scheme is an innovative provision for the students who could not find time to appear at examination of all the courses of a programme, in one go. In this scheme of examination, the students who have completed the minimum stipulated study period and submitted their assignments can now choose the date of examination as per their convenience and preparation and need not to wait for six months for term end examinations. This is a boon for those who have failed or could not appear in any paper for some reason or the other.

For On-Demand Term end Examination, the student has to get himself/herself registered in advance on-line through IGNOU website for which he has to pay a nominal fee. The procedure for payment of fees is also very simplified and flexible. If exam fees is paid by credit card, the Hall Ticket is generated instantaneously and the student can take its print out. Registration fee can also be paid through bank challan and bank draft in favour of IGNOU.

Another important feature of the scheme is that the result of On-Demand-Examination will be announced soon after the examination. This will help the students whose maximum period is about to expire or whose career progress needs immediate result. However, the certificate or degree will be issued along with the result of the term end exam. For availing the facility of On-Demand Term End Examination, the students have to ensure that they fulfill the eligibility criteria as set for the term end examination for that course or programme.

The scheme is expected to improve results and eliminate the possibility of malpractices in the examination as the entire process of registration, paper generation and result preparation is computer based and examination is carried under camera surveillance at the Regional Centers of IGNOU in direct custody of the Regional Director. It will thus help the genuine students in completing the courses as per their convenience.

Source:www.ignou.ac.in/bulletin board/ announcement/archives

It is hoped that reading the announcement had made you clear about the advantages of on- demand examination. You may mark the advantages of online examination. To recapitulate one may list out advantages as given in figure 16.1

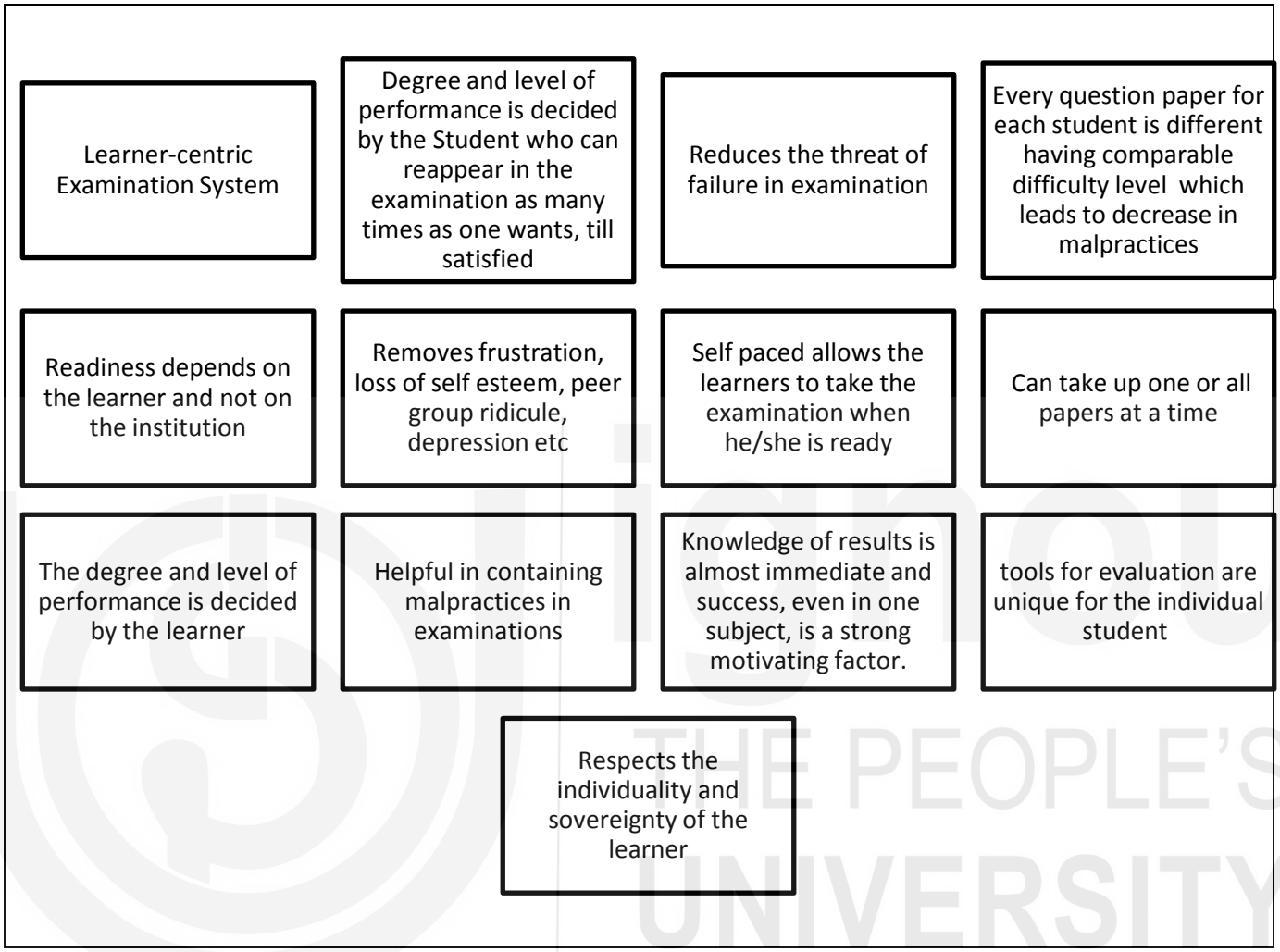

Fig. 16.1 Advantages of On- Demand Examination

Innovative features of On-Demand Examination System: The On-Demand Examination System (O-DES) is ICT enabled flexible of examination system free from traditional rigid time frame. In this case, students have advantage of selecting the suitable time for appearing in the examination rather than waiting for a period or six months or even more than that for waiting for next cycle of examination. In this case the problem of generating multiple set of question papers is resolved as instant generation of parallel question papers are generated with the help of ICT. Some of the salient features of the O-DES are as under:

- The system has symbiotic relationship with online examination. The registration process for O-DES is in online mode. Once the eligibility is ensured then all other processes are held online, like issuing hall ticket indicating date, time and examination center, conduct of examination and declaration of results.

- Since the entire process is computer based, there is inbuilt mechanism for checking the authenticity of the student's data, eligibility for the examination, validity of the admission. In other words, the system ensures that only genuine learners are benefitted.

- Students have flexibility for fee payment through online mode like net banking, credit card and debit card.

- It is safe, secured, and truly transparent system. The O-DES is reliable, valid and practical system. It has several advantages over traditional system.

- The system is very simple and user friendly, at the same time it is also cost-effective and saves time and effort in setting question papers, in database management and in data transfer.

- In this system, individualized question papers are generated on the day of examination by picking up the questions randomly from the question bank as per the blueprint and design, It is ensured that though each student may get different question paper but they may have the comparable content and difficulty level.

- The question papers are encrypted on the day of examination at the time of generation. The encrypted question papers are made available online to the examination centers. They are decrypted by the authorized person with the help of software and unique key is generated.

- Question bank is important component for generating required number of question papers for O-DES. Each question is coded with Meta data (Unit and chapter, type of question, difficulty level). Question bank is reviewed and moderated by subject experts, periodically. The finalized question papers are converted into database from which question papers are generated based on blueprint and design.

Learners' Views: Let us read what these learners had to offer with respect to on-demand examination.

Fig: 16.2: Learners' views on On-Demand Exam

Online Examination: You may have noticed that learning and assessment has undergone several changes in the last few decades. Many gadgets, like computer, tablets, mobile phones, mobile apps were not available when we were there as students. In the present day, technology is used in big way in education. Several educational institutions are using technology for their educational administration and management. They are using technology to carry out admission processes, fee payment, registration of students, conducting examination, declaration, and analysis of results. Using technology in assessment has many advantages. In our country several entrance examinations are conducted online. At the same time, several recruitment agencies also select their employees through online examination. Conduct of Online Examination has certain advantages over conventional pen-paper test.

We will discuss some of the advantages of online examination.

- **Generation of question paper:** Generation of question paper is easy, as questions are lifted from the database of question bank.
- **Flexibility in Test Conduction:** In online examination, there is less threat if the paper is postponed. Same material may be used in the subsequent time. Even, there is possibility of last minute changes in

online examination, whereas such changes are not possible in traditional pen paper test.

- **Security of the question paper**: As mentioned earlier in this unit, online question papers are generated encrypted and decrypted, which not only leads to minimizing the chance of paper leakage but also the chance of mass copying.
- **Result processing in shorter time**: Since online examination is computer based, the responses are calculated instantly and accurately. Even analysis of result is done with the faster pace. Contrary to pen-paper test, there are several steps involved and lot of time is consumed.
- **Unlimited Examination Centers**: For online examination we need computer, internet and web browser. Though most of the entrance examination is conducted at the designated centers, but this can be conducted at your own place of convenience. This also resolves the issue of hiring so many examination centers, providing security to these centers etc.
- **Cut on Logistics Cost**: When result processing is done online, it saves not only time but also money. In a conventional examination, lot of time, money and energy is consumed in transporting test material to the examination centers and bringing it back to the examining agency. Since there is lesser cost involved in conduct of examination, this is feasible, affordable.
- **Remote Supervision**: As stated earlier in this unit, in online test monitoring and supervision can be done through microphone and web browser. This can lead to appoint minimum number of invigilators.

Though there are several advantages of online examination but still it has several limitations especially for subjective examinations in which students are expected to elaborate and discuss. It is also not suitable for conducting practical examination. Online examinations are also of limited utility for conducting examination for the lower classes where students are not well versed with the computers. These are well suited for conduct of entrance examination. This has served as boon for education system in open and distance learning, where due to inaccessibility students are not able to carry forward their studies.

Check Your Progress 2

Notes: a) Write your answers in the space provided.

b) Compare your answers with those given at the end of the unit.

1) Out of the several advantages of online examination, which one do you consider the most significant one? Give your argument.

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16.5 CREATING A DEDICATED AGENCY TO GOVERN ASSESSMENT AND EVALUATION (NATIONAL BOARD OF ACCREDITATION)

You may recall that assessment and evaluation are carried out for several purposes. Teachers conduct assessment to know the effectiveness of classroom transaction, the board of school education conduct assessment for certification and promotion of students; while several agencies conduct assessment surveys to know the quality of the education system, and some specialized agencies conduct assessment to know the effectiveness of programmes and functioning of institutions and organizations. Now let us read the following chat boxes of various stakeholders.

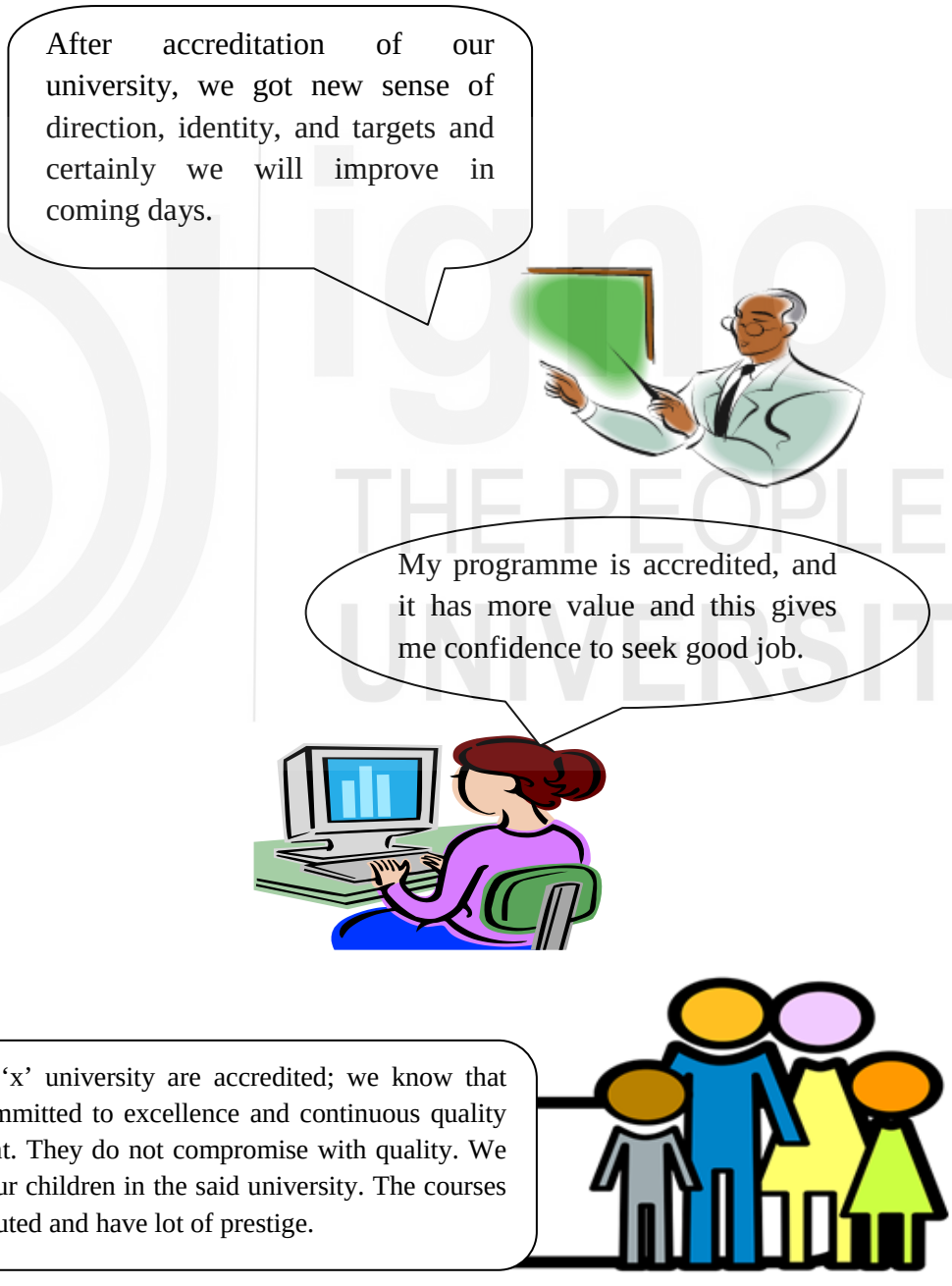

Fig. 16.3: Responses of various stakeholders related to accreditation of institutions and programmes

Think of a situation wherein you realize that the course you have opted for is both not recognized and accredited or the course does not meet national and international standards. Certainly, you will be disappointed, frustrated and may feel helpless. The solution to such situation is described in the forthcoming sections.

You are aware that in our country there are several conventional and professional organizations which are working in educational sector. These organizations are set up with a particular mandate and they have specific goals to target at. Then, we have dedicated agencies such as National Board of Accreditation (NBA), National Assessment and Accreditation Council (NAAC), Medical Council of India (MCI), Bar Council of India (BCI), National Council of Teacher Education (NCTE), All India Council of Technical Education (AICTE), University Grants Commission (UGC), Distance Education Council (DEC) and various boards of school education such as Central Board of School Education (CBSE). These boards monitor the functioning of institutions that falls under their jurisdiction. They conduct assessment and evaluation of organizations fall under their jurisdiction on periodic basis and accredit them. *Accreditation is the process of quality assurance and improvement, whereby a programme in an approved institution is critically appraised to verify that the institution or the programme continues to meet and / or exceeds the norms and standards prescribed by regulator from time to time. It is a kind of recognition that indicates that a programme or institution fulfills certain standards. Accreditation is a tool that stakeholders use to monitor, assess and evaluate the standards and quality of the education a student receives at a college, university or other institution of higher learning.*

NBA-India was initially established by the All India Council of Technical Education (AICTE) under section 10 (u) of AICTE Act, in the year 1994 to assess the qualitative competence of the programme offered by educational institution from diploma level to post graduate level in engineering and technology, management, pharmacy, architecture and related disciplines, which are approved by AICTE.

NBA came into existence as an independent autonomous body with effect from 7th January 2010 with the objectives of assurance and quality and relevance to technical education, especially of the programmes in professional and technical education. i.e. engineering and technology, management, architecture, pharmacy, and hotel management and catering technology, through the mechanism of accreditation of programmes offered by technical institutions.

Purpose served from Accreditation

- *Support and advice to technical institutions in the maintenance and enhancement of their quality provision.*
- *Confidence and assurance on quality to various stakeholders, including students.*

- *Assurance of the good standing of an institution to government departments and other interested bodies.*
- *Enabling the institution to state publicly that it has voluntarily accepted independent inspection and has satisfied all the requirements for satisfactory operation and maintenance of quality education.*
- *Encourages quality improvement initiatives by institutions.*
- *Improves students' enrolment in quality and quantity.*
- *Helps the institutions in securing funds.*
- *Enhance employability of graduates.*
- *Facilitates transnational recognition of degrees and mobility of graduates and professionals.*
- *Motivates faculty to participate actively in academic and related institutional departmental activities.*
- *Helps create sound and challenging academic environment in the institutions and contribute to social and economic development of the country by producing high quality technical manpower.*

Major objectives of NBA:

The main objectives of NBA are the following:

- To assess and accredit the technical education.
- To evolve standards and parameters for assessment and accreditation in line with the parameters lay down by the appropriate statutory regulatory authority for co-ordination, determination, and regulation of standards in the concerned field of technical education.
- To promote excellence through a benchmarking process, which is helpful in determining whether an institution is able to achieve its mission and broad based goals and in interpreting the results of the outcomes assessment process.
- To promote quality conscious system of technical education where excellence, relevance to market needs and participation by all stakeholders are prime and major determinants.
- To build a technical education system as facilitator of human resources, that will match the national growth by competence, contribution to economy through competitiveness and compatibility with societal development.
- To set the quality benchmarks targeted at global and national stockpile of human capitals in all the fields of technical education.
- To conduct evaluation of self-assessment of technical institutions and/or programme offered by them on the basis of guidelines, norms and standards specified by it, and
- To contribute to the domain of knowledge in quality parameters, assessment and evaluation.

Other organizations: Besides NBA, other organizations conduct assessment for accreditation. The National Assessment and Accreditation Council (NAAC) is an organization to accredit institutions of higher education (Universities, Autonomous Colleges, and Affiliated/Constituent College). NAAC is set up with a vision to make quality the defining element of higher education in our country through a combination of self and external quality evaluation, promotion and sustenance initiatives. NAAC arrange for periodic assessment and accreditation of institutions of higher education or units thereof, or specific academic projects or programmes. NAAC uses seven criteria to serve the basis of its assessment procedures and different weightages to these criteria, under different key aspects based on the functioning and organizational focus of the three types of higher education institutions. After assessment, institutions are graded based on their performance.

Recent initiatives taken by the Government: In order to regulate and monitor the quality of education in different universities and institutes, the Ministry of Education, Government of India came out with a scheme in 2015 called as **National Institutional Ranking Framework (NIRF)**. This framework outlines a methodology draws from the overall recommendations broad understanding arrived at by a core committee to identify the broad parameters for ranking various universities and institutions. The parameters broadly covered are as under:

- Teaching- Learning and Resources
- Research and Professional Practices
- Graduation Outcomes
- Outreach and Inclusivity
- Perception

Certain sub-parameters were significantly changed in the subsequent cycles. Result of the ranking is such that every institution in the country is striving hard to be ranked in top 100 and upgrading their standards year by year.

Assessment for Rankings of Institution: At the international level, the QS World University rankings is by Quacquarelli Symond Limited. It ranks universities and subjects at the global level annually. At school level, Educational World International School Ranking (EWISR) is the largest, most independent, and comprehensive primary-secondary schools survey in the world conducted annually. It ranks India's top 1000 schools nationally and in states and cities, divided into three main categories (day, boarding and international) based on 14 parameters of excellence in school education.

Thus, one of the important purposes of assessment is accreditation. The goal of accreditation is to ensure that education provided by institution meets acceptable quality. Accrediting agencies can be owned by government or may be private. These agencies develop assessment criteria and conduct

assessment. Through accreditation institutions comes to know its strengths, weaknesses and opportunities through an informed review process. It helps in identification of internal areas of planning and resource allocation. Funding agencies look for objective data for performance funding. The society also looks for reliable information on quality education offered. Employers look for reliable information on the quality of education offered to prospective recruits.

Check Your Progress 3

Notes: a) Write your answers in the space provided.

b) Compare your answers with those given at the end of the unit.

1) What is the goal of accreditation of educational institutions?

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16.6 MENTAL ABILITY TEST

You will agree to the fact that our examination system is criticized on several grounds. One such ground is that it is based on rote memory. Students require skills such as problem solving, critical thinking, analytical skills and skills of interpretation. These are 21st century learning skills which are required by students to stay competitive in changing job market. These include critical thinking, creativity, collaboration, and communication. These are tested through mental ability tests. These are related to mental processes required to adapt and improve upon a modern work environment. There is wide gap between the assessment conducted by school/college and assessment for entrance and recruitment examination as the latter consist of assessment of higher mental processes through Mental Ability Test. Almost all competitive examination has component of Mental Ability Test, such as National Talent Search Scheme conducted by NCERT, CAT, UGC/CSIR Examination for Junior Research Fellowship, GRE and GATE.

16.6.1 Meaning of Mental Abilities

These are abilities such as space visualization, perceptional speed, numerical ability, verbal communication, word fluency, inductive reasoning, and spatial intelligence of an individual.

16.6.2 Different Types of Mental Abilities

There are many types of mental abilities but broadly mental ability tests have two parts, namely verbal reasoning and non-verbal reasoning.

Verbal reasoning is further categorized into two parts mainly mental ability and logical deduction as given in table 16.1.

Table 16.1: Categorization of Verbal Reasoning

General Mental Ability	**Logical Deductions**
• Series completion • Analogy • Classification • Coding- decoding • Blood relationship • Puzzle Test • Sequential Output Tracing • Direction Series • Logical Venn Diagram • Mathematical Operations • Data sufficiency • Assertion and Reason • Situation Reaction Test	• Logic • Statement- Arguments • Statement- Assumptions • Statement Courses of Action • Statement Conclusions • Deriving conclusions from passages • Theme detection • Cause and effect reasoning

Then there is another group of reasoning called non- verbal reasoning. This includes figures related problems. The most prominent test types in this category are as under,

- Series
- Analogy
- Classification
- Analytical reasoning
- Mirror and water images
- Completion of pattern
- Figure matrix
- Paper folding
- Paper cutting
- Cubes and cuboids
- Dot situation
- Figure formation and analysis.

16.6.3 Some Prominent Competitive Examinations to Assess Mental Abilities

National Talent Search Examination (NTSE): The National Council of Educational Research and Training (NCERT) identify 2000 talented students across the country and nurture them. Identification of talented students is through two-tier examination process. Stage-I is conducted by the states/UTs, and Stage-II is conducted by NCERT. Selection of talented students is done through two test papers. Mental Ability Test (MAT) is an important component along with the Scholastic Aptitude Test (SAT).

Common Entrance Test (CAT): This test is conducted every year for those aspiring to pursue a career in managemen. It consists of just one paper divided into several sections that includes verbal reasoning, logical reasoning, data interpretation and quantitative aptitude.

The Graduate Record Examination (GRE): This standardized test is an admission requirement for many graduate schools in the United States and Canada. The GRE is owned and administered by Educational Testing Service. GRE measure verbal reasoning, quantitative reasoning, analytical writing and critical thinking skills that have been acquired over a long period of learning.

The Graduate Aptitude Test in Engineering (GATE): This test is one of the most competitive examination primarily assesses the comprehensive understanding of various subjects in engineering and science. GATE is conducted jointly by Indian Institute of Technologies (IITs) and Indian Institute of Science (IISc) on behalf of the National Coordination Board GATE, Department of Higher Education, MHRD, Government of India. The GATE score of a candidate reflects the relative performance level of a candidate. The score is used for admissions to various post graduate programmes in higher education. Recently, GATE scores are also being used for recruiting graduate in entry level positions. The examination has two important components, i.e. general and technical. General section includes verbal ability (English grammar, sentence completion, verbal analogies, word groups, instructions, critical reasoning and verbal deductions), Numerical ability (numerical computation, numerical estimates, numerical reasoning and data interpretation).

Apart from these prominent examinations, there are number of other examination conducted for either entrance test or for recruitment tests, where there is large dependency of assessment of mental abilities.

Check Your Progress 4

Notes: a) Write your answers in the space provided.

b) Compare your answers with those given at the end of the unit.

1) Why there is more focus on assessing mental abilities?

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16.7 GREATER EMPHASIS ON LEARNING OUTCOMES

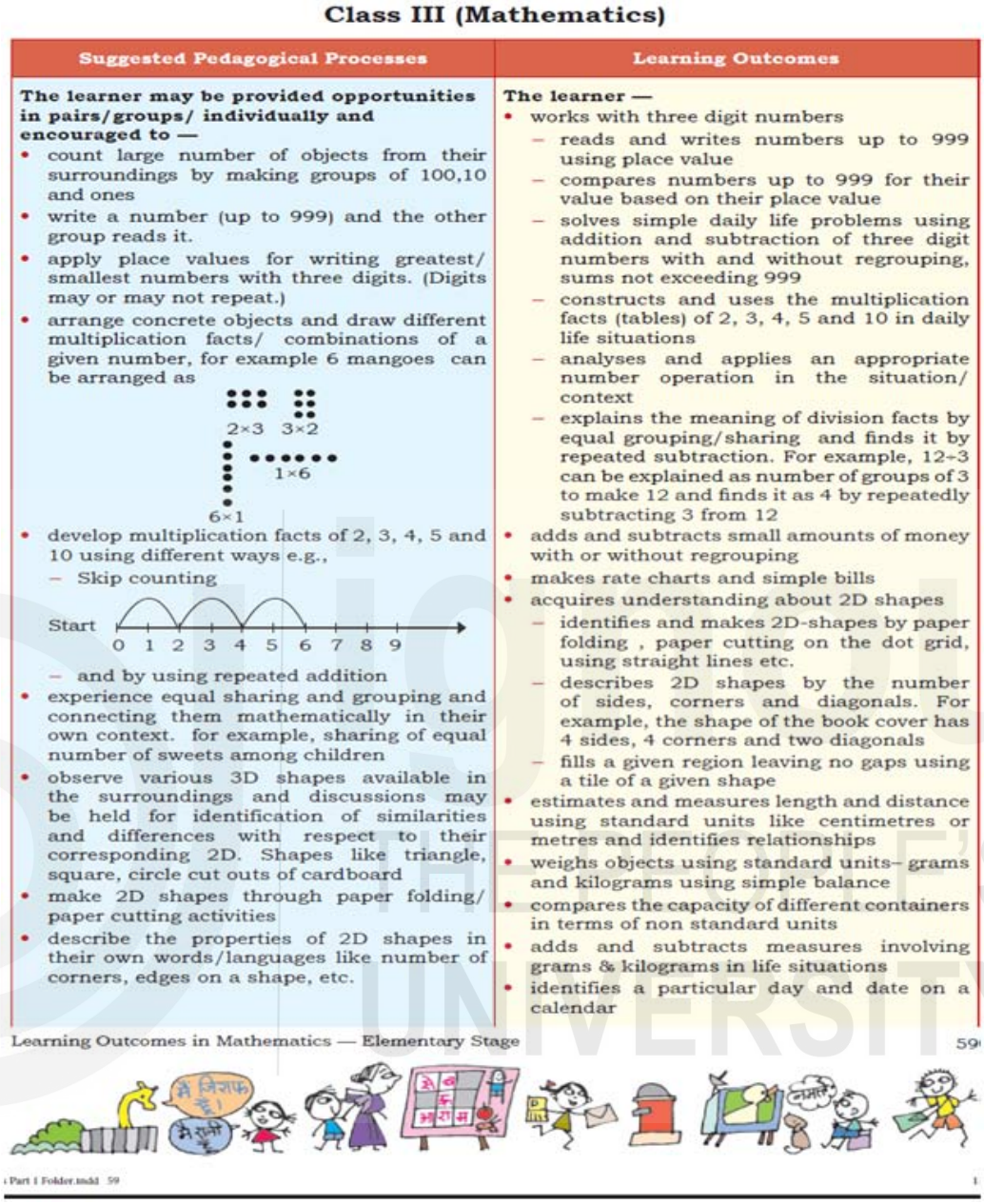
Learning outcomes and assessment has close relationship. The learning outcomes provide benchmark on which learning progress can be tracked in quantitative or qualitative manner. The learning outcomes help the teachers to direct their teaching learning process in the desired manner and also make other stakeholders, like parents, School Management Committees (SMCs) community and the state functionaries responsible and alert towards role for ensuring quality education.

We are aware that the quality in education has always remained a matter of global concern. In accordance with the Sustainable Goals at the global level in India, the Right of children to Free and Compulsory Education Act (RTE), 2009, entitles every child in the age group of 6-14 years to quality education. Though there is a mention of Learning Outcomes in the RTE Act, it has not been properly defined. In this context, the goals of education needed to be envisioned in a broader manner than mere learning the subjects. Instead of assessing students in a very superficial manner, there is need to assess students against certain benchmarks. This led to initiation of national level exercise to clearly define learning outcomes for grades 1 to 8 and in different curricular areas that included Environmental Studies, Mathematics, English, Hindi, and Urdu.

NCERT had developed the document on ‘Learning Outcomes at the Elementary Stage’ for teachers, teacher educators, educational administrators as well as parents to enhance the quality of learning in schools, by enabling teachers to ascertain learning skills more accurately and take corrective steps without delay and provide effective learning opportunities to all the students, including children with special needs. NCERT at national level and SCERTs at state level are academically supporting all stakeholders in the proper implementation of learning outcomes.

The document prepared by NCERT was developed in two sets. The set one contains the complete document, which includes curricular expectations, pedagogical processes and learning outcomes for classes 1 to 8. The set two contains the compact version with only the learning outcomes for each subject, and each class. From the academic session 2017-2018, specific benchmarks related to learning level of students from Classes, I to 8 had been included in the rules, and their implementation is mandatory. The document aims to standardize the parameters for assessing the levels of learning of school students. The learning outcomes are not prescriptive and may be contextualized as per the local-specific requirement.

These learning outcomes were mapped with curricular expectations and also with the pedagogical processes. Let us see an example from Class III Mathematics:



Class III (Mathematics)

Suggested Pedagogical Processes	Learning Outcomes
The learner may be provided opportunities in pairs/groups/ individually and encouraged to — • count large number of objects from their surroundings by making groups of 100,10 and ones • write a number (up to 999) and the other group reads it. • apply place values for writing greatest/ smallest numbers with three digits. (Digits may or may not repeat.) • arrange concrete objects and draw different multiplication facts/ combinations of a given number, for example 6 mangoes can be arranged as 2×3 3×2 1×6 6×1 • develop multiplication facts of 2, 3, 4, 5 and 10 using different ways e.g., – Skip counting Start 0 1 2 3 4 5 6 7 8 9 – and by using repeated addition • experience equal sharing and grouping and connecting them mathematically in their own context. for example, sharing of equal number of sweets among children • observe various 3D shapes available in the surroundings and discussions may be held for identification of similarities and differences with respect to their corresponding 2D. Shapes like triangle, square, circle cut outs of cardboard • make 2D shapes through paper folding/ paper cutting activities • describe the properties of 2D shapes in their own words/languages like number of corners, edges on a shape, etc.	**The learner —** • works with three digit numbers – reads and writes numbers up to 999 using place value – compares numbers up to 999 for their value based on their place value – solves simple daily life problems using addition and subtraction of three digit numbers with and without regrouping, sums not exceeding 999 – constructs and uses the multiplication facts (tables) of 2, 3, 4, 5 and 10 in daily life situations – analyses and applies an appropriate number operation in the situation/ context – explains the meaning of division facts by equal grouping/sharing and finds it by repeated subtraction. For example, 12÷3 can be explained as number of groups of 3 to make 12 and finds it as 4 by repeatedly subtracting 3 from 12 • adds and subtracts small amounts of money with or without regrouping • makes rate charts and simple bills • acquires understanding about 2D shapes – identifies and makes 2D-shapes by paper folding , paper cutting on the dot grid, using straight lines etc. – describes 2D shapes by the number of sides, corners and diagonals. For example, the shape of the book cover has 4 sides, 4 corners and two diagonals – fills a given region leaving no gaps using a tile of a given shape • estimates and measures length and distance using standard units like centimetres or metres and identifies relationships • weighs objects using standard units– grams and kilograms using simple balance • compares the capacity of different containers in terms of non standard units • adds and subtracts measures involving grams & kilograms in life situations • identifies a particular day and date on a calendar

Fig: 16.4: An Example of learning outcomes designed for class III Mathematics

In this example, you may notice the way pedagogical processes and learning outcomes are listed out.

Based on the learning outcomes, National Achievement Survey (NAS) was conducted for classes, III, V and VIII on November 17th, 2017 in all States/UTs of the country. The test items used in the survey were based on learning outcomes. In continuation of the elementary stage, competency-based learning outcomes for secondary stage (classes IX and X) for all subjects (English, Hindi, Urdu, Sanskrit, Science, Mathematics, Social Science, Health & Physical Education, and Art Education) are developed. The subject and class-specific curricular expectations and pedagogical

processes are listed taking examples from diverse learning contexts prevailing in the country. However, the pedagogical processes mentioned in the document are suggestive and are not corresponding one to one with the Learning Outcomes. The teachers have the flexibility to adopt, adapt as even modify the pedagogical processes as per the context and resource availability.

Learning Outcomes at Higher Education Level: We have learnt the way learning outcomes are framed at school level. Now we will turn our attention to the learning outcomes at higher education level. University Grants Commission (UGC) has framed the Learning Outcomes-based Curriculum Framework (LOCF) document at higher education level. The Quality Mandate of the UGC emphasized on Curriculum Reforms on Learning Outcome based approach with an aim to equip the students with knowledge, skill, values and attitude. Let us go through the **objectives of learning outcomes as framed by UGC.**

- ☐ To help formulate graduate attributes, qualification descriptors, programme learning outcomes and course learning outcomes that are expected to be demonstrated by the holder of a qualification;
- ☐ To enable prospective students, parents, employers and others to understand the nature and level of learning outcomes (knowledge, skills, attitudes and values), or attributes a graduate of a programme should be capable of demonstrating on successful completion of the programme of study;
- ☐ To maintain national standards and international comparability of learning outcomes and academic standards to ensure global competitiveness, and to facilitate student/graduate mobility; and
- ☐ To provide higher education institutions an important point of reference for designing teaching-learning strategies, assessing student learning levels, and periodic review of programmes and academic standards.

(Source: Retrieved from https://www. ugc.ac.in/pdfnews/4598476_LOCF-UG.pdf.)

The argument behind the inclusion of learning outcomes is that higher education qualifications are awarded on the basis of demonstrated achievement of outcomes (expressed in terms of knowledge, understanding, skills, attitudes and values) and academic standards expected of graduates of a programme of study. The expected learning outcomes are used as reference points that would help formulate graduate attributes, qualification descriptors, programme learning outcomes and course learning outcomes, which in turn will help in curriculum planning and development, and in the design, delivery and review of academic programmes. The **graduate attributes** reflect both disciplinary knowledge and understanding, generic skills, including global competencies, that all students in different academic fields of study should acquire/attain and demonstrate. For example, a Bachelor degree holder is expected to demonstrate characteristic attributes in the following areas:

Graduate Attributes

- Disciplinary Knowledge
- Communication Skills
- Critical Thinking
- Problem-Solving
- Analytical Reasoning
- Research-Related Skills
- Team work/Cooperation
- Reflective Thinking
- Digital Literacy
- Self-Directed Learning
- Multicultural Competence
- Leadership qualities
- Moral and Ethical Awareness
- Lifelong learning

(Source: Retrieved from https://www. ugc.ac.in/pdfnews/4598476_LOCF-UG.pdf.)

A **qualification descriptor** indicates the generic outcomes and attributes expected for the award of a particular type of qualification. For example, a graduate should be able to demonstrate on completion of a degree-level programme may include the following:

- Demonstrate

  (i) a fundamental/systematic or coherent understanding of an academic field of study, its different learning areas and applications, and its linkages with related disciplinary areas/subjects;

  (ii) procedural knowledge that creates different types of professionals related to the disciplinary/subject area of study, including research and development, teaching and government and public service;

  (iii) skills in areas related to one's specialization and current developments in the academic field of study.

- Use knowledge, understanding and skills required for identifying problems and issues, collection of relevant quantitative and/or qualitative data drawing on a wide range of sources, and their application, analysis and evaluation using methodologies, as appropriate to the subject(s) for formulating evidence-based solutions and arguments;
- Communicate the results of studies undertaken in an academic field accurately in a range of different contexts using the main concepts, constructs and techniques of the subject(s);
- Meet one's own learning needs, drawing on a range of current research and development work and professional materials;
- Apply one's disciplinary knowledge and transferable skills to new/unfamiliar contexts, rather than replicate curriculum content knowledge, to identify and analyze problems and issues and solve complex problems with well-defined solutions.
- Demonstrate subject-related and transferable skills that are relevant to some of the job trades and employment opportunities.

(Source: Retrieved from https://www. ugc.ac.in/pdfnews/4598476_LOCF-UG.pdf.)

Check Your Progress 5

Notes: a) Write your answers in the space provided.

b) Compare your answers with those given at the end of the unit.

1) State one learning outcome from a particular class and subject. How will you assess that whether that learning outcome is attained?

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16.8 INTERNATIONALIZATION OF ASSESSMENT

Improving the learning levels is the heart of the global education and development agenda for 2030. The education system needs to equip students with the most relevant knowledge, skills, and values in the era of global competitiveness. At the national level, we conduct National Achievement Surveys (NAS) by NCERT. At the international level, there are several assessment surveys conducted by different organizations and for different levels (see table 16.1). In the global era, where economy plays a major role, employability is not only restricted to one's own country. When there are emerging curricular expectations with the changing time; when there are new set of skills required to sustain in the global market; when there is no room for rote memory and the focus is on competency-based education wherein you are expected to create new knowledge rather than reproducing knowledge. Further, you have expectations to think out of the box. Thus, there is need to have such a system in practice wherein educational standards of different countries are placed on the common platform. There are several agencies involved in conduct of international assessment surveys. The most prominent international assessment survey is **Programme for International Student Assessment (PISA)** conducted by Organization for Economic Co-operation and Development (OECD), since the year 2000. The survey is conducted in 80 countries every three years. In PISA-2018, around 600,000 students were drawn representing about 32 million 15 plus children from seventy-nine countries. Next round of PISA will be conducted in the year 2021 wherein India will also be participating. We will read in detail about India's participation in PISA in the forthcoming paragraphs.

PISA tests the skills and knowledge of 15 years old students in reading, mathematics and science. The age 15+ is chosen because at this age young people in most OECD and other countries are nearing the end of compulsory education. In our country also 15+ means completion of ten years of formal

education and also completion of secondary stage of school education. In this assessment survey, conventional areas of reading, mathematics and science, which are foundation to a student's ongoing education are tested. This survey collects information on student's attitude, motivations, dispositions and beliefs, their home, school and learning environment, and also regarding skills such as collaborative, problem solving, creative thinking and global competence. In 2018, several other questionnaires were also administered, like familiarity with computers, expectations for further education and student's well-being. There are options available with the country to opt for some of the questionnaires based on their needs and aspirations.

Though PISA does not prescribe or promote any one curriculum, yet this assessment is based on the content that is found in curricula across the world and looks at student's ability to apply knowledge and skills to analyze, reason and communicate effectively as they examine, interpret and solve problems. Countries usually volunteer to take the test. In case, making all 15-year-old in the country take the test is not feasible, regions are identified within the country where the test can be conducted. Within the region, individual schools are chosen which are approved by the PISA governing board, and evaluated using stringent criteria. These schools represent the country's education system. Like Shanghai Province represented China and the states of Tamil Nadu and Himachal Pradesh represented India in 2009.

MCQs in PISA have variety of formats, including highlighting of a word within a text, connecting pieces of information, and making multiple selections from drop-down menus, in addition, typically up to one-third of questions in are open-ended. The test is set by educational experts drawn from different parts of the world. The tools are administered in the language of instruction that the students are familiar with. Further, it evaluates whether students can solve mathematical problems, or explain phenomena through scientific thinking or interpretation of text. In PISA-2018 computer-based tests were used in most countries.

PISA is a study done to produce comparable data on education policy and outcomes across countries. PISA ranks countries and economies according to their performance. PISA helps country to raise the standard of education in their country. It also assesses the quality and inclusivity of school systems in these countries. The aim of the test is not to rank the countries which volunteer to participate in the evaluation, but to give a comprehensive analysis of how education systems are working in terms of preparing its students for higher education and subsequent employment. After collecting results from across the world, experts translate these results into data points which are evaluated to score the countries. If a country scores well, it suggests that not only does it has an effective education system but an inclusive one, in which students from privileged and underprivileged backgrounds perform equally well. Further, the test evaluates whether the

education system in these countries teach students adequate social and community skills, which will enable the students to excel holistically as a member of the workforce. OECD also hopes that the test will allow countries to learn from each other about effective education policies and improve their own systems, using others as examples.

Programme for International Student Assessment (PISA) in India: India has participated in the PISA test only once before, in the year 2009. In this survey student from two states, viz. Himachal Pradesh and Tamil Nadu had participated. In that survey the position of our country was not so encouraging at the global level. India ranked 72nd out of 73 countries, outranking only Kirgizstan. Since then, India has strayed away from the survey in next three rounds.

Once again India will be part of PISA-2021 wherein 1.75 lakh students from government schools from Union Territory of Chandigarh, along with 600 students from *Navodaya Vidyalayas* and 3,000 from *Kendriya Vidyalayas* will be participating in the survey. India's participation in PISA 2021 is an attempt to move away from rote learning and move towards competency-based education. The assessment will help us to set global benchmarks for Indian institutes. It is true that it is hard to deliver competency-based education in our classrooms, because it requires a very different learning and teaching pattern. PISA will help India understand different ways of learning and substantiate difficult educational reforms. It will analyze if poverty is the real reason for limited education.

Table 16.2: Main International Surveys of Student Achievement

	Curriculum/Discipline area Assessed	**Age/Class**	**Frequency**
prePIRLS	Reading	Class 4	Every 5 Years
PIRLS	Reading	Class 4	Every 5 Years
TIMSS	Mathematics and Science	Class 4, 8 & 12	Every 4 Years
PISA	Reading, Mathematics and Science	Age 15	Every 3-4 Years
SEACMEQ	Literacy, Numeracy	Class 6	Varies, Every 3-4 Years
PASEC	French, Mathematics, National Language for each country	Class 2, 5	Varies by Country, but generally annually
LLECE	Languages (Spanish, Portuguese), Mathematics	Class 3, 6	Every 5 Years

Notes:
prePIRLS: It is a stepping stone to participate in PIRLS.
PIRLS: Progress in International Reading Literacy Study.

TIMSS: Trends in International Mathematics and Science Study

SEACMEQ: Southern and Eastern Africa Consortium for Monitoring Educational Quality

PASEC: Programme d' analyse des systemes educatifs de la Confemen, where the latter stands for conference des Ministers de l' Education des Pays ayant le Francaisen Partage (Programme for the Analysis of Education Systems).

LLECE: Laboratorio Latinomericano de Evaluacion de la Calidad de la Educacion

(UNESCO's Latin American Laboratory for the Assessment of the Quality of Education)

(Source: NAS Review and Strategic Planning Committee Report, 2012)

Check Your Progress 6

Notes: a) Write your answers in the space provided.

b) Compare your answers with those given at the end of the unit.

1) Should our country participate in international achievement surveys? Give two arguments to support your answer.

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16.9 RELYING MORE ON EDUCATIONAL STANDARDS

Education standards are the learning goals for what students should know and be able to do at each grade level. Educational standards are the knowledge and skills students should possess at critical points in their career. Standards serve as basic educational reform across the nation and policy makers respond to the call for clear definition of desired outcomes of schooling and a way to measure student's success in terms of these outcomes. We have realized that today's education must sync with tomorrows job market. Our education system needs to move from conventional examination system to equip students with skills that bridge their disconnect with job markets. Educational standards need to be upgraded by inculcating problem-solving skills, logical reasoning, language comprehension, general knowledge and data interpretation. Life skills need to be inculcated amongst students.

You have read about national achievement surveys in the previous section of the unit. The results of these surveys are used for not only planning and designing appropriate interventions for improving the standards. The results of National Achievement Survey are aggregated at the district, state and national level. Data obtained from these surveys helps in setting standards for various administrative regions. Benchmarking helps in setting targets and

planning for interventions. Thus, several countries/states rely on the data for setting standards.

In order to set norms and standards, and to provide guidelines for assessment, and evaluation of all recognized school boards in India, NEP-2020 recommended a National Assessment Centre-**PARAKH (Performance Assessment, Review, and Analysis of Knowledge for Holistic Development).** The center will guide the State Achievement Survey (SAS) and will undertake the National Achievement Survey (NAS), and will monitor learning outcomes in the country. The center will also encourage and help school boards to shift their assessment towards meeting the skill requirements of 21st century, and advice school education boards regarding new assessment patterns and latest research, promote collaboration between boards, and become instrument for sharing of best practices among school boards. Thus, the proposed center will help in relying more on educational standards.

Check Your Progress 7

Notes: a) Write your answers in the space provided.

b) Compare your answers with those given at the end of the unit.

i) What does PARAKH stands for? What are its proposed roles and function?

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16.10 LET US SUM UP

In this unit, you have learned about the way assessment and evaluation is reflected in the policy documents. You have also learnt about innovative practices of assessment in the form of online and on demand examination. You are acquainted with several national organizations which are responsible for maintaining quality standards. Furthermore, you were made aware of international assessment (PISA) and its different features. You also came to know that how this was different from national achievement survey. At the end, you have learnt about educational standards and its importance. Hope these trends in assessment will widen your horizon in the domain of understanding the recent trends in assessment.

16.11 UNIT-END EXERCISES

1) Highlight the prominent issues of assessment practices reflected in the policy documents.
2) Online and on-demand examination in school education is a distant thought in our country. Elaborate the statement.
3) Critically analyze the role of National Board of Assessment in our country.
4) 'Mental ability test is panacea to assess mental abilities'. Justify the statement.
5) List out salient features of Programme of International Students Assessment.
6) Setting up of Educational Standards is need of the hour in our country. Give reasons.

16.12 REFERENCES AND SUGGESTED READINGS

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Website

https://www. ugc.ac.in/pdfnews/4598476_LOCF-UG.pdf.

16.13 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress 1

1) Assessment has been given importance in the policy documents because of its immense importance in teaching-learning process. Assessment not only helps in improving the teaching- learning process and attainment of learning outcomes, but also used as a valid tool for certification, fixing accountability and maintaining quality standards in imparting education.

2) The three recommendations on assessment suggested by New Education Policy-2020 are as under:

   a) Introduction of 360 degree multidimensional report card that reflects in greater details the progress, as well as the uniqueness of each learner in all domains.

   b) Board examination will be made easier in the sense they test primarily core capacities/competencies rather than content memorization.

   c) Setting up of National Assessment Centre/PARAKH. To set standards and guidelines for assessment, and evaluation of all recognized schools boards in India.

Check Your Progress 2

1**)** Out of the several advantages of online examination, I consider speed and accuracy the most important advantage of online examination. One such example is that Joint Entrance Examination (JEE) main was conducted for seeking admission for courses in engineering during 23-26 February 2021 and results were released on March 8, 2021 in a short span of time.

Check Your Progress 3

i) The goal of accreditation is to ensure that education provided by institution meets acceptable quality. Through accreditation institutions comes to know its strengths, weaknesses and opportunities through an informed review process. It helps in identification of internal areas of planning and resource allocation. Funding agencies look for objective data for performance funding. The society also looks for reliable information on quality education offered. Employers look for reliable information on the quality of education offered to prospective recruits.

Check Your Progress 4

1) Our examination system is criticized on several grounds. One such ground is that it is based on rote memory. Students require higher mental abilities such as problem solving, critical thinking, analytical skills and skills of interpretation. These are 21st century learning skills which are required by students to stay competitive in changing job market. These include critical thinking, creativity, collaboration, and communication. These are related to mental processes required to adapt and improve upon a modern work environment. There is wide gap between the

assessment conducted by school/college and assessment for entrance and recruitment examination, as the latter consist of assessment of higher mental processes. Thus, there is increased focus on attaining higher mental abilities.

Check Your Progress 5

1) There is one learning outcome for Class VIII Social Science. It is stated as under:

   Draw bar diagram to show population of different countries/India/States.

   The teacher will provide population data of different states/countries, and will ask them to draw the given bar graph. The bar graph will be assessed by using rubric.

Check Your Progress 6

1) Yes. In my opinion that our country must participate in international assessment surveys, as the assessment will help us to set global benchmarks for Indian institutes. The education system of our country needs to equip students with the most relevant knowledge, skills, and values in the era of global competitiveness. These surveys will help our country to assess the strengths and limitations of our education system.

Check Your Progress 7

1) The PARAKH stands for Performance, Assessment, Review, and Analysis of Knowledge for Holistic Development, a proposed National Assessment Centre by NEP-2020. The basic roles and function are as under:

   - Setting norms and standards, and guidelines for students' assessment, and evaluation of all recognized school boards in India.
   - Guiding the State Achievement Survey (SAS) and undertaking the National Achievement Survey (NAS), and monitoring learning outcomes in the country.
   - Encouraging and helping school boards to shift their assessment towards meeting the skill requirements of 21st century.
   - Advice school education boards regarding new assessment patterns and latest research, promote collaboration between boards, and become instrument for sharing of best practices among school boards.