

Module 3 Instructional Techniques

Unit 3.2 Writing Objectives

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INTRODUCTION

About this unit

Welcome to Unit 3.2 on writing objectives.

The unit introduces the concept of behavioural objectives in technical and vocational learning. The parts of an objective are identified and defined, and the advantages of a curriculum written in objective terms are indicated.

Examples of technical and vocational learning objectives are accompanied by exercises in identifying the characteristics of satisfactory objectives.

How to use this book

As well as information about writing objectives, this book includes some questions and exercises.

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 answer the questions or do the activities as you work through the book.

Answers and examples are provided throughout the manual for you to check your work as soon as you complete an activity.

Assessment tasks in writing objectives relevant to your area of vocational expertise will be provided by your tutor 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 be given two assignments.

The assignments will be done at the completion of certain sections of the work in the manual.

Your tutor will assist you to understand the requirements for the assignments - do not hesitate to ask for clarification of anything you do not understand.

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!



Self- checking questions or activities



Assessment task



Competency

The curricula of this training programme for Technical and Vocational teachers is 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:

- Explain the concept of a behavioural objective
- Identify the elements of behavioural objectives
- State the advantages of a curriculum written in behavioural terms
- Write behavioural objectives for:
 - the development of attitudes and values (affective domain)
 - the learning of knowledge (cognitive domain)
 - the development of skills and abilities (psychomotor domain)
- Develop objectives from general goals and aims
- Describe the relationship between behavioural objectives and the delivery of lessons

Assessment criteria

- Explain correctly the concept of a behavioural objective
- Identify the three parts of a behavioural objective
- Explain, according to information in this book, the advantages of a curriculum written in behavioural terms
- Write behavioural objectives based on the attitudes, knowledge, and skills needed to achieve a specified learning outcome in the affective (attitudes), cognitive (knowledge) and psychomotor (skills) domains of learning
- Develop behavioural objectives, based on examples of objectives in this book, from general goals and aims
- Explain, according to the supplied information, the relationship between behavioural objectives and the delivery of a lesson

Other resources you may find useful

- Mager, R. 1991, Preparing Instructional Objectives, London, Kogan Page.

Section 1



1.1 What are behavioural objectives?

If someone needs to learn to do something they can't already do, for example, a task that is part of a job, such as using a specific piece of equipment which is needed to do the job, there has to be a way of teaching that person how to do it.

There is no point, however, in teaching what the person already knows or can already do.

We need to find out what knowledge and skills someone must have, or would have to get, to be considered competent at doing the task.

This information is obtained by first describing the steps a competent person takes to complete the task. Next the skills and knowledge needed for each step are identified to be sure they are included in the learning process. This process is called a task analysis.

Then we need a way of saying what a learner should be able to do at the end of the learning process.

As well, we will want to know how to measure the result of the learning to determine if competency has been attained.

A statement which describes what learners should be able to do when they complete a learning activity, the conditions under which learners will demonstrate their competency, and how it will be measured, is called a behavioural objective.

They are called behavioural objectives because they indicate the expected changes of behaviour in learners who complete a course of instruction to reach those objectives.

Objectives are not descriptions of how the learning will take place. They tell you the expected outcomes of a learning activity, not how learners will get the knowledge and skills to do whatever it is the objective describes.

Worthwhile objectives can only be written after a task analysis has been done. Until you know what needs to be taught, you can't describe the outcomes expected of the teaching.

When the objectives have been written, a course of instruction is developed through which learners will be able to achieve the objectives.

Tests are prepared to measure the success of the instruction.

This unit deals only with writing objectives, and not the processes that lead to or follow the preparation of objectives.

It will help you identify the features of objectives that state clearly the outcomes learners are intended to achieve as a result of undertaking a course of study.



1.2 Features of behavioural objectives

Behavioural objectives usually have three parts:

Performance - tells you what the learner should be able to do as an outcome of a learning process.

The performance part of an objective is called a learning outcome .

Performance should be written in words that describe an activity and not a state of mind.

Activities like writing, adjusting, repairing, preparing, drilling and stitching can be seen and measured.

Other performances may be unseen. Identifying, adding, solving, are examples of hidden performances which are detected only when the learner makes us aware of them, for example, by saying or writing the result of the performance *to be able to add a column of numbers*.

Mind processes such as knowing, understanding, and appreciating can't be made visible in the same way and are not helpful in writing behavioural objectives. The understanding of what is meant by *know the principles of magnetism, understand methods of effective supervision or develop an appreciation of abstract art* may not be the same for different people.

Performance statements must say what learners should be able to **DO**.

Conditions - describes the important conditions under which the performance is to take place.

Here are some examples of conditions statements:

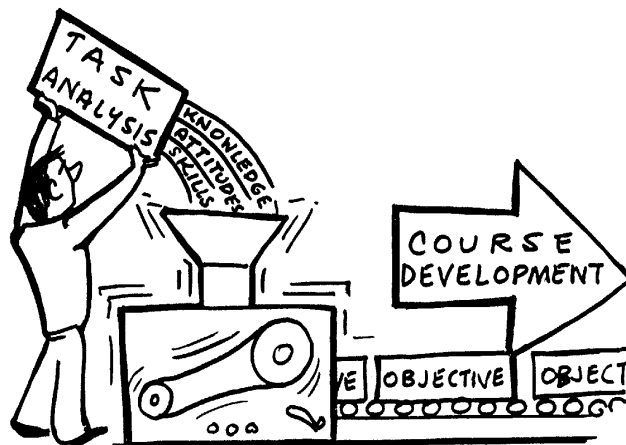
- without supervision
- using standard workshop tools
- without reference to recipes
- on a computer with mouse and Windows™ installed
- from the samples provided

Standard - describes how well the learner will be expected to perform.

The standards of acceptable performance are called Assessment Criteria.

Standards may be expressed in terms of:

- accuracy (cut to within 0.5 mm of the specified size)
- speed (type 60 words per minute)
- quality (to company specification No. XYZ123)

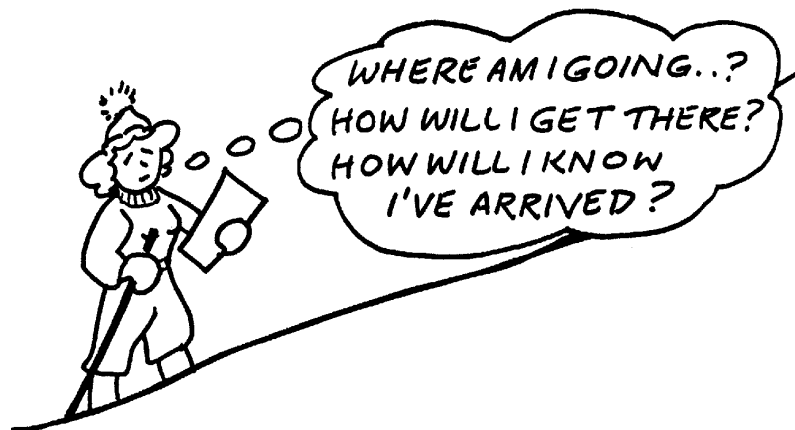




1.3 Advantages of an objective-based curriculum

A curriculum written in terms of behavioural objectives provides several advantages. The key ones are:

- writing objectives for a curriculum requires thorough consideration of the value and relevance of what will be taught in the course
- the content can be evaluated to verify that it reflects the needs of the students doing, or intending to do the course
- instructional designers have a clear indication of the outcomes expected from the learning materials and procedures they develop for implementation of the curriculum
- objectives provide the basis for updating and making improvements to a course
- teachers/instructors are informed about what has to be achieved from the transfer of knowledge and skills to students and what has to be assessed
- students can determine what is required of them to successfully complete each part of a course and are able to direct their own activities toward achieving the course objectives
- clearly stated objectives allow the development of tests which tell teachers, instructors and students if the objectives have been achieved





Activity 1

Listening skills – concentration

Identify the 3 components of a behavioural objective and give a description of each.

1. _____

2. _____

3. _____

Compare your answers with those on the next page.



Activity 1 Answers

1. **Performance** - what the learner is to be able to do.
2. **Conditions** - the important conditions under which the performance will take place.
3. **Standard** - what will be considered an acceptable level of performance.

If you didn't write descriptions with the same meaning as each of those above, read again the definitions of Performance, Conditions and Standard on pages 6-7 before going to Section 2 of this unit.

Section 2



2.1 Performance

Let's look at the performance part of a behavioural objective more closely.

Performance is described by words which show you are doing something.

Here are more examples of performance words:

- cutting
- connecting
- measuring
- testing
- servicing
- manufacturing
- welding
- threading
- installing



If a word describes a state of being, like appreciating, understanding, knowing, realising, it's not a performance word. An objective has to say what learners must be able to **DO** to prove they have achieved the objective.



Go to the following page and see how well you can accomplish an activity in telling the difference between *doing* words and *being* words.



Activity 2

Here's an activity in recognising the difference between words describing things you might do (performances) and words describing a state of being (they can't be observed as a practical performance).

Underline words in the following list which you think describe performances:

- drawing
- lifting
- stating
- listing
- appreciating
- switching
- tightening
- meditating
- hammering
- understanding

When you finish check your list on the following page.



Activity 2 Answers

Performances are underlined:

- drawing
- lifting
- stating
- listing
- appreciating
- switching
- tightening
- meditating
- hammering
- understanding

The underlined words are things that a person can do.

Appreciating is not something a person does - it's a feeling you have about the quality and value of something.



2.2 What are you doing?

The most important feature of an objective is that it tells you what learners must be doing to show you they have mastered the objective.

In most instances, you will be able to see directly the expected learning outcome. Examples are changing a wheel on a car, writing a list, planting a tree, connecting test equipment.

However, in teaching knowledge and attitudes to learners, evidence that you've succeeded is only gained from seeing them **DO** something that depicts the meaning of these mental states.

A statement that does not include a performance you can see is not a behavioural objective.

Study the following statement:

Given reference information, be able to develop an understanding of the function of resistors in electrical circuits.

There is no indication of what a learner will **DO** to show achievement of the outcome. Answer questions about resistors? Connect resistors to an electrical circuit? Measure the values of resistors with a meter?

The statement will mean different things to different people.

Here is another statement:

Given manufacturers' workshop manuals, access to spare parts, all necessary tools and materials, be able to repair any make of videocassette recorder (VCR). The repaired video cassette recorder must operate to the manufacturer's specifications.

What will learners be doing to show achievement of this objective?

You're right! They'll be repairing a videocassette recorder.

To write the performance part of an objective, ask yourself what the learner will be **DOING** to show the objective has been achieved.



On the next page is another activity in recognising performances.



Activity 3

This exercise will help you to recognise statements which have performances in them.

Underline the performances in the following.

- ___ 1. Be able to start up a word-processing application on a computer.
- ___ 2. Be able to seal and label packages.
- ___ 3. Be able to understand how television works.
- ___ 4. Be able to appreciate the contributions of others in group discussions.
- ___ 5. Be able to name the parts of an electric motor.
- ___ 6. Be able to fill in a job application form.
- ___ 7. Be able to understand the meaning of thermodynamics.
- ___ 8. Be able to know Occupational Health and Safety regulations.
- ___ 9. Be able to sort books into fiction and non-fiction stacks.
- ___ 10. Be able to operate a fork-lift truck.
- ___ 11. Be able to know the principles of printing processes.
- ___ 12. Be able to describe at least four methods of transporting parts from the store to the production line.
- ___ 13. Be able to pack a shipping container.
- ___ 14. Be able to appreciate the importance of protective clothing to personal safety.
- ___ 15. Be able to recite a selected passage from Shakespeare's *Hamlet*.

Now check your responses by turning to the next page.



Activity 3 Answers

1. Be able to start up a word-processing application on a computer.

YES - this is something you can see people do.

2. Be able to seal and label packages.

YES - another performance you can see.

3. Be able to understand how television works.

NO - what would someone be doing? Adjusting the controls on a television receiver? Repairing a faulty television set? Making their own?

The statement doesn't tell us what someone will be able to do.

Starting the statement with "be able to" doesn't make it a performance unless it is followed by an activity you can observe.

4. Be able to appreciate the contributions of others in group discussions.

NO - similar problem to the previous statement - you can't see a person appreciate something.

5. Be able to name the parts of an electric motor.

YES - you can tell when things are being named.

6. Be able to fill in a job application form.

YES - filling in forms is an observable performance.

7. Be able to understand the meaning of thermodynamics.

NO - much the same problem as No.3

8. Be able to know Occupational Health and Safety regulations.

NO - know what about them? what they say? how to implement them? when they apply? - you can't see "knowing" being done.

9. Be able to sort books into fiction and non-fiction stacks.

YES - you would be able to see the sorting procedure taking place.

10. Be able to drive a fork-lift truck.

YES - if you don't see this performance you may be run over!

11. Be able to know the principles of printing processes.

NO - similar difficulties as No.8

12. Be able to describe at least four methods of transporting parts from the store to the production line.

YES - the description may be visible (writing) or audible (saying). Either way a performance is present.

13. Be able to pack a shipping container.

YES - you know why by now.

14. Be able to appreciate the importance of protective clothing to personal safety.

NO - appreciation is a state of mind, not a performance.

15. Be able to recite a selected passage from Shakespeare's *Hamlet*.

YES - most definitely a performance!





2.3 More about performances

If a performance can be observed taking place, for example when a learner is able to *repair an electric motor*, you would see the repairing being done.

Here is another performance - *to be able to identify spelling errors in a given typesetter's proof*.

You would be able to see a learner reading through the typesetter's proof, so the first requirement of an objective is there - a performance you can see - but how would you tell if the student was identifying incorrectly spelled words? Having the learner underline those words, or mark them with a highlighting pen, would do the job.

The statement might then look like this - *to be able to identify, by underlining, spelling errors in a given typesetter's proof*.

That was an example of a performance you can't see directly. A learner may identify the incorrectly spelled words while reading the typesetter's proof, but until the words are underlined you won't know if the required performance has been achieved.

Identifying things, like recognising specific features and locating parts, is a mental performance. You can't see a person do it until they show or say what is being identified. The invisible performance happening in the learner's mind is then made visible to an observer.

In adding *by underlining* to our earlier example we included an action that shows us what it is the learner is identifying.

While we are considering this objective, had it been written *be able to underline spelling errors in a typesetter's proof* then the main intention of the objective would have only been implied, not stated.

A performance is present - *be able to underline* - but the implied performance of the objective is for students to be able to identify spelling errors.



Make sure the main intention of each objective you write is stated and not implied.



2.4 Seeing the unseen

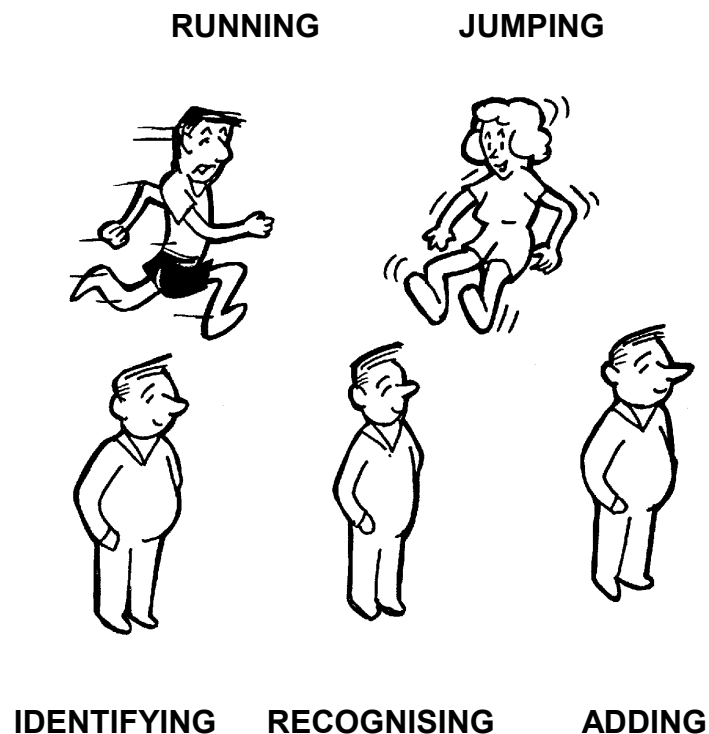
There are two words that indicate the difference between performances you can see or hear taking place, like writing, saying or doing something, and performances hidden in a person's mind such as adding, subtracting, multiplying or dividing simple numbers.

These words are **OVERT** and **COVERT**.

OVERT means *open to view, not hidden or secret*.

COVERT means *secret, concealed, disguised*.

On the next page is an activity in identifying OVERT and COVERT performances.





Activity 4

Here are some visible (**OVERT**) and invisible (**COVERT**) performances.

Underline the ones you think are overt performances, then write one visible action, under each performance you think is covert that would let you know the hidden performance was occurring.

1) Solve simple arithmetic problems

2) Recognise visible levels of contamination in vegetables

3) Tune a piano

4) Differentiate between virus infected and useable computer diskettes

5) Locate correctly the battery, alternator and distributor in circuit diagrams of automobile electrical systems

When you've finished go to the next page and compare the responses.



Activity 4 Answers

1) Solve simple arithmetic problems -

write the answers

You can't see the mental process of solving, but by having students write the answers you will know if the problems have been correctly solved.

2) Recognise visible levels of contamination in vegetables -

place contaminated items in appropriate waste receptacle

How do you tell if a person has the skill to recognise visible levels of contamination in vegetables? Putting contaminated items in an appropriate waste container is one way. Another would be to restore useable food and discard non-useable. Either of these activities allow students to show they can discriminate between uncontaminated and contaminated vegetables.

3) Tune a piano

You would be able to see and hear the tuning being done. No other pointer to the performance would be needed.

4) Differentiate between virus infected and unusable computer diskettes -

place reusable diskettes into the container marked "reusable computer diskettes" and place virus infected diskettes in a container marked "virus infected".

Being able to tell the difference between one thing and another is a mental skill. Placing reusable diskettes in one container and unusable ones in a second container is only one way of seeing that the sorting skill is being used.

5) Locate correctly the battery, alternator and distributor in circuit diagrams of automobile electrical systems -

draw a line around

How do you tell if students are able to locate components in a diagram? You could have them draw a line around each component, or point to them; any activity which shows that students can identify specified components among the detail of a diagram.



Summary

- A behavioural objective describes the expected outcome of your teaching, not the teaching process.
- An objective always contains a performance, stating what learners will be able to do when they have achieved the objective.
- Always state the main performance intended as the outcome. If the performance is hidden (covert) add a visible action to indicate the main performance, e.g. identify (write down).

Section 3



3.1 Conditions

When you write statements that clearly tell you (and others) the performances you expect learners to show when they finish your course of instruction, you avoid their having to guess what you mean by words like appreciate, know or understand.

Because your statements contain performances, they can be called objectives, and being written down they can be reviewed and made better if needed.

More information may be needed, however, to make your intended outcome clearer.

To be able to assemble a gearbox may not be enough to indicate the expected performance. Is there a specific procedure? Are standard workshop tools sufficient, or are special tools and equipment required?

Does the learner have to recall the procedure from memory, or can reference materials be used?

The answers to these questions affect what should be in the learning content, and the relevance of ways by which the performance can be tested.

To make some objectives clearer, a statement is added about what will be given, or sometimes not be given, to a learner who is demonstrating achievement of the objective.

These statements are the **CONDITIONS** under which the learner's performance is to take place.

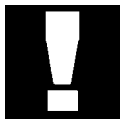
Some examples of conditions are:

- Given standard workshop tools.....
- Without using a calculator.....
- Given the workshop manual for the engine.....
- Given a defective computer monitor and relevant circuit diagrams.....
- Without reference materials.....
- Given several printed samples.....
- Without assistance from the supervisor.....

Let's return to the objective *be able to assemble a gearbox*. We would state our intended outcome more clearly if we wrote:

Given the parts and sub-assemblies of the ZF 4-speed manual gearbox and the manufacturer's special tools, be able to assemble the gearbox without supervision or reference to the factory manual.

You should put enough information about conditions in your objective so that others will understand the performance you want a learner to show in the same way as you understand it.



Here's a little checklist:

Ask yourself these questions when writing an objective -

1. Under what conditions do I expect the performance to occur?
2. What will the learner be able to use when demonstrating achievement of the objective?
3. What will the learner not be able to have?

Now do the following activity in recognising the conditions part of an objective.



Activity 5

Underline the parts of each statement that tell you about the conditions under which the performance is to take place.

1. Given a hand-held magnifier and sample pages, some printed by offset-lithography and some by letterpress, be able to identify (by sorting into two piles) pages printed by each process.
2. Given a 35 mm single-lens reflex camera and a cassette of colour film be able to load the camera without reference to the instruction book.
3. Given ten arithmetical problems, be able to solve correctly all the problems (write down the answers) without the aid of an electronic calculator.
4. Using parts catalogues and unlabelled, exploded drawings, be able to name correctly every part (label the drawings) of three different types of spray-painting gun.
5. With the machined timber components, door fittings, hand tools and assembly bench provided, be able to assemble a Colonial-style entry door, without assistance from a supervisor, to factory standard TDQS.014.

Now check if you've underlined all the conditions in the above on the next page.



Activity 5 Answers

1. Given a hand-held magnifier and sample pages, some printed by offset-lithography and some by letterpress, be able to identify (by sorting into two piles) pages printed by each process.

The underlined words tell learners what they will be given (magnifier and sample pages) to identify the printing processes used for the samples. Implied by the conditions is that learners may need to view the pages through the magnifier to identify the printing process used.

2. Given a 35 mm single-lens reflex camera and a cassette of colour film be able to load the camera without reference to the instruction book.

As well as telling learners what they will be given (camera and film) to demonstrate achievement of the objective (loading a camera) the statement also tells them what they will be denied (instruction book).

3. Given ten arithmetical problems, be able to solve correctly all the problems (write down the answers) without the aid of an electronic calculator.

Learners will be given problems to solve, but are denied the use of a calculator.

4. Using parts catalogues and unlabelled, exploded drawings, be able to name correctly (label the drawings) every part of three different types of spray-painting gun.

Learners will be given reference materials (catalogues and unlabelled drawings). They are also told how the naming will be done (labelling the parts in the drawings).

5. With the machined timber components, door fittings, hand tools and assembly bench provided, be able to assemble a Colonial-style entry door, without assistance from a supervisor, to factory standard TDQS.014.

Learners will be given components, fittings, tools and a workbench, but must achieve the objective without help from a supervisor.



3.2 Avoiding too many words

There will occasionally be objectives that could be made clearer by saying more about the intended performance. Let's look again at one of the examples from the exercise you've just completed:

Given ten arithmetical problems, be able to solve correctly all the problems (write down the answers) without the aid of an electronic calculator.

Would it help if we knew what kind of arithmetical problems the learner will be expected to solve?

Given ten arithmetical problems requiring addition, subtraction, multiplication and division of numbers, be able to solve correctly all the problems without the aid of an electronic calculator.

Now we know that the problems will involve all four basic arithmetic operations - adding, subtracting, multiplying and dividing.

It is possible to add more information to improve the clarity of some intended performances but that could lead to very wordy objectives.

In some instances lengthy objectives can be avoided by including a sample test of the expected performance:

Given ten arithmetical problems, be able to solve correctly all the problems without the aid of an electronic calculator.

Sample test:

Write in the answers to the following:

i) $345 + 276 - 67 - 25 + 138 = \underline{667}$

ii) $(65 \times 89) \div 5 + 34 - 19 = \underline{1172}$

Now we know the kind and level of problems learners will be asked to solve and what they have to do with them (write in the answers).

Only the writer of an objective knows what expected performance he or she has in mind for a learner to demonstrate achievement of the objective, and whether any conditions will have to be included in the statement to communicate clearly the intended outcome to another person.

Sometimes the statement of what the learner has to be able to do (performance) and how well they must do it (standard) will be enough information to make your intentions clear.

In other cases you will have to add descriptions of what will be given or denied learners when they are showing they are able to do whatever performance you have written in the objective.

Now do the following exercise.



Activity 6

Underline the conditions contained in the following two objectives:

1. Given a mechanical fuel pump that has a defective diaphragm, and given a set of tools, spare parts, and the pump manufacturer's service manual, be able to repair the pump. The repair is to be completed within 30 minutes and the pump must operate within the tolerances specified in the manual.
2. List (write down), without using references, the botanical names of at least five indigenous (native) flowering trees and at least five exotic (introduced) flowering trees, all of which grow to less than 5 metres in height.

Check your responses with those on the next page.



Activity 6 Answers

1. *Given a mechanical fuel pump that has a defective diaphragm, and given a set of tools, spare parts, and the pump manufacturer's service manual, be able to repair the pump. The repair is to be completed within 30 minutes and the pump must operate within the tolerances specified in the manual.*

The performance is clearly *be able to repair the pump*. To demonstrate that ability the learner will be given a faulty pump, tools, spare parts and references, so those are the conditions for the performance.

The second sentence describes what will be a satisfactory performance in terms of an acceptable time to complete the repair, and specifies the precision required for satisfactory operation of the repaired pump.

2. *List (write down), without using references, the botanical names of at least five indigenous (native) flowering trees and at least five exotic (introduced) flowering trees, all of which grow less than 5 metres in height.*

The only conditions stated are to do it without using references. The rest of the statement tells us how well learners have to do the listing, and leads us to our next topic in section 4.



Summary

- A behavioural objective describes the expected outcome of your teaching, not the teaching process.
- An objective always contains a performance, stating what learners will be able to do when they have achieved the objective.
- Always state the main performance intended as the outcome. If the performance is hidden (covert) add a visible action to indicate the main performance, e.g. identify (write down).
- Add a description of any important conditions under which the performance will take place.

Section 4



4.1 Standards

Now it's time to think about whether you should say how well you want learners to be able to do it.

By including a description of what you consider to be an acceptable performance in your objective statement, you have provided a way of evaluating the success of your teaching or instruction.

The objective now has a standard against which a performance can be measured - a basis for assessing if the objective has been achieved.

Let's say a learner is expected to make something in which dimensions are critical. If the allowable variation or tolerance of the required sizes is stated in the objective, both you and the learner (and anyone else who reads the objective) would know the accuracy needed in the dimensions of the product if the learner is to be considered competent.

If a learner's performance doesn't achieve the accuracy stated in the objective that learner will have to be given further practise or instruction until the desired performance is attained.

In writing a standard for performance into the objective you should always describe the expected performance you want, not the minimum or borderline performance you will tolerate.

This could mean for some objectives a performance can have no margin for error, while other objectives may allow some degree of variation from the *perfect* performance.

What might be acceptable joins for a plumber replacing blocked water pipes certainly wouldn't be tolerated for a heart surgeon bypassing blocked arteries.

Accuracy

One way of indicating a standard for acceptable performance is to specify its accuracy.

Here are some examples:

Be able to drill a hole in 5 mm sheet aluminium to within 0.25 mm of the specified diameter.

Be able to record water meter readings with no more than one error in every fifty records.

..... with all steps in the process in the correct sequence.

..... calculations must be accurate to two decimal places.

..... and all volumes of solution measured to the nearest millilitre.

..... nine of every ten repaired pumps must operate without fluid leaks.

Speed

Not all objectives require a description of how accurately a performance is to be done. Sometimes how quickly the performance is done may be important.

When the speed of a performance is important it is usually stated as a time limit within which the acceptable performance is to be completed.

Here are a few examples of speed standards:

..... the motor must be functional within the estimated time of repair.

..... at least 5 switch assemblies must be tested within 10 minutes.

..... the error must be located within 20 minutes.

..... the processor must not remain disconnected from the power supply for more than 10 minutes.

.....all computer files must be transferred within 5 minutes.

In setting speed standards, or time limits, for acceptable performances, you must consider at what level of competence a learner's performance will be assessed.



Will the standard be used to measure performance at the stage where all the learner needs for improvement is more practise, or will it be when the learner can perform well enough to move on to mastering a new objective, go on to a new course, or to doing the job?

Whatever time limit you set, (include a time limit only if it is needed), it is your estimate of the time the task should be completed in, to illustrate the level of competence or standard required.

Quality

In some objectives accuracy will be the standard, in some objectives speed, and in others both accuracy and speed will be of importance in measuring acceptable performance.

There will be objectives, however, in which something should be stated about the quality of an acceptable performance.

How do you express the quality of a performance?

It's not of much help to say that something must be of high quality, to underline high quality, or print it **bold** or in *italics*. Quality must be something measurable if it's to provide a standard in an objective.

Maybe there's an industry or company standard, clearly stated in a quality control document. Such information about standards, however, must be explicit and readily available to both teachers and students.

Here's how documented quality standards might appear in an objective:

..... according to company quality control standard QC028, section 3.2

..... to the requirements of Total Quality Control - Bulletin TQC 1-3A

*..... in accordance with Emission of Noxious Gases - May 1996,
Page 31*

This reference approach can be used with standards in general.

The accuracy, speed and quality required for acceptable performance, either by themselves, in combinations of two or all three, may be available in existing documents.

Here are two examples:

*..... according to 3-10 HP Static Engines Manual, 1996-97 Edition,
Section 3, pages 3-5.*

*..... in accordance with the standards of bibliography in the
Chicago Manual of Style, 13th ed. – section 1.73.*

Again, their most important requirements are that they clearly specify the standard to be achieved, and they are available to teachers and students concerned with the objective.



4.2 Checklists

When there are several distinct steps in a performance it can be useful to prepare a checklist for assessing a performance.

A checklist can avoid lengthy descriptions in the objective of standards covering all the steps, or the ones critical to acceptable performance.



Take note that a relevant checklist **must exist** if you intend to refer to it in the objective as a standard for measuring performance.

*..... each step of the make-ready procedure to be in the sequence shown,
and performed as described, in Machine Set Up Checklist PM02.*

*..... all critical steps (shown in italics in Processing Checklist 3B) must
be included in the procedure, and in the order listed in the checklist.*

Find the standards in the following activity.



Activity 7

Identify (by underlining) the standards in the following objectives:

1. Given government regulations for the design of vocational training kitchens, be able to list 4 environmental factors and 4 safety factors to be considered in the planning.
2. Without references, be able to recall (write down) 5 issues of importance to occupational health and safety in your workplace.
3. Using the components, adhesives, fasteners and tools provided, be able to assemble a Windsor-style window within 20 minutes. All joints are to be free of excess adhesive, and fasteners must not protrude outside the timber surfaces.
4. Be able to state correctly 3 causes of industrial dermatitis without referral to the trainee's notebook.
5. Given a slide projector having one malfunction, and using the operators manual, locate the cause of the malfunction in less than 15 minutes.
6. With the power drill and drill bits provided, and given measuring tools, a metal component and a working drawing, be able to drill holes in the component at the positions specified in the drawing. Holes are to be free of burrs and centred within 1 mm of the required locations.

Check your selections with those on the next page.



Activity 7 Answers

1. Given government regulations for the design of vocational training kitchens, be able to list 4 environmental factors and 4 safety factors to be considered in the planning.

Performance: listing

Conditions: government regulations

Standard: 4 factors of each of 2 kinds (accuracy)

2. Without references, be able to recall (write down) 5 issues of importance to occupational health and safety in your workplace.

Performance: recall by writing

Conditions: without references

Standard: 5 issues (accuracy)

3. Using the components, adhesives, fasteners and tools provided, be able to assemble a Windsor-style window within 20 minutes. All joints are to be free of excess adhesive, and fasteners must not protrude outside the timber surfaces.

Performance: assemble a window

Conditions: components, etc., provided

Standard: within 20 minutes (speed). All joints surfaces (quality)

4. Be able to state correctly 3 causes of industrial dermatitis without referral to the trainee's notebook.

Performance: state

Conditions: without referral to notebook

Standard: correctly 3 causes (accuracy)

5. Given a slide projector having one malfunction, and using the operators manual, locate the cause of the malfunction in less than 15 minutes.

Performance: locate

Conditions: slide projector with one malfunction, standard tools

Standard: less than 15 minutes (speed)

6. With the power drill and drill bits provided, and given measuring tools, a metal component and a working drawing, be able to drill holes in the component at the positions specified in the drawing. Holes are to be free of burrs and centred within 1 mm of the required locations.

Performance: drill holes

Conditions: metal component, drill and bits, measuring tools, drawing

Standard: as specified, centred within 1 mm (accuracy); free of burrs (quality)



Summary

- A behavioural objective describes the expected outcome of your teaching, not the teaching process.
- An objective always contains a performance, stating what learners will be able to do when they have achieved the objective.
- Always state the main performance intended as the outcome. If the performance is hidden (covert) add a visible action to indicate the main performance, e.g. identify (write down).
- Add a description of any important conditions under which the performance will take place.
- Write a description of the standard against which the performance can be measured.

Assignment No. 3.2 – 1

Unit 3.2 Writing Objectives

You are now required to do the **Assignment 3.2 - 1** which will be found at the end of this unit or distributed by your Tutor.

Section 5



5.1 Formats and labels

You have identified the features of objectives in terms of the information in this book by testing yourself with various exercises throughout the text.

Let's review these features:

1. An objective describes the intended outcome of your teaching and not what you will teach.
2. Its main part is the performance which tells what you want your students to be able to do as a result of your teaching.
3. The objective may also have some important conditions under which your students will show the desired performance.
4. When it's practical to do so, a standard may be included by which the performance will be assessed.

So far we've been looking at objectives in which the performance, conditions and standard are written in one or two sentences.

You've done activities in identifying each of these elements in an objective.

Here's a reminder of the format:

Given a commercial software programme on compact disc, user instructions, access to a 486 or equivalent computer with CD capacity, connection to a phone line and current credit card, be able to establish an email account. The account must be tested by sending and receiving mail.

All three parts that may be in an objective are present in the statement.

You may prefer to write objectives under heading format:

Performance: Establish an Email connection

Conditions given:

- a commercial software programme
- user instructions
- access to a 486 or equivalent computer with CD capacity
- connection to a phone line
- current credit card

Standard: the account must be tested by sending and receiving mail

Test your skill in identifying the elements of objectives by changing the three in the following activity into separate statements of performance, conditions and standard.



Activity 8

1. Without references, be able to list (write down), in correct order, the steps in the company emergency evacuation procedure relevant to your workstation.

On completion of this unit the trainee will be able to:

Performance: _____

Conditions: _____

Standard: _____

2. Given a multimeter, an electrical appliance which has one defective component, the manufacturer's service bulletin and circuit diagram, and all necessary tools, be able to repair the appliance to the manufacturer's specifications within 30 minutes.

On completion of this unit the trainee will be able to:

Performance: _____

Conditions: _____

Standard: _____

3. With the tools, test instruments, shutter speed specification chart and parts provided, and given a 35 mm camera having a jammed shutter, replace the shutter mechanism. The replaced shutter must give the specified exposure time at each setting within 5% of specification.

On completion of this unit the trainee will be able to:

Performance: _____

Conditions: _____

Standard: _____

Compare your selections with those on the following page.



Activity 8 Answers

1. Without references, be able to list, (write down) in correct order, the steps in the company emergency evacuation procedure relevant to your workstation.

On completion of this unit the trainee will be able to:

Performance: list (write down) the steps in the company emergency evacuation procedures relevant to the workstation

Conditions: trainees are not to use references

Standard: all steps in the procedure must be listed in correct order

2. Given a multimeter, an electrical appliance which has one defective component, the manufacturer's service bulletin and circuit diagram, and all necessary tools, be able to repair the appliance to the manufacturer's specifications within 30 minutes.

On completion of this unit the trainee will be able to:

Performance: repair an electrical appliance

Conditions: trainees must be given an electrical appliance with one defective component, a multimeter, manufacturer's service bulletin, circuit diagram and all necessary tools

Standard: the appliance must be repaired to manufacturer's specifications within 30 minutes

3. With the tools, test instruments, shutter speed specification chart and parts provided, and given a 35 mm camera having a jammed shutter, replace the shutter mechanism. The replaced shutter must give the specified exposure time at each speed setting to within 5% of specification.

On completion of this unit the trainee will be able to:

Performance: replace a camera shutter mechanism

Conditions: trainees must be given a 35 mm camera having a jammed shutter, parts, tools, test instruments and a shutter speed specification chart

Standard: the replaced shutter must give specified exposure times within 5% of specification at each speed setting



5.2 An object by any other name...

While a performance and standard may be present in an objective, they are sometimes given different labels.

Among other names for performance statements, you'll find performance objectives, learning objectives, training objectives, learning outcomes, and competencies.

Conditions for the performance are usually called conditions.

Standards may be referred to as criteria (or criterion if there is only one), performance criteria, or assessment criteria.

The labels don't matter all that much as long as you are able to identify the part of the objective to which they refer.

As long as the statement clearly tells you what students have to be able to do, it's an objective. If it also tells you under what conditions they must do it, and how well it must be done, that makes the intended outcome even clearer.

Some curriculum documents specify more than one expected outcome for a unit or topic of a course module.

Several performances may be listed, with a set of conditions that cover all of the stated performances, and a separate standard is specified for each performance.

In addition this format may have information about the teaching points and learning activities needed in the instructional process to bring students to achievement of the desired performances.

There is usually a statement of the assessment methods to be used in evaluating the performances, and sometimes resource materials are identified.

There is an example of this format on page 40. It is an example from this Core Curriculum. You'll notice that performances are called learning outcomes and the standards are called assessment criteria. There's also a list called learning activities which is the teaching content for the unit. In some curriculum documents this part may be called the scope or range of the content.

Module 5 COMPUTER APPLICATIONS**Unit 5.3 WORD PROCESSING**

Learning Outcomes: On completion of this unit a trainee will be able to:

- 5.3.1 Format a new document.
- 5.3.2 Select typefaces and font sizes.
- 5.3.3 Key in text data.
- 5.3.4 Name and save the document.
- 5.3.5 Print the document.

Conditions: trainees must be given:

- an IBM compatible computer with Windows® 98, word processing software and mouse installed.
- a compatible and operational printer.
- necessary references and sample documents.
- specifications and text for reports and letters of less than 4 pages
- document file name and directory name.

Learning activities for trainees must include:

- control of the screen cursor movement with mouse and directional keys
- function of ruler and icons
 - setting page size and margins
 - selecting typefaces and sizes
 - left, right and centre alignment of text
 - cutting, copying and pasting text
 - printing documents

Assessment Criteria:

- 5.3.1.1 Page layout (size and margins) to be as specified.
- 5.3.2.1 Specified typefaces and sizes selected correctly.
- 5.3.3.1 Keyed in text must be free of spelling errors.
- 5.3.4.1 Document must be correctly named, and saved to the specified directory.
- 5.3.5.1 Printed document must conform with specifications and sample documents.

Assessment Method:

To demonstrate achievement of the above criteria the trainee will be given a supervised practical assignment.

Section 6



6.1 Aims, Goals and Objectives

Objectives

We have spent a fair amount of your time explaining what objectives and their essential elements are. Briefly, objectives are specific statements that tell us as clearly as possible what learners will be able to DO when they achieve the objectives.

Aims and Goals

Aims and goals are more general and state very broad intentions. For example, **your goal** in the next five years may be to purchase a house. Or **the aim** of a particular programme offered by a hospitality college might be to:

Train participants to a level where they can be certified as bar attendants.

These statements tell us what the general aim or goal is, but they tell us nothing about how we will go about achieving these aims or goals. From these statements a **task analysis** of the goal to purchase a house, or aim to train certified bar attendants would need to be conducted. (We referred to task analysis on page 9 of this unit).

Tasks have a series of steps, which lead to satisfactory completion of the task. Objectives are developed from information about these steps within the tasks. In preparing to teach lessons to enable a trainee to do the task, you must first describe the desired outcomes of your teaching in statements of objectives.

There will be times, however, when what you want the learners to be able to do, can't be called a task because you ***won't be able to see it being done.***

You may decide, for instance, that a student should:

- have a positive attitude to workplace safety, or
- demonstrate a responsible attitude to product quality, or
- develop an appreciation of high quality equipment and tools, or
- have a courteous attitude toward customers, or
- show leadership qualities, or
- value good housekeeping practises in the work area.

None of the statements has a performance, so they are not objectives. Rather, they describe *being* something - being safety conscious, being responsible, being appreciative or being courteous, and so on.

They are ***general aims and goals*** to be reached and state very broad intentions.

How can these intended aims and goals be described so you can observe learners being safety conscious, or responsible, or appreciative, or courteous?

Let's look at the aim to *have a positive attitude to workshop safety*.

What do you think you might see workers doing in the workplace if they have a positive attitude to safety?

Write a list on the next page of what visible actions would satisfy you that a worker was safety conscious.





Indicators that tell you a worker is safety conscious.

[illegible]

When you finish, compare your list with the one on the next page.



Here are examples of observable performances which would point to a positive attitude toward safe working practises:

- observes workplace safety rules shown in signs displayed in the workplace
- wears personal protective equipment and clothing indicated by signs in a designated work area
- wears eye and/or ear protection when performing specified tasks
- keeps the work area clean by placing waste materials in waste bins
- maintains own safety equipment in working order
- reports safety hazards to supervisor

Your list will no doubt have some differences from this one because of your workplace experiences and surroundings, but the important thing is we have stated what workers would have to be doing to show they *have a positive attitude to workplace safety*.

Now we can write objectives for these performances. Here is one example:

Given apron, hat, mask and gloves, and workplace signs illustrating the hygiene equipment to be worn in the preparation of food, be able to identify the correct personal equipment necessary for the preparation of shell fish.

Together the objectives would describe a worker who shows a positive attitude to workplace safety.

Section 7



7.1 General Objective about lessons

In Section 1 we listed some of the advantages of a curriculum written in terms of behavioural objectives.

A lesson developed from such a curriculum, is designed to accomplish a specified objective. The lesson is based on the performance expected of a learner at the end of instruction and linked to a standard by which that performance can be assessed.

When you prepare a lesson which meets the learning need expressed in a particular behavioural objective, it is possible for you to deliver that lesson either as teacher-centred instruction or as learner-centred instruction.

Teacher-centred lessons

Teacher-centred lessons have been the traditional method of instruction from the beginning of formal teaching.

Their advantage is that a teacher can present information to several students at the same time. However, this makes it difficult to give individual attention to students.

All students are taught at the same pace, a method often referred to as "lock step" instruction. Students may not have time to practise newly acquired skills long enough to perform them well.

A teacher can present information to students in different ways. For example, the teacher may give a lecture, lead a discussion, conduct a role-play activity, combine explanations and demonstrations, or provide problem-solving exercises.

Here are the desirable outcomes of delivering a teacher-centred lesson developed from a behavioural objective-based curriculum:

- the objective of the lesson was clear to students from its beginning.
- the content covered what was needed for students to achieve the objective, and not things they already knew.
- students were able to ask questions.
- students were able to practise what they were taught.
- students got prompt feedback on their practise.
- individual students were helped with their problems.
- the teacher was easily understood.
- the teacher was interested in what was being taught.
- at the end of the lesson students were able to perform as described in the objective.

Learner-centred lessons

The delivery of learner-centred lessons involves the teacher as a manager of student learning, rather than as a presenter of information. More time is needed to prepare learning materials for learner-centred delivery than for a teacher-centred presentation.

Students learn at their own pace, using resources provided by the teacher. Although some teacher-centred sessions and group activities may be required from time to time, students will learn mainly from manuals, text books, audio and video tapes, models, computers, problems or case studies, group assignments or exercises.

The teacher makes suitable resources available, helps students with problems, teaches if needed and assesses each student's progress towards achievement of the objective.

Most of the teacher's time in the classroom will be spent helping and encouraging individual students, dealing with problems and suggesting ways of resolving them.

Each student will get feedback on performance and only move to the next lesson (objective) when the current objective has been mastered.

Was the lesson a success?

Whichever method of lesson delivery used, the key issue is that the expected student performance described in the specified objective is achieved.

You can measure how well your students accomplished the objective of your lesson by finding out if the students achieved the standards stated in the objective.

You do this by preparing a test for each of the objectives.

The reason for the test is to determine whether the standard set for the performance part of the objective has been reached by the student.

Both you and the student will know as a result of the test if the student is ready to move on to the next objective.

You should prepare the test soon after you write the objective, but before you decide what you will teach and how you will teach it. That will help you to make your objective clear, as the test will emphasise the outcome of your lesson rather than how you will teach it.

The test must match both the performance and the conditions of your objective.

First, the test will require students to do what the objective states they should be able to do at the end of the instruction process.

Secondly, students will be asked to perform under the conditions set out in the objective.

When students take the test you can compare their performances against the standards set out in the objective.

If a student's performance reaches the standards stated in the objective, it will be recognised as an acceptable performance.

This is the only way you will really know if students are able to do what you set out to teach them when you delivered the lesson.

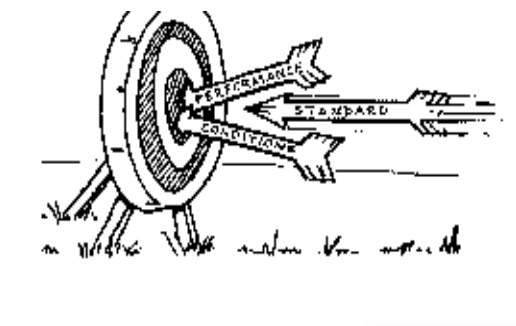
You will not always be able to match exactly the conditions stated in the objective when you test your students. In these cases you should provide conditions for the test as close as possible to those stated in the objective.

For example, an objective requiring an electronic appliance technician to repair, *without removing the appliance from the client's premises*, a videocassette recorder which has a broken drive belt, can be assessed in the training workshop.

What you must **not** modify is the performance the objective requires. The performance of repairing cannot be replaced by a description of the repair procedure. The performance is to repair, not to write or talk about repairing the videocassette recorder.

The delivery of lessons developed from a curriculum written in terms of behavioural objectives must lead students to successful achievement of the lesson's objective.

A test which matches the performance and conditions stated in the objective allows comparison of each student's performance with a fixed standard.





Summary

To prepare a worthwhile objective, write a statement that describes:

- what you want your students to be **DOING** when they are demonstrating their achievement of the objective
- the important conditions that apply to what is being done
- the standard by which achievement of the objective will be judged

Objectives that have these elements clearly stated should make the intent of your teaching or instruction known, without misinterpretation, to all who read them.

Now you should be confident enough to tackle writing your own objectives.



REMEMBER! If you need help with any of the information or exercises in this book, contact your tutor.



If you are ready to write objectives, ask your tutor for your assignment. The assignment will be relevant to objectives in your area of technical or vocational expertise.

Over the page is a list of *doing* words you may find helpful.

Some performance (doing) words

adjust	fabricate	machine	screw
align	fasten	manufacture	secure
alter	fill	measure	service
assemble	filter	melt	sharpen
bisect	fire	mitre	shim
bolt	fix	mix	smooth
brace	flush	monitor	spray
braze	fold	mould	stain
burr	forge	nail	stamp
cast	free	oil	start
centre	fuse	operate	state
check	galvanise	paste	stop
chisel	glaze	patch	straighten
circle	glue	plane	strip
clamp	graft	plaster	tack
clean	graph	plumb	tap
connect	grease	polish	tell
crimp	grind	position	test
cut	guide	pour	thread
depress	hammer	prepare	tie
disable	heat	press	transcribe
disconnect	hoist	produce	transport
dismantle	ignite	pump	trim
dispose	immerse	ream	tune
dissolve	imprint	reassemble	type
distribute	inspect	recite	unpack
draw	install	remove	veneer
drill	instruct	repair	vulcanise
dye	intersect	restart	weld
eject	jack	restore	wind
elevate	laminate	roll	wipe
emboss	level	rotate	wrap
empty	load	rule	write
engrave	locate	schedule	
examine	lubricate	scrape	

Assignment No. 3.2 – 2

Unit 3.2 Writing Objectives

You are now required to do the **Assignment 3.2 - 2** which will be found at the end of this unit or distributed by your Tutor.



Assignment Number 3.2 – 1

Unit 3.2 Writing Objectives

Question 1

Answer *true* or *false* to the following statements:

- | | |
|-----|--|
| 1.1 | The three characteristics of a behavioural objective are performance, conditions, standard |
| 1.2 | At least one word of a behavioural objective needs to be a verb or action word |
| 1.3 | The performance statement in an objective tells the student what standard has to be achieved |
| 1.4 | The condition statement refers to the things students will be allowed or disallowed when they attempt to do the task specified |
| 1.5 | You can observe the action represented by words such as know, understand, appreciate |

1 mark each - 5

Question 2

Label the following statements as either observable (O) or not observable (NO) in terms of their action statement or verb.

- | | |
|-----|---|
| 2.1 | Given a list of words, the student will learn how to spell them correctly |
| 2.2 | Given a list of words, the student will underline those that are spelled incorrectly |
| 2.3 | The student will learn to appreciate Banjo Patterson's poem, <i>Mulga Bill's Bicycle</i> |
| 2.4 | The student will list two advantages of steam generated electrical power |
| 2.5 | Given a diagram of operable sewing machine, the student will label the components |

1 mark each - 5

Question 3

Complete the sentences below using the words from the list to make them true statements.

- 3.1 _____ performances are those that you can
_____ or see.
- 3.2 _____ performances are those that are
_____ and therefore cannot be observed.
- 3.3 Doing mathematical calculations is an example of
_____ performance; you cannot observe the
performance but you can observe the _____ of
the performance.

Concealed, results, covert, observe, overt

***1 mark
each – 6***

Question 4

Indicate your knowledge of the parts of an objective by rewriting the following under the separate headings of Performance, Conditions, and Standard.

- 4.1 Without the aid of any reference material,
other than the illustrations provided, identify,
by numbering in the correct sequence, and
labelling, the five stages of a two stroke engine

Performance:

Conditions:

Standard:

***2 marks
each – 6***

- 4.2 Describe, given the ingredients of a basic plain cake, the correct procedure for mixing and baking. The description may be given either orally or in a written statement, and must include the correct temperature and time for baking, determined by the quantities.

Performance:

Conditions:

Standard:

***2 marks
each – 6***

- 4.3 Using the video provided, list three patterns of behaviour that would indicate the automobile driver displayed tolerance and regard for other drivers on the road.

Performance:

Conditions:

Standard:

***2 marks
each - 6***

Question 5

Standards can be specified in a number of ways. In the following statements, state how the standard is specified.

- 5.1 Given a street directory and an address that specifies a street, building number and district, the trainee must be able to locate the address within one minute.

This standard is specified as _____

- 5.2 With access to a selection of pipes and a micrometer, the learner must be able to measure the inside diameter to a tolerance of 0.02mm.

This standard is specified as _____

- 5.3 Given access to all personal safety equipment, the trainee must be able to transfer the waste chemicals from the tank to the disposal vehicle in accordance with Regulation No. 2603-35 as specified in Handling of Hazardous Chemicals, 1997.

This standard is specified as _____

**2 marks
each – 6**

Question 6

List three advantages of a curriculum written in behavioural objectives.

**2 marks
each – 6**

Total: 46 marks



Assignment Number 3.2 – 2

Unit 3.2 Writing Objectives

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 approximately 60 words, explain the concept of behavioural objectives. In other words, what is a behavioural objective? You may use an example in your answer.

8 marks

Question 2

2.1 What is the difference between an educational goal and a behavioural objective? (Tick the correct answer)

- ☐ Educational aims are stated in more general terms than behavioural objectives
- ☐ Educational goals are more precisely defined than behavioural objectives
- ☐ There is no difference

3 marks

2.2 Why do we write behavioural objectives?

- ☐ To prepare the groundwork for writing educational aims
- ☐ To describe behaviour in terms of student performance
- ☐ To describe behaviour in terms of teacher performance

3 marks

2.3 Label each of the following: **A** equals **educational aim**; **B** equals **behavioural objective**

- ☐ The student will know the principals of entrepreneurship
- ☐ The student will explain the difference between kinetic and potential energy
- ☐ The student will construct an isosceles triangle
- ☐ The student will learn to operate the controls on an electric oven
- ☐ The student will recite the Gettysburg Address

5 marks

Question 3

Write three objectives that relate to your area of expertise. The format may be either descriptive or specified under the separate headings of Performance, Conditions, and Standard. One objective is required for each of the following types:

- The acquisition of a skill (psychomotor: eg. replacing a fuse)
- The learning of knowledge (cognitive: eg. calculate the angle of ..)
- To develop an attitude (affective: eg. become conscious of the environment)

18 marks

Question 4

From the following *Aim* write an objective that would specify a competency indicating a knowledge or skill in one aspect of the aim.

AIM:

At the conclusion of the programme, the students will have an understanding of the geography of the Caribbean.

9 marks

Question 5

If you, as the instructor, were supplied with a list of objectives that your students were required to achieve, explain in 150 to 200 words or so, how this would influence the way you would both **teach** the topics and **assess** the students.

14 marks

Total 60 marks