

## **Module 3      Instructional Techniques**

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### **Unit 3.4      Measurement and Evaluation**

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# Introduction

## About this unit

Welcome to Unit 3.4 Measurement and Evaluation.

The unit consists of two sections. Section One examines a variety of strategies to determine trainees' performance.

Section Two examines the processes and documentation used to evaluate training programs, teacher performance and the training function.

## How to use this book

As well as information about measurement and evaluation this book includes activities.

These activities don't play a part in your assessment for this unit, they are there to help you check your learning progress.

Read the information, then complete the activities as you work through the book.

Assessment tasks in measurement and evaluation relevant to your area of vocational expertise are provided to assess your achievement of the learning outcomes.

**It's these tasks that determine your competence in this unit.**

## How you'll be assessed

To be assessed for this unit, you will complete the two assignments.

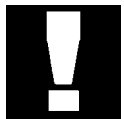
Your tutor will give you details of any specific requirements for each of your assignments.

## Finding your way

As you work through the text you'll see symbols in the left margin of some pages. These “icons” guide you through the content.



Read



Important—take note!



Check your progress



Assessment task



## Competency

The curricula of this training programme for Technical and Vocational teachers are competency based. The competency for each unit is expressed as a number of learning outcomes and assessment criteria.

Assessment criteria specify what you must be able to do to show you have gained the knowledge and skills needed to achieve each learning outcome.

Each unit has its own assessment criteria specified. Recognition of prior learning is encouraged. If you feel confident you have the necessary level of competence to successfully complete the elements shown under Assessment Criteria on the next page you may be able to take the assessment without studying the unit.

### Learning outcomes

When you have completed this unit you should be able to:

- Define the main concepts of testing, measurement, assessment and evaluation.
- Identify different kinds of assessment.
- Identify and develop assessment tools.
- Outline Bloom's taxonomy and apply its use to determine levels of difficulty of test items.
- Match assessment tools with instructional objectives.
- Examine the value of different reporting techniques.
- Examine strategies for assessing and recording performances on practical tasks.
- Identify assessable elements of practical tasks.
- Explain the concept of student profiles.
- Explain how test results can be used to improve performance and facilitate decision-making.

**Assessment criteria**

- Define testing, measurement, assessment and evaluation.
- List four (4) ways of assessing students.
- List five (5) tools used to assess students.
- Describe Bloom's taxonomy.
- State accurately the levels of difficulty of identified items using Bloom's taxonomy.
- Select the evaluation tool that should be used with a given set of instructional objectives.
- List five (5) ways of reporting students' performances.
- State two (2) reasons for the appropriateness of each specified reporting technique.
- State accurately how performance will be assessed and recorded on given examples of practical tasks.
- Identify skills and knowledge required of students for given examples of practical tasks.
- State accurately the competencies expected of a student from the given profile of the student.
- State from given test results, how the results will be used to provide feedback to students to improve the students' performance and facilitate decision making.

**Other resources you may find useful**

- Bloom, B. S. 1964, Taxonomy of Educational Objectives, Longmans.
- Rominszowski, A. J. 1981, 'Bloom's and Krathwohl's taxonomies' in Developing Auto Instructional Materials.
- Stufflebeam, D. L. Standards for evaluations of educational programs, projects and materials, New York: McGraw Hill 1981.



# Section 1



## Measurement of performance

This section examines a variety of strategies to determine trainee performance.

### What is Assessment?

Assessment is the gathering and judging of evidence about the performance of individuals. It is based on criteria provided in training specifications or curricula, or by criteria established in the workplace, or by agreement between teachers or assessors and those assessed.

A well-designed objective-based curriculum contains several characteristics. It has inputs, outputs and controls. The training inputs, processes and outputs can be *measured* to ensure the efficiency and effectiveness of the purposes of the training.

All processes are directed towards assisting trainees to achieve what they must be able to do in their designated jobs.

One of the basic premises is that one must learn by doing. Although a trainee may be thought to possess the knowledge or skill, there is no certainty until the trainee actually performs a task. So, if you must determine whether trainees have achieved a particular objective they must be able to demonstrate this skill or knowledge. Therefore it is necessary to develop *tests* which *measure* a trainee's performance – *performance testing*.

Since all jobs can be identified as a series of tasks, which are composed of skills that may be performed with varying degrees of proficiency, a rationale for the importance of performance tests is established.

Since the test is designed around a job-relevant task or skill, the trainee and teacher are provided with critical information regarding the trainee's likely future performance *on-the-job*. Teachers can also gauge the success of their management of trainees' learning by the degree of success the trainee has against a job requirement. This may lead to altering your approach to the learning tasks required.

The goal of performance testing is to translate a trainee's performance on a task into a mark or report which reflects the quality of the performance, and to relate this to a pre-determined level of performance required of the task.

The record of performance allows decisions to be made; that is, was the minimum acceptable behaviour for skill attainment demonstrated? *Yes* or *No*.

### **Practical Assessment & Marking**

In determining how to obtain the best record of a trainee's performance, one problem that requires careful consideration is the marking of the record of a practical performance. Issues that need to be considered are:

- is every test item of equal value?
- are some items vital and others "nice to have?"
- if they are not of equal value, what numerical weight should be given to each record to achieve the minimum standard acceptable for the job?

You also need to consider how the record is to be marked so that it reflects the trainees' actual performance.

It is strongly recommended that % be used only when absolute criteria are available.

For example, accuracy in a typing test:

1,000 characters  
- result 98 percent

#### **Something to ponder:**

Brian is a trainee pilot.

He has passed his training course with a mark of 90 percent.

What 10 percent doesn't he know?

Is it how to land the plane?

**Advantages of performance tests**

1. A performance test is the most direct means of finding out whether a trainee can actually do the job and do it well. Written tests, no matter how carefully or cleverly constructed, may fail in this respect.

For example, a trainee nurse may pass a written test on how to prepare a patient for surgery, answer all the questions asked, and yet make several errors while performing the task.

2. Performance tests reveal, better than any other test, specific difficulties a trainee encounters when doing a job. In a situation where a trainee is required to service, repair, shape, assemble or disassemble something, a performance test is practically the only way of revealing whether the trainee:
  - handles tools efficiently
  - observes safety precautions so as not to endanger self or fellow workers
  - carries out the operations in the correct order or sequence

**Limitations of performance tests**

- They may be difficult to set up properly
- They are more difficult to administer than written tests because they often require tools and special equipment
- Much of the teacher's time is required in checking trainee performance

Following is an example of a well-constructed performance test that accommodates both the knowledge and skill aspects of the task.

# Test Specification

FOR TASK ..... <i>Install a water service</i> — ..... COURSE..... <i>Plumbing</i> .....	
..... <i>main to meter</i> ..... TEST TIME ..... <i>4 hours</i> .....	
REQUIREMENTS	
MATERIALS.. <i>Test sheet, reference material, checklist, water supply regulations</i> .....	
EQUIPMENT <i>Simulated conditions; 100 mm water main; all necessary tools and equipment</i>	
TESTING PROCEDURE	
TESTER (Assessor)	TRAINEES
1. <i>Provide written test sheets</i>  2. <i>Supervise and assess written test</i>  3. <i>Ensure that all necessary tools and equipment are available</i>  4. <i>Issue task checklist</i>  5. <i>Supervise the installation</i>  6. <i>Check the installation according to the checklist</i>  7. <i>Make final assessment of the work</i>  8. <i>Record the result</i>  9. <i>Supervise the dismantling of the installation</i>	<i>Answer the test sheet without error</i>                    <i>Carry out the installation tasks as required</i>

## Written Test

### **Install a water service—main to meter.**

1. When excavating in a roadway, care must be taken to prevent damage to other services. State three authorities that should be contacted for the location of the services.
2. What type of mains requires a tapping saddle?
3. What is the regulation minimum depth for a service pipe in a roadway?
4. State the minimum size-tapping hole for tapping 100 mm cast iron main.
5. State the material and minimum wall thickness for a 20 mm service pipe, main to meter.
6. State the maximum distance the water meter may be fitted above ground surface level.
7. At what angle to the building line must a service pipe, which crosses a road, be laid?

**When the test is completed without error, the trainee will be directed to proceed with the simulated installation.**

# Checklist

## Install a water service—main to meter.

☐

1. Answer the test sheet without error.

## Planning the installation.

☐

1. Have approved materials been used?

## Tapping the main.

☐

1. Is the ferrule facing the correct direction?

☐

2. Has the pipe been correctly laid?

## Installing the meter.

☐

1. Is the meter in the correct position?

☐

2. Is the meter level?

☐

3. Is the meter at correct height above ground level?

☐

4. Is the meter installed with the correct flow direction?

☐

5. Has a controlling stop tap been installed before the meter?

☐

6. Has the service pipe been purged of air and dirt?

☐

7. Are there any leads from the service pipe?

☐

8. Satisfactory dismantling of the installation?

☐

9. Satisfactory return of equipment to store?



### Activity 1

On pages 8, 9 and 10, we have provided you with sample test specification material used in a plumbing industry-training course.

When you have read it through, turn to the blank test specification on the next page.

Use it to outline how you would test trainees in the performance of a particular task required in your industry.

Decide on the task, list the materials and equipment required, and then list all of the elements that require checking during the testing procedure.

**Discuss your completed specification with your tutor.**



## TEST SPECIFICATION

FOR TASK ..... COURSE .....

..... TEST TIME .....

## REQUIREMENTS

MATERIALS .....

EQUIPMENT .....

## TESTING PROCEDURE

TESTER (*Assessor*)

TRAINEES





## Purposes of assessment

Four purposes for assessment are outlined below:

1. To assist and support learning by advising the learner about quality of performance and the learner's rate of progress towards the achievement of the specified standard. This is referred to as *formative assessment*.
2. To help learners and their teachers to determine their training needs. Assessment for this purpose is called *diagnostic assessment*.
3. To determine whether a unit or element of competency, or an objective/learning outcome has been achieved for the formal purpose of recognition of training. This process of judgement is known as *summative assessment*.
4. To determine whether a person has achieved the standards of competency, which have not yet been formally assessed or recognised, so that they may gain entry to, or credit in, recognised courses. This form of assessment has become known within the competency-based education and training system as *recognition of prior learning*.

## Assessment strategies

### Assessing knowledge and skills

It is critical that you design, or select and use, appropriate assessment methods and instruments to determine whether a trainee has achieved the required objectives/learning outcomes of a training session.

The assessment method must be appropriate to the situation, the conditions and the expected performance to be assessed.

Key forms of assessment include:

- *observation*, where a teacher and/or assessor observes a learner carrying out a particular task; the observation may include questions
- *demonstration and questioning*, where the observation consists of structured practical demonstration, and the assessor can see both the process and finished product

- *pen and paper tests and essays*, which are often used to measure the extent of knowledge; they may also be used to assess deductive powers or as a complement to practical demonstration
- *oral tests*, which can be used as part of practical demonstration, or to test speed and accuracy or recall, when these are essential in the assessment of particular elements of competency
- *projects* – these are used on a largely unsupervised basis, though they may, in some instances, involve working in groups; the completed project is used as evidence from which the assessor makes a judgement
- *simulations*, including computer simulations and role playing – where actual tasks and conditions are similar to real life situations
- *portfolios* – these are useful for assessing the achievement of skills achieved in the past. Work samples also provide a source of evidence for skills and knowledge acquired in the past
- *computer-based assessment*, which can take the form of question and answer or it can be interactive where the assessor can seek further responses or clarification if the responses are unclear
- *checklists*, where the assessor can observe the quality of performance by using a checklist of critical characteristics of satisfactory performance

Trainees should be encouraged to use these methods for self-assessment. This will assist in their learning and help them to make judgements about their readiness for final (or summative) assessment.

### **Classification of educational objectives**

#### **Bloom's taxonomy**

Benjamin Bloom and his colleagues at the American Psychological Association (APA) first became interested in specifying outcomes for the educational system through a concern with the processes of assessment and testing in the early 1950s.

Bloom chaired a sub-committee of the APA, which was charged with the task of devising ways in which college examiners could compare and contrast their methods of assessment for American students. It quickly became clear in Bloom's words that:

*"...a theoretical framework might best be obtained through a system of classifying the goals of the educational process, since educational objectives provide the basis for building curricula and tests, and represent the starting point for much of our educational research."*

Bloom eventually came up with a threefold taxonomy<sup>1</sup> of educational objectives that would classify all learning. He divided learning objectives into domains.

1. The *cognitive* domain deals with the learning of knowledge and the acquisition of intellectual skills.
2. The *affective* domain includes the development of attitudes, values, interests and appreciations.
3. The *psychomotor* domain includes physical skills and abilities.

Each domain is ordered into levels of competence.

Within the cognitive domain the learner progresses through six levels of mastery; knowledge, comprehension, application, analysis, synthesis and evaluation.

Five levels are specified for the affective domain; attending to specific phenomena, responding to them, learning to value them, organising one's own values, and creating a system of personal values to guide one through life.

Six levels are categorised in the psychomotor domain. These relate to the learning of practical tasks that require perception, decision and action.

Educational objectives are developed on the basis of the domains and levels of competence within them. Learning domains can be categorised in the three ways indicated.

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<sup>1</sup> Taxonomy: *classification, arrangement, categorisation*

**Cognitive Domain**

Category Name	Brief Description
Knowledge	The remembering of previously learned material. The lowest level of learning outcomes is in the cognitive domain.
Comprehension	Ability to grasp the meaning of material. Interpreting, paraphrasing, explaining.
Application	Ability to use learned material in new and concrete situations. Applies, demonstrates.
Analysis	Ability to break down material into its component parts, so that its organisational structure may be understood.
Synthesis	Ability to put ideas together to form a new whole. Proposes, integrates, designs.
Evaluation	The ability to judge the value of materials for a given purpose.

**Affective Domain**

Category Name	Brief Description
Receiving	The student's willingness to attend to particular phenomena or stimuli.
Responding	Active participation, the learner not only attends but also reacts favourably.
Valuing	Demonstration of a preference, belief, or commitment with respect to certain behaviours/phenomena.
Organisation	Bringing together different values into a consistent and coherent value-system.
Characterisation	The total adoption of a value-system, so that it becomes a personal life-style.

### Psychomotor Domain

Category Name	Brief Description
Reflex Movements	Movements or actions that are the response to a stimulus without the conscious intent of the learner.
Basic – Fundamental Movements	Those inherent movement patterns that form the basis for specialised complex skill movements.
Perceptual Abilities	Efficiently functioning perceptual abilities are essential to development of the learner in the affective, cognitive and psychomotor domains.
Physical Abilities	The functions characteristic of organic vigour which when developed provide the learner with a sound, efficient, functioning body.
Skilled Movements	The degree of efficiency with which the learner can perform a complex task.
Non-discursive Communication	The expressive movement (facial) and interpretative movement (modern dance).



#### Activity 2

Bloom's threefold taxonomy classifies educational objectives into domains.

In your own words describe the levels of competence contained within:

- the cognitive domain
- the affective domain
- the psychomotor domain

# **Assignment No. 3.4 – 1**

## **Unit 3.4 Measurement and Evaluation**

You are now required to do the Assignment 3.4 – 1 that will be found at the end of this unit or distributed by your Tutor.



## Selecting appropriate assessment methods

### Instructional objectives

Instructional (or training, or behavioural) objectives are statements that describe the intended result of completing a unit of training; that is, competence to perform a specific task to the standard expected in employment.

Objectives must state clearly the outcomes learners are intended to achieve as a result of undertaking a course of study.

#### Please note:

Unit 3.2 “Writing Objectives” explains the essential properties of objectives and the advantages they provide to technical and vocational education.

Unit 3.2 also details the relationship between objectives and learning outcomes. It covers in detail the three essential elements of learning outcomes:

- what a learner is expected to be able to do (performance) as a result of a learning experience
- the facilities and constraints under which the assessments are to be carried out (conditions)
- the level of performance in terms of time, accuracy and completeness of the tasks involved (standards)

“Objectives” and “learning outcomes” are so intricately linked that we shall take the liberty of expressing this important training function as training objectives/learning outcomes.

As a teacher you will be required to determine which training objectives/learning outcomes you will assess within a “training room” environment (off-the-job) and those that are best assessed under actual workplace conditions (on-the-job)

Assessing within a controlled training room environment or simulated workshop is quite different from assessing a trainee in the workplace.

The following table compares the advantages and disadvantages of assessing in a training room or on-the-job.

<p><b><u>On-the-job</u></b></p> <p><b>Advantages</b></p> <p>Real situation/conditions</p> <ul style="list-style-type: none"> <li>• Equipment/materials readily available</li> <li>• Easier to set up assessment</li> </ul>	<p><b><u>Off-the-job</u></b></p> <p><b>Advantages</b></p> <ul style="list-style-type: none"> <li>• Can control conditions (reliable)</li> <li>• No distractions</li> <li>• Can set up assessment at a pre-arranged time</li> <li>• Can conduct task more slowly for close observation</li> </ul>
<p><b>Disadvantages</b></p> <ul style="list-style-type: none"> <li>• Distractions (e.g. co-workers)</li> <li>• Time pressures (e.g. to complete a task)</li> <li>• Assessment has to wait for a situation to arise</li> <li>• May be affected by weather (if outdoor) or other external factors</li> </ul>	<p><b>Disadvantages</b></p> <ul style="list-style-type: none"> <li>• Artificial – cannot simulate real contingencies/problems/workplace demands</li> <li>• Trainee may not be nervous in a simulated situation but could be in a real situation (e.g. dealing with a customer)</li> </ul>

The objectives/learning outcomes you write for a training session will determine *how*, *when*, and *where* you assess.

The following steps provide a framework by which a teacher can plan for assessing trainee performance, both on, and off-the-job.

Step 1. Analyse the objectives/learning outcomes and prepare a list of potential assessment methods for each objective/learning outcome to be assessed, as you did on page 13.

Step 2. Using your list of potential assessment methods, choose the method(s) you consider the most compatible with the objective/learning outcome.



Develop an assessment matrix based on your session plan, as follows:

- (a) draw up a table with a number of rows or columns
- (b) list a range of assessment methods that are to be used to assess trainees in the left-hand column, one method on each row
- (c) label each column with a number which identifies each objective/learning outcome
- (d) place a tick in the box where the assessment method and appropriate objective/learning outcome intersect

### EXAMPLE

Assessment method	Objectives/learning outcomes					
	1	2	3	4	5	6
Written test	✓	✓	✓	✓		
Practical test	✓	✓	✓			
On-the-job assessment				✓	✓	✓
Assignment	✓	✓	✓	✓		
Self-assessment	✓	✓	✓	✓		
Oral questioning						

By examining the matrix it can be seen that learning outcomes 1 - 4 can be assessed by a written test. Learning outcomes 1, 2 and 3 can be assessed by a practical test, and so on.

It is possible therefore to reduce the number of assessments by treating objectives/learning outcomes as “clusters” of assessment events rather than individual assessments.

Step 3. As a general rule you can use the following assessment methods for assessing knowledge:

- written tests
- oral questioning
- case studies
- reports

- evidence from prior learning
- simulations/role plays

Use the following assessment methods for assessing practical skills:

- direct observation of work activities
- skills/work sample tests
- projects
- log books
- records of achievement/portfolios

Step 4. Feedback should be provided to the trainee, during or at the end of an assessment session, depending on the procedures used. Notification of the need for a trainee to repeat an assessment, or undertake further training, should be made immediately after an unsuccessful performance.

**To judge a trainee's performance:**

- set quality rather than numerical standards for performance
- assess the whole integrated performance
- refer to performance (assessment) criteria to specify the properties that characterise performance as competent
- determine the number of competent performances required to establish consistent performance
- judge whether an individual has satisfied a criterion or standard of performance
- decide if strengths in one area compensate for weaknesses in another area



**Activity 3**

Develop your own matrix by selecting three or four learning outcomes associated with your training responsibilities, and an appropriate range of assessment methods.

**Discuss your work with your tutor.**



## Assessing on-the-job performance

1. Make a list of the people you will need to inform that on-the-job assessment is to occur. Ensure that safety factors are observed.
2. Build sufficient time into your on-the-job assessment strategies to obtain details about the trainee(s) from work supervisors/trainers who will assist you to make a fair and accurate assessment.
3. Brief the trainee about the on-the-job assessments that are to be undertaken, *when* they will be held, *what type* of assessment, *where* they will be held and *when* the results of the assessment will be available.
4. Ensure the workplace venue is critical to the success of any on-the-job assessment. Ensure that all equipment and materials will be available to the trainee at the pre-determined time to undertake the on-the-job assessment.
5. Conduct the assessment. The assessment instruments you can use for recording on-the-job assessments include:
  - *oral questioning* – to determine the trainee's understanding of relating knowledge relevant to an observed procedure
  - *observation checklists* – to assess the ability to operate equipment or perform a workplace task
  - *product checklists* – to assess the trainee's ability to produce a product to stated specifications
6. Give feedback, in the form of discussion with the trainee, outlining achievement of the objectives/learning outcomes, the need for further training or for the trainee to repeat the assessment, should be provided to the trainee as soon as possible after the completion of the on-the-job assessment.

This method of assessment is critical in determining competency if actual equipment or machinery has not been available during the training.

## Recognition of prior learning (RPL)

RPL is the process of assessing a learner's prior competencies obtained from previous training, work experiences and general experience. The learner is entitled to appropriate credits for this experience/training.

Trainees should be given the opportunity to provide RPL evidence. A good way of communicating with your learners is to list the pre-requisite skills clearly, at the start of your learning program. You may also apply a simple test that will assist the learners to assess their own skills and their ability to complete the program.

This pre-test can be a useful tool to assist you in determining any RPL claim. Should the learner be able to satisfy the training provider's need or requirement, and then the learner may not have to complete part, or the entire program.



#### Activity 4

Design a suitable instrument that will enable you to assist trainees to establish evidence for recognition of prior learning (RPL).

Relate the test to a specific training program.

**Discuss your work with your tutor.**





## Assessment – what choices do we have?

Some of the choices an assessor has to make are outlined below:

1. **Formal assessment** – including tests, examinations, checklists, skill tests etc. These have no direct instructional function, but are used to provide knowledge about the trainee.
2. **Continuous assessment** – where the trainee is assessed throughout the training. There may also be assessment both on and off the job. This form of assessment also provides continual grading of performance so that teachers are able to adjust their training tactics according to how the trainee is developing.
3. **Course work assessment** – what the trainee does during the course, including the things produced. Course work may include examinations. All trainees do not necessarily do the same things when they are assessed.
4. **Process assessment** – this assesses the means by which a product has been produced and the extent to which the processes used were satisfactory. Process should be assessed while it is happening.
5. **Objective assessment** – where there is only one correct answer, or at most, only a limited range of correct answers; for example, a multiple choice test.

### Practises in Assessment:

**Examinations** – trainees are given a limited period of time to complete a task and, although they have prepared for the task, the exact nature of what is required is not usually known. Trainees may not be allowed to consult references or each other. Examinations can cause stress, and trainees may be assessed by people who do not know them.

**Product assessment** – where the practical outcomes of the learning and instruction process are assessed **after** they have been produced.

For example, a trainee may have produced an item to meet certain specifications but may have omitted some important steps related to quality control or occupational health and safety that would not be identified if only product assessment was used.

It is important that in assessing practical skills, both process and product components are measured wherever possible.

## Principles of assessment

There are four essential principles of assessment.

Assessment methods must be:

VALID                  RELIABLE  
  
FAIR  
  
PRACTICABLE

### Valid Assessment

Valid assessment measures precisely and accurately what it sets out to measure.

Validity in assessment asks:

- Does the assessment actually assess what it is supposed to assess?
- What is the test measuring?

Many assessment methods do not assess the assessment criteria validly.

The methods should be selected so that learners do what the assessment criteria states they should be able to do. It is possible that some learners who can perform a task very well may not be able to reach an acceptable standard in a written test. Similarly, trainees who can describe how to do something may not be able to do it in practise.

To improve the validity of assessment methods:

- Describe clearly and precisely what is to be assessed and the criteria by which it will be assessed; that is, the learning outcomes, assessment criteria and assessment methods.
- Recommend assessment methods that assess what they claim to assess. For example, being able to describe how to change a tire does not mean that a person can change a tire.
- Collect evidence that shows how well the learner has achieved the learning outcomes of the training program.
- Develop assessment methods that integrate knowledge, attitudes and practical skills components of a learning outcome.

- Assess learner achievement under conditions that are as close as possible to those under which the related competence would be practised in the workplace.
- Assess skills over a period of time rather than “once only.”
- Assess knowledge and understanding through oral questioning during the performance of the skill, not only by multiple choice tests or other written tests.
- Keep in mind that written and oral tests should not become a test of literacy skills unless these skills are required in the job, or are part of the learning outcome being assessed.

### **Reliable assessment**

Reliable assessments are those which measure learner achievement or performance consistently and precisely, and are free from bias or error.

*Reliability* in assessment is concerned with “*How well is the test measuring?*”

A reliable assessment should be able to be used by a range of assessors with a range of learners and at different times, and produce similar results.

The results obtained by learner A when assessed by assessor X in June and those obtained by learner B with similar ability, when assessed by assessor Y in November, should be similar.

To improve the reliability of learner assessment:

- Provide unambiguous statements of assessment criteria.
- Ensure that the methods of assessment that you suggest will enable all assessors to measure learner performance consistently.
- Suggest assessment methods and strategies that allow for evidence of learner performance to be collected over a period of time and in a range of situations.
- Combine several assessments to produce a complete picture of the learner’s performance.
- Word the suggested assessments, such as assignments and projects, so that what is required is clearly stated and there is no ambiguity.

- Ensure that there can be no misunderstanding of what learners should do to show their achievements of the learning outcomes.

### **Fair assessment**

The fairness of assessment has often caused concern for both trainees and those responsible for assessment. Assessment of necessity must be a process that offers a true indication of the trainees' ability over pre-determined tasks. It must be fair to both parties, offering trainees the opportunity to demonstrate their skill level and the assessors the opportunity to judge, if that demonstrated skill level matches the requirements.

To be *fair* and *equitable*:

- Assessment should provide for recognition of achievement, regardless of how, where or when learning occurred.
- Everyone in the assessment process should be aware of his or her responsibilities.
- The criteria against which the performance is to be measured should be clearly stated and identified.
- The methods of assessment should be known and understood by the learners and the assessor.
- Alternative forms of assessment should be considered, provided they are valid and reliable.
- Learners should know well in advance when, how, and by whom they will be assessed.
- If assessment comprises several components, learners and assessors must know how the different components will be brought together.
- Assessment must not directly or indirectly limit access to individuals solely on the grounds of age, race, gender, ethnicity, disability, employment status, and social or educational background.
- There should be a commitment to recognising the prior learning and current competencies of individuals.
- Access to assessment should not be subject to artificial or unnecessary restrictions such as the minimum or maximum time period, or age limits or gender.



## Practicable assessment

As well as being fair, equitable, valid and reliable, assessment must be *practicable*; that is, any recommended assessment method or strategy must be capable of being carried out.

When recommending an assessment method or strategy, ask yourself:

- Is it cost effective?
- Is it affordable?
- Is there sufficient time for the learner to complete the assessment tasks?
- Can all assessment criteria of the learning outcomes be assessed?
- Should all assessment criteria of the learning outcomes be assessed?
- Which assessment criteria of the learning outcomes should be assessed?
- Is there sufficient equipment, materials and other resources available?
- Are there enough assessors to carry out the assessment fairly and reliably?

### To summarise:

Assessment methods should:

- assess what they are supposed to assess (valid)
- be able to be used by a range of assessors for a range of learners in a range of locations over a period of time
- be non-discriminatory and unambiguous
- be capable of being administered.

**Now do Activity 5 on the next page.**



## Activity 5

Using your own experiences of having to be assessed (or “taking tests”), reflect on *why* we assess and write your comments below.

How have these assessments matched up with our principles of assessment? Were they valid, reliable, fair and practicable?

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

**Check your response with your tutor.**



### **Criterion-referenced and norm-referenced assessment.**

*Criterion-referenced* assessment is the process of forming a judgment about whether an individual meets a specified performance.

It is assessment against explicitly stated objectives and standards rather than against a group norm. The two essential elements are *performance* and *criterion-referenced*

A learner must perform a task against a pre-determined, job-derived standard - *criterion*.

For example, if a learning outcome requires a trainee to operate a loom, then an essay on how to operate a loom is not a performance test. The trainee must operate the loom according to job-derived standards indicated in the learning outcomes.

*Norm-referenced* assessment is designed to measure and compare the capability of one person against the capabilities of another, regardless of the quality of the group's performance.

One of the biggest objections to norm-referenced testing in a systematic and efficient training system is that norm-referenced tests are often associated with a percentage score.

For example, one trainee may receive a mark of 70 percent, where another received 50 percent. The conclusion made is that the first trainee is performing at a better level. However, we do not know whether the 30 percent one trainee did not know is more or less critical than the 50 percent of the training the second trainee did not know.

#### **In brief:**

In *criterion-referenced* assessment performance of an individual is measured in relation to some specified standard.

In *norm-referenced* assessment the performance of an individual is measured in relation to the performance of others who complete the same assessment task.

## Designing Theoretical Assessment Items

Assessment can be constructed from a number of different types of items or questions, most of which are useful for a particular type of application and not so effective for others. A number of the most common types that you are likely to use are listed below with a brief outline of their uses and their advantages and disadvantages.

### 1. Objective items

This type of item is one that calls for a very definitive answer and where there can be no interpretation. Answers are either correct or incorrect and allow for no subjectivity. There are three main classes of objective type test items:

#### 1.1 True/False or Yes/No items

e.g. *A hydrometer is an instrument for measuring temperature*  
True ☐ False ☐

##### Advantages:

Many questions of this type can be used to sample a large range of a programme or syllabus. They are quick and simple to write, simple to mark and can be marked electronically.

##### Disadvantages:

Only very simple questions are possible. Guessed responses allow a trainee to have a 50% chance of being correct, so this needs to be accounted for by correction (see *Correction for Guessing*). Questions must be randomly arranged so that no pattern emerges in the responses to assist guessing. Ambiguities can occur when words like *sometimes*, *always*, *impossible* and *usually* are used.

#### 1.2 Multiple Choice

These questions consist of a stem, which is an incomplete sentence or statement, together with responses, alternatives, options and choices. The correct response is called the key while the incorrect ones are called distracters.

e.g. *Put a tick in the box alongside the word which will make this a complete and accurate sentence .*

*The person responsible for the discovery of electricity was:*

<i>Watt</i>	<input type="checkbox"/>
<i>Einstein</i>	<input type="checkbox"/>
<i>Voltaire</i>	<input type="checkbox"/>
<i>Marconi</i>	<input type="checkbox"/>
<i>Edison</i>	<input type="checkbox"/>

**Advantages:**

Can be used to measure a large sample of a programme or syllabus providing the items are carefully constructed. Most cognitive abilities can be assessed with this type of item. Marking is simple and does not require a subject expert to correct. Can be marked electronically.

**Disadvantages:**

Relatively difficult to write successfully. Guessed responses must be corrected for unless they include a large range of items and a large number of distracters in each item.

The distracters need to have a reasonable level of probability and not be far out. They should have a common element – for example in the above, all distracters are inventors or men of similar distinction. (Distracters must be plausible).

**1.3 Matching items**

These again consist of a stem with instructions and a list of possible “premises” which must be matched with items from a list of responses.

*e.g. Here is a list of countries which your clients may visit. It is important for you to be able to talk authoritatively on the culture, geography and social issues relating to it. See if you can link the appropriate country with its capital city by writing the correct number in the space alongside the country.*

<i>Yugoslavia</i>	<input type="checkbox"/>	<i>1. Prague</i>
<i>Hungary</i>	<input type="checkbox"/>	<i>2. Ankara</i>
<i>Czechoslovakia</i>	<input type="checkbox"/>	<i>3. Belgrade</i>
<i>Poland</i>	<input type="checkbox"/>	<i>4. Budapest</i>

<i>Roumania</i>	<input type="checkbox"/>	5. <i>Sofia</i>
<i>Bulgaria</i>	<input type="checkbox"/>	6. <i>Warsaw</i>
<i>Turkey</i>	<input type="checkbox"/>	7. <i>Bucharest</i>

**Advantages:**

Large areas of the programme or syllabus can be cover by a number of these items. Marking is simple and can be done electronically.

**Disadvantages:**

Difficult to use this technique to test higher order abilities. Clear instructions need to be given about the nature of the question and the manner in which it is to be answered. Usually guessing must be corrected for as for other objective type responses.

**Correction for Guessing.**

With any type of True/False, Multi-choice or Matching type items, even students who have no real knowledge or skill in relation to the objectives of a programme can be expected to achieve a non zero score. This can be corrected for by using the following formula:

$$\text{Corrected Total Score} = \text{No. of Items} - \frac{\text{No. of Items incorrect}}{\text{No. of Choices per Item} - 1}$$

The result of guessing can be seen in this example:

If 50% is taken to be the pass mark, then approximately 21% of trainees are likely to achieve a pass on chance alone if there are ten test items in the test, with four choices per item. But if the test covers 50 items of the same type, then the pass rate will drop to 3.5%. This indicates very clearly that the correction formula would need to be applied where the instrument does not have a large number of items or where each item does not have a large number of choices.

Setting a competency level which is relative to 85% or more, (requiring a high rate of correct answers or no score is given), will help eliminate the guess factor.

## 2. Short Answer type items

These are questions that can be answered with a few words or sentences or with a number of symbols.

e.g. *Give a definition of “Formative Assessment”*

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### **Advantages:**

Can be used to test higher order cognitive skills. Very easy to write.

### **Disadvantages:**

Must be marked by a subject specialist. There can be a tendency towards triviality in this type of question. Interpretation can be a problem.

## 3. Essay type items.

These involve the collection, analysis and organisation of material. They may be as short as a paragraph or two or a substantial essay.

e.g. *Discuss the implications of litigation for the instructor or teacher in a workshop or laboratory where there is potential risk of personal injury to trainees.*

### **Advantages:**

Can be used to test higher order cognitive skills. Generally easy to set, though clear guidelines are required.

### **Disadvantages:**

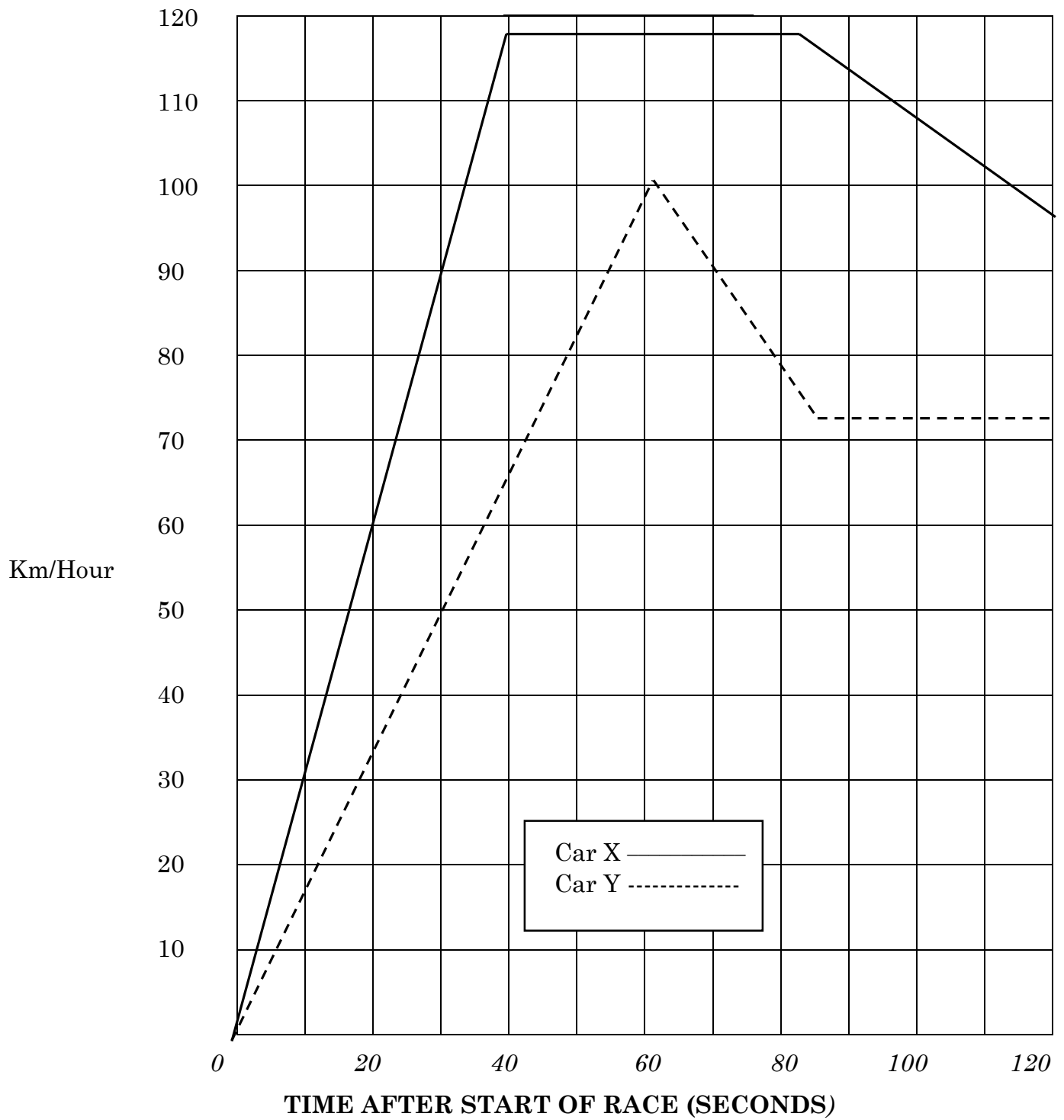
Very difficult to mark and can only be marked by subject specialists. Marking is time consuming and fatigue effects will influence grading, as will personal acquaintance with the student. For these reasons the reliability of this type of assessment is very low unless a clearly defined marking scheme is used.

#### 4. Structured items

These provide a set of data about which a number of questions are asked. These individual questions can have a format but are usually multiple choice or short answer type.

*e.g. The graph on the next page has been drawn from information obtained during a series of car tests. It shows the speed of the two cars at different times. Use this graph to answer the questions below.*





*After 60 seconds, the speed of Car X:*

- i      *is greater than the speed of Car Y*      ☐
- ii     *is less than the speed of car Y*      ☐
- iii    *is equal to the speed of car Y*      ☐
- iv     *cannot be predicted from the graph*      ☐

### **Advantages:**

Earlier questions within the item can be used to test lower level cognitive skills and later ones to test higher level skills. It can therefore provide the sort of discrimination required in norm-referenced testing.

### **Disadvantages**

If answers are interdependent, problems will arise with grading students who use an early wrong answer correctly in a subsequent operation. Depending on the type of response required, the item might not need to be marked by a subject expert.

## **2. Likert items**

Likert scales are used to measure affective or attitudinal states, rather than cognitive abilities. A Likert item consists of a statement and the trainees select the response most closely reflecting their attitude to it.

*e.g. The following are statements about how people feel about technology in education. As you read them you will find yourself agreeing with some and disagreeing with others. Think about how much you agree or disagree with each statement and select your answer accordingly. There are no right or wrong answers to these questions and many other people will think as you do.*

*Each statement is followed by the numbers:      1,2,3,4,5.*

*Simply circle the number that most closely relates to how you feel about the particular item. The following code applies:*

- 1      SA      *Strongly agree*
- 2      A      *Agree*
- 3      Un      *Undecided*
- 4      D      *Disagree*
- 5      SD      *Strongly disagree*

<b>No.</b>	<b>Statement</b>	<b>SA</b>	<b>A</b>	<b>Un</b>	<b>D</b>	<b>SD</b>
1	<i>I don't have the interest to become involved in technology</i>	1	2	3	4	5
2	<i>I prefer to learn through the traditional lecture approach</i>	1	2	3	4	5
3	<i>Using technology is an essential part of the learning process</i>	1	2	3	4	5
4	<i>I am only interested in technology if it can simplify a task for me</i>	1	2	3	4	5
5	<i>Technology gets in the way of learning</i>	1	2	3	4	5
6	<i>Access to technology is the most frustrating aspect of using it in educational pursuits</i>	1	2	3	4	5
7	<i>Technology is a cop-out for the instructor</i>	1	2	3	4	5
8	<i>I would choose a class not predicated on technology rather than one which was</i>	1	2	3	4	5
9	<i>Etc.</i>	1	2	3	4	5

### **Advantages**

It is one of the few instruments available to collect information on affective or attitudinal characteristics of a group. Can be marked easily and results allow for analysis.

### **Disadvantages:**

Takes time to prepare. Trainees can deliberately choose to mislead by responding incorrectly, as they are not obliged to respond accurately for assessment purposes.

Whatever type of item you choose to use for your assessment tests, it must be suitable to test the intended learning outcome.

# **Assignment No. 3.4 – 2**

## **Unit 3.4 Measurement and Evaluation**

You are now required to do the Assignment 3.4 – 2 which will be found at the end of this unit or distributed by your Tutor.

## Section 2



### Evaluation

This section examines the processes and documentation used to evaluate training programs, teacher performance and the training function.

#### What is evaluation?

In its simplest sense, to *evaluate* is to judge *the merit or worth of something*.

A more useful definition is based on the work of Daniel Stufflebeam, who sees evaluation as the *process of delineating, obtaining and providing information about a program, of use in describing and understanding it, and in making judgments and decisions related to it*.

#### What do you evaluate?

The teacher must strike a balance between what might be desirable in any evaluation process, and what is realistically possible.

It is important, however, not to view the evaluation of your teaching too narrowly, as this may result in incomplete data being collected. Try to avoid pre-conceived ideas.

For example, evaluation of teaching should take into account the following:

1. The *environment* of the teaching/learning process including:
  - support facilities available
  - media resources
  - room and workshop facilities
  - commitment to student learning

2. The *presentation* of the teaching/learning process including:
  - teaching strategies and methods
  - knowledge of subject matter
  - level of interest and enthusiasm
  - teaching style
  - selection of media and other teaching materials
  - empathy with learners
3. The *course or program content*, especially aspects such as:
  - appropriateness of objectives and their acceptance by learners, teacher and employers
  - the scope of the content
  - the focus and relevance of the course, particularly in facilitating achievement of the objectives
4. The *learning outcomes* of the teaching covering:
  - the three areas of knowledge, skills and attitudes
  - the degree of mastery required and achieved
  - the relevance and appropriateness of the assessment undertaken

**Worth keeping in mind as this section unfolds:**

Evaluation has been described as “ninety percent common sense and ten percent hard work.” In other words, if you ask the right questions at the beginning of an evaluation, the remainder of the evaluation process is associated mainly with *collecting, analysing* and *reporting* the data.

## Why do we evaluate?

Reasons for evaluating include:

- It provides *information* to the teacher, the learner, the administration, and where appropriate, the employer and the community in general.
- It provides *feedback*, which facilitates improvement in training course/program design, in the choice of resources, teaching/learning activities, methods of presentation and the actual content to be covered in the course.
- It helps in the making of *decisions* by the learner, the teacher, the administration of the training facility and the employer.
- It facilitates the provision of greater *satisfaction* for the learner, the teacher, administration and the employer.

Evaluation should become a natural part of your teaching pattern. As a teacher, you have designed and conducted training sessions, but it does not end there.

How can you be sure that the objectives of the session have been met, and that the trainees will apply this new knowledge and skill back on the job?

To answer this question, you will need to evaluate the training session itself and develop mechanisms that will allow you to monitor each of the trainees in the session, to see if there is an increase or improvement in their job performance/output and that this improvement is maintained in the long term.

We shall provide you with some examples of evaluation techniques for training sessions a little later on.

(For your evaluation, of course.)

It is important to integrate evaluation into the design of the course. By implementing evaluation throughout training, and at the end of a training program, you will be able to determine the effectiveness of the overall program.

*Findings of the evaluation process are used to improve future training.*

Evaluation is *making judgements* about the information, *not* the information-gathering techniques. To make judgements about the success or shortcomings of a learning program is possible only when there is an overall policy, specific criteria and techniques established and in place.

**Note:** *Strengths*, as well as *needs*, should be assessed, because both require constant monitoring.

If *strengths* are neglected and only *needs* are emphasised, the *strengths* may be overlooked.

### How do you evaluate?

Teaching effectiveness can be evaluated in two major ways:

- By examining the teaching process
- By analysing the product of the training

Evaluating the teaching *process* involves:

- measuring the teacher's ability to establish objectives
- planning training sessions that achieve those objectives
- selecting and preparing appropriate teaching/learning materials
- implementing effective teaching methods and strategies

Evaluating the *product* of teaching involves measuring the outcomes of teaching in terms of learner achievement.

Evaluation of teaching effectiveness should examine both of these aspects of teaching.

In evaluating the process and products of teaching there are a number of sources and techniques that can be used.

Sources of feedback include evaluations by others (learners, teachers) and by self-evaluation.



Techniques that may be used to gain feedback include:

- questionnaires
- interviews
- checklists
- observations
- discussions
- video-taping (for self-analysis, and for assessments of learners' achievement and performance)

Prior to any evaluation being undertaken, the teacher needs to carefully plan how feedback will be gathered, and from whom.

Although any feedback can be useful, evaluation should be based on information from a variety of sources.

A number of opinions or evaluations will give teachers a better and clearer picture of their effectiveness.

Feedback from only one session may not be enough for you to make a definite judgement about your own teaching effectiveness.

## **Evaluation methods and techniques**

### **Planning the evaluation**

In planning an evaluation, whether it is the entire training function, the training program or the teacher's performance, the following basic steps can be used:

#### ***1. Focusing the evaluation***

This step examines the focus of the evaluation - the people involved, the background or context of the evaluation and the crucial questions that must be addressed.

#### ***2. Collecting information***

This step examines the kinds of information that can be collected, procedures to collect the information and the selection or design of data collection instruments.

#### ***3. Analysing and interpreting the information***

This step examines how the collected data will be handled, how the information will be analysed and how the results of the analyses will be interpreted.

#### **4. *Reporting the information***

This step deals with the questions of who will be sent the report, what will be the format of the report, and the post-report discussions, consultations and follow-up activities which need to take place.

#### **5. *Managing the evaluation***

This step deals with choosing internal or external evaluators, any costs incurred, the organisation of the evaluation and the scheduling of evaluation tasks.

Observation is one of the most common methods of evaluation. Training sessions may be observed by people such as media specialists, industry representatives, and colleagues.

Feedback may be *formal*, using checklists to evaluate specific skills, or *informal* with some discussion afterwards.

The most desirable approach is a combination of formal and informal feedback.

If *pre-testing* of trainees is done early in a training course, you will be able to determine:

- what learners already know
- what learners' needs, interests and abilities are.

This information will help you to measure improvement in a learner's performance.

When you have determined how your teaching will be evaluated, who will be evaluating it, and what methods or techniques will be used, you can then begin to gather data on your teaching effectiveness.

Remember, and dare we say it again, feedback enables you to:

- establish strengths and weaknesses
- set goals for improvements
- plan a program to build on the strengths and correct the weaknesses

**Formative evaluation**

Formative evaluation refers to assessing the worth or providing information about something – instructional materials, course content etc., with the view of making on-going changes. Implicit in the process of formative evaluation is the requirement that the activities being evaluated can be modified during the conduct of the evaluation. Formative evaluations are characterised by flexibility and a commitment to making improvements as soon as they are seen to be necessary.

**Summative evaluation**

Summative evaluation on the other hand, assesses the worth or provides information on a program at some pre-determined point, or on the program's completion. Summative evaluations have little flexibility. They may be designed with improvement in mind, but any changes aimed at improving things are made at the end of the evaluation.

**Responsibilities of evaluation**

To be effective, evaluation must be continuous and systematic. It must be on going to be of the maximum benefit to both learners and teacher.

There must be a very strong commitment by teachers. There must be commitment for both present and future trainee development, self-development and course development.

If evaluation is not conducted on an on-going basis and is only conducted at the end of a course, the feedback obtained will be too late for those learners, and too far away for the next group.



## Activity 6

Describe in your own words the meaning of the following terms:

1. Learning outcomes are

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2. Teaching effectiveness is

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3. Checklists are

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4. Feedback means

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6. Formative evaluation is

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7. Summative evaluation is

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**Discuss your answers with your tutor.**

Before we look at some evaluation instruments, there is one important area of teacher responsibility that must become an integral part of your duties.

### Updating training records

These records are often referred to as 'student profiles'.

An efficient reporting and record-keeping system should:

- be secure and confidential and only made available to the trainee and authorised persons
- allow the monitoring of trainee progress in respect to programs, modules, sessions completed, assessments undertaken and any certification granted on completion of programs/sessions
- be a means of storing personal information about trainees, session enrolment details and a concise and accurate record of training completed or in progress

Before a reporting system can be implemented, the teacher will need to be briefed by the appropriate authority as to:

- what kind of information is to be collected
- how will the information be gathered
- how will the information be analysed and reported
- how is the information going to be used
- who will have access to the information
- where will, and in what kind of system (manual or computer-based) will the information be stored

Because documenting training session outcomes for each trainee is an important function for the teacher, a possible process is outlined below.

*Create a simple record-keeping system to keep track of, and retain details of, a trainee's achievement of session objectives/learning outcomes.*

The system must allow for:

- an individual trainee's progressive record of objectives/learning outcomes achieved in a training session
- a consolidated record of competencies achieved at the conclusion of a training program. This is a summarised form of the trainee's progressive record.

The teacher will also need to know:

- will the recording/reporting system be paper-based or computerised?
- who will have access to the records?
- what security access levels will need to be considered?
- will the system only produce print-outs which detail trainee performances as “competent/not competent” or will it be capable of producing detailed competency profiles or graded assessments?

The assessment results stored in the record-keeping system must be capable of:

- being used by the teacher to advise trainees about their performance so that proper advice can be given to either repeat an unsuccessful assessment or progress to the next stage
- providing appropriate authorities with sufficient information to allow the trainees to be allocated additional or new tasks as a result of achieving specified objectives/learning outcomes



### Activity 7

Does your system of recording/reporting allow for access to information as described in the previous pages?

Are you able to produce an accurate profile of each trainee?

How are records of your trainees kept?

Can you provide an accurate account of competencies expected from each trainee?

**Discuss these matters with your tutor.**



### Evaluating self-paced programs

When considering the evaluation of a self-paced learning program, ask yourself these three questions:

1. Will it measure the effectiveness of instructional materials in relation to skills learnt?
2. Will it measure the effectiveness of instructional materials when delivered or at the conclusion of the program?
3. Is there a requirement to evaluate throughout the implementation of the instructional materials?

### Observation and structured feedback

With the first evaluation choice, *observation*, you can actually observe the performance of the learner performing the task.

A checklist will help you to make sure that each point is covered and performed correctly.



### Activity 8

Select a task that is part of a learning program connected with your industry.

Compile a checklist which:

- lists the steps required to complete the task
- clearly states the standard(s) to which each step should be performed

For example:

*(Extracts from a hospitality industry checklist)*

- Has the server observed dress code requirements - Refer FS.1.02
- Has the server observed hygiene requirements - Refer FS. 2.03
- Has the food been placed on a serving tray
- Has a serving table been positioned near the client table
- Has the appropriate cutlery for the dish been provided - Refer FS 4.06
- Has the food been served from the left

**Discuss your answers with your tutor.**



The second evaluation choice of *structured feedback* requires that you supply the trainee's work supervisor with a copy of the learning outcomes of the training course and then ask for any feedback regarding the trainee's performance.

This feedback can be supplied over a period of time, but it is important that the work supervisor is advised as to what is to be observed. A suitable feedback sheet should be developed when you design the program.





## Activity 9

Design a *structured feedback* sheet that you could use to gain information from a trainee's workplace about the task you selected in Activity 8.

Remember that you must clearly convey to the work supervisor the objectives/learning outcomes related to the work task, and the trainee's performance of the task.



## Questionnaires

Questionnaires can range from single "tick the box" style to many pages. They can be completed in a couple of minutes or up to half an hour.

The basic elements of evaluation questionnaires are:

- Did the learner learn anything?
- If so, what?
- What could be done to improve the self-paced learning program?
- What could the program designer do to improve the effectiveness of the program?

*It is worth considering the following before you design your own questionnaire.*

- Questionnaires handed out at the start of training often allow the participants to consider each part of the course as they experience it.

This style, however, does not always allow the participants to change their mind at the conclusion of the course about earlier sessions or units of instructional materials.

- Questionnaires handed out at the end of a course may be rushed and incomplete due to the participant's eagerness to attend to other needs.
- Short answer type questionnaires are rarely fully completed; the few words provided giving little useful information.

- You can tailor your questionnaire to provide you with the feedback you need to make judgements on what you have done and how well you have done it.
- Teachers can design questionnaires to suit themselves. This is often done unconsciously in seeking approval, or feedback about themselves or the course.
- A scale method of judging the course, for example, a rating scale of 0 - 10 can result in most responses marked around the centre point of 5.

*To produce quality questionnaires:*

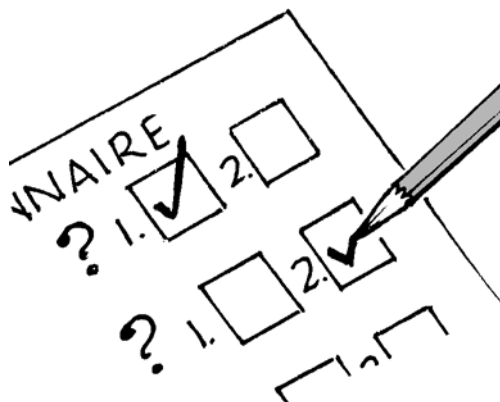
- Establish what information you need from the learners.
- Know the objectives of the course.
- Allow sufficient time for the evaluation questionnaire to be completed.
- Know what you are going to do with the information gathered.

Finally, one other method you could try is discussion.

To do this, you need to ask questions and discuss issues with the participants, and take notes of the comments being made.

A pre-arranged checklist will assist you to keep the discussion focused on the relevant issues.

On the following pages we have prepared a comprehensive questionnaire to evaluate program content.



## Example of an Evaluation Questionnaire

### Assessing the Suitability of Program Content

**Program No:** .....

**Program Title:** .....

**Instructions:** Please circle the number of the appropriate response

	Strongly Agree	Agree	N/A	Disagree	Strongly Disagree
<b>Rationale:</b>					
A clear and convincing explanation of the value of the program is included	5	4	3	2	1
<b>Objective:</b>					
The objective/s is/are clearly stated	5	4	3	2	1
<b>Media Suitability:</b>					
The medium is appropriate to the learning task	5	4	3	2	1
The medium is appropriate to the conditions under which it will be used	5	4	3	2	1
<b>Entry Level/Target Group:</b>					
The entry level skills/knowledge/concepts are clearly defined	5	4	3	2	1
The target group is defined	5	4	3	2	1
<b>Program Content and Motivation Factors:</b>					
Content is designed to enable the trainee to reach the learning outcome	5	4	3	2	1
The instruction on how to use the program is clear	5	4	3	2	1
The trainees know what is expected of them by the program, e.g. answering questions, completing tasks	5	4	3	2	1
The information is presented from the known to the unknown	5	4	3	2	1
The program achieves a balance between information and interest	5	4	3	2	1
The sequence is logical and clear	5	4	3	2	1

	Strongly Agree	Agree	N/A	Disagree	Strongly Disagree
The step size is appropriate	5	4	3	2	1
The skills/knowledge/concepts are correctly sequenced	5	4	3	2	1
The words and pictures match	5	4	3	2	1
Difficult terms are explained	5	4	3	2	1
Unnecessarily complex words and sentences are avoided	5	4	3	2	1
Interaction is relevant to the learning outcome	5	4	3	2	1
Interaction is adequate	5	4	3	2	1
The program reinforces previously learned skills/knowledge/concepts	5	4	3	2	1
The trainees understand how to respond to questions	5	4	3	2	1
Questions are structured so they are easy to correct, i.e. objective type	5	4	3	2	1
Reinforcement is immediate	5	4	3	2	1
The program is designed to promote transfer, i.e. it is directed to general principles which can be applied to similar situations to that shown	5	4	3	2	1
The material was designed to provoke interest and involvement	5	4	3	2	1
Examples are provided which are relevant to the learner's experience	5	4	3	2	1
<b>Publication and Production:</b>					
The program can be easily duplicated	5	4	3	2	1
The program can be cheaply duplicated	5	4	3	2	1
Expensive equipment is not required for presentation	5	4	3	2	1
The program and its presentation equipment are durable	5	4	3	2	1

... continued

Other comments please:

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We shall round off this unit with some examples of evaluation instruments.

One technique is progressive evaluation and a suitable instrument is a panel such as the one below which can be used at appropriate points within your training program. It allows the trainee to make self-assessments throughout the program as well as supplying feedback on the course to the teacher.

### Progressive Evaluation

Place a ✓ in the appropriate column

	Strongly Agree	Agree	No opinion	Disagree	Strongly Disagree
1. I was able to achieve the session objective/learning outcome.					
2. The session objective/learning outcome was appropriate to my development as a ..... .....					
3. I feel competent to apply these skills within the workplace.					

Other comments:

---



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**Following are some examples of techniques to obtain feedback on training.**

**Example 1**

## Evaluation of the Training Session

---

1. What benefits have you gained from this session?

.....

.....

.....

2. What were the most valuable features of this session?

.....

.....

.....

3. What were the **least** satisfactory features of this session?

.....

.....

.....

4. In what way could this session be improved?

.....

.....

.....

5. How would you rate this session? (tick one)

*Excellent*

*Good*

*Fair*

*Poor*

6. Would you recommend this session to others? (tick one)

*Definitely*

*Probably*

*Perhaps*

*No*

**Example 2**

## Reaction Sheet

**Name of session** ..... **Date** .....

1. How would you rate the overall session? (Tick one)

Excellent  
Very good  
Good  
Fair  
Poor

COMMENTS:

2. To what extent will it help you do a better job for your organisation? (Tick one)

To a large extent  
To some extent  
Very little

COMMENTS:

3. What were the major benefits you received? (tick as many as you wish)

Helped confirm some of my ideas  
Presented new ideas and approaches  
Acquainted me with problems and solutions from other companies  
Gave me a chance to look objectively at myself and my job

Other benefits:

4. How were the meeting facilities, luncheon arrangements, etc.? (Tick one)

Excellent  
Very good  
Good  
Fair  
Poor

COMMENTS:

5. What would have improved this session?

6. Would you like to attend future sessions of a similar nature? (Tick one)

Yes  
No  
Not sure

7. Other comments and suggestions for future sessions:

**Example 3****Evaluation of Training Session**

Session Title .....

Teacher .....

Put a line under one of the responses following each question.

1. Was the session pertinent to your needs and interests?  
*No                      To some extent                      Very much so*
  
2. How was the ratio of information giving to group discussion?  
*Too much talk                      O.K.                      Too much discussion*
  
3. How would you rate the teacher on:
  - A. Clarifying objectives?  
*Excellent      Very Good                      Good                      Fair                      Poor*
  - B. Keeping the session interesting?  
*Excellent      Very Good                      Good                      Fair                      Poor*
  - C. Using audio-visual materials?  
*Excellent      Very Good                      Good                      Fair                      Poor*
  - D. Maintaining a friendly and helpful manner?  
*Excellent      Very Good                      Good                      Fair                      Poor*
  - E. Illustrating and clarifying points?  
*Excellent      Very Good                      Good                      Fair                      Poor*
  - F. Summarising?  
*Excellent      Very Good                      Good                      Fair                      Poor*
  
- What is your overall rating of the teacher?  
*Excellent      Very Good                      Good                      Fair                      Poor*
  
4. What would have made the session more effective?

.....

.....

.....



**Example 4****Reaction Questionnaire to a Training Program**

1. Did you enjoy the training program?      **Yes** ☐      **No** ☐

2. Now give reasons why you answered **Yes** or **No** .

.....

.....

.....

3. How would you rate the following, in relation to the Training Program?

	Excellent	Very Good	Good	Fair	Unsatisfactory
(a) The learning aids					
(b) The training equipment					
(c) Training facilities					
(d) Content of the course					
(e) Balance of Theory/Practise					
(f) Teacher's performance					
(g) Others (please specify)					
.....					
.....					

If you rated any factor as **Unsatisfactory** please provide an explanation:

.....

.....

..... (continued)

4. What was of **most** value to you in this Training Program?

.....

.....

.....

.....

5. What was of **least** value to you in this Training Program?

.....

.....

.....

.....

6. Additional comments would be appreciated:

.....

.....

.....

.....

.....

.....

.....

.....

.....

Name (optional) .....

# **Assignment No. 3.4 – 3**

## **Unit 3.4 Measurement and Evaluation**

You are now required to do the Assignment 3.4 – 3 which will be found at the end of this unit or distributed by your Tutor.





## Assignment Number 3.4 – 1

### Unit 3.4 Measurement and Evaluation

To be completed and returned to your tutor for assessment.

This is an Open Book assignment and you may refer to whatever references you have at your disposal.

Name: \_\_\_\_\_ Due date: \_\_\_\_\_

#### Question 1

Complete the following sentence from your knowledge of assessment and using the words listed below:

- 1.1 Assessment can be described as the \_\_\_\_\_ and \_\_\_\_\_ of evidence about the \_\_\_\_\_ of those being trained. Reliable assessment requires that the trainees must be able to \_\_\_\_\_ their competence against a set \_\_\_\_\_.
- 1.2 Testing the actual performance of a trainee is done by developing instruments that \_\_\_\_\_ trainees' actual performance. This is called \_\_\_\_\_.
- 1.3 Measuring the competency of trainees in practical tasks requires special considerations. It is important that each \_\_\_\_\_ of the task is \_\_\_\_\_ and \_\_\_\_\_ against a checklist to ensure that all essential elements are assessed.

***Element, test, gathering, performance testing, identified, judging, performance, demonstrate, criteria, checked***

### Question 2

The following table gives a definition for three terms used in the measuring of competencies. Name each one and give an example.

Term	Definition	Example
_ S _ _ _ _ _ E _ _	The collecting and evaluation of evidence about the performance of individuals. It is grounded on prescriptive standards provided in training blue prints or curricula.	
_ E _ _ U _ _ _ _ N _	A factor by which an individual's performance is evaluated. In norm referenced testing it is usually given as a percentage, while in competency-based evaluation it is specified as complete or incomplete.	
_ E _ _ _ _ N _	A process that allows examination of an individual's ability in a particular area or field. Can be either theoretical or practical.	

**Terms – 2 Marks Each, Examples – 3 Marks Each = 15 Marks**

**Question 3**

There are a number of assessment tools or methods that you can use to measure trainees' performance. Match the description with the label given on the next page by placing the appropriate letter alongside the description, and then give a brief example of where or when each may be used.

**3.1**    \_\_\_\_\_    Where the assessor watches the trainee carry out a particular task

e.g. \_\_\_\_\_  
\_\_\_\_\_

**3.2**    \_\_\_\_\_    Used to measure the extent of knowledge or deductive powers

e.g. \_\_\_\_\_  
\_\_\_\_\_

**3.3**    \_\_\_\_\_    Where actual tasks and conditions are similar to real life situations

e.g. \_\_\_\_\_  
\_\_\_\_\_

**3.4**    \_\_\_\_\_    An interactive form of assessment - usually question and answer type, where responses are assessed automatically and feedback to the trainee can be available immediately on completion.

e.g. \_\_\_\_\_  
\_\_\_\_\_

**3.5**    \_\_\_\_\_    Largely unsupervised - can involve working in groups outside the control of the assessor. Judgment made on the evidence provided for in the final product.

e.g. \_\_\_\_\_  
\_\_\_\_\_

- A**     Computer based testing
- B**     Project based
- C**     Simulation
- D**     Observation
- E**     Written test

***Labelling – 1 mark each = 5 marks***

***Examples – 2 marks each = 10 marks***

***Total 15 Marks***





## Assignment Number 3.4 – 2

### Unit 3.4 Measurement and Evaluation

To be completed and returned to your tutor for assessment.

This is an Open Book assignment and you may refer to whatever references you have at your disposal.

Name: \_\_\_\_\_ Due date: \_\_\_\_\_

#### Question 1

Select a training session you are scheduled to present to a group of trainees.

Produce an assessment matrix to show how your training session will be assessed.

**5 Marks**

Refine this step by matching each objective/learning outcome in your training session with an appropriate assessment method.

**5 Marks**

Chose two objectives/learning outcomes, one theoretical and one practical, and prepare assessment instruments you will use to determine whether the trainees have achieved the stated outcomes.

***Theoretical – 10 Marks***

***Practical – 10 Marks***

***Total – 40 Marks***





## Assignment Number 3.4 – 3

### Unit 3.4 Measurement and Evaluation

To be completed and returned to your tutor for assessment.

This is an Open Book assignment and you may refer to whatever references you have at your disposal.

Name: \_\_\_\_\_ Due date: \_\_\_\_\_

#### Question 1

In assignment 3.4 –2 you were asked to choose a training session you are to conduct with a group of trainees.

For the *same session* prepare/design the following:

1. A formative evaluation procedure for the session  
**10 marks**
2. A summative evaluation procedure for the session  
**10 marks**
3. Other evaluation strategies you might consider appropriate.  
**5 marks**
4. Write a brief summary, listing the evaluation techniques you have prepared, and how you will apply them.  
**10 marks**

**Question 2**

You have recorded trainee's results from an assessment test.

Show how you will use the results to:

- Provide feedback to trainees **5 Marks**
- Improve trainees' performance **5 Marks**
- Facilitate decision making **5 Marks**