

Authors

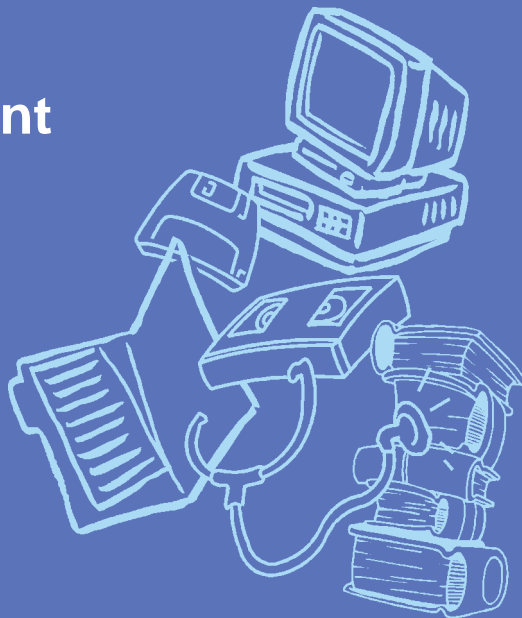
S McAleer
E A Hesketh

Instructional Design
J M Laidlaw

Desktop Publishing
L E Bell
M C Gunn

Computing
N K McManus

A ssessment



Designed and produced by the
Education Development Unit
NHS Education for Scotland

Initial development sponsored by the
Scottish Higher Education Funding Council

Forward



Snippets on assessment

[Home](#)[Units](#)[Snippets](#)[Core](#)[Examples](#)[Practical Tips](#)[Opportunities](#)[Activities](#)[Don't Forget](#)

Assessment is the driving force behind any good training programme. It has many purposes which include: a diagnostic role to highlight trainee strengths and weaknesses, a means of acknowledging the achievement of a certain standard of performance, a measure of the effectiveness of training. Key concepts in assessment that need to be understood are standards, validity and reliability.



[Home](#)[Units](#)[Snippets](#)[Core](#)[Examples](#)[Practical Tips](#)[Opportunities](#)[Activities](#)[Don't Forget](#)

The Problem

“Using multiple choice questions to find out if my students had read and understood the textbook was OK but it did not help me discover whether they could actually apply the techniques described in the book.”

“I set exam questions that relate to those areas I teach well in. I feel this is fair to the students but my colleague doesn't agree.”

“There are some areas of my course that are difficult to assess. I feel it is better to forget about these when it comes to setting the exam.”

The Solution

The trainer is using an inappropriate assessment for the learning outcomes. He/she needs to look at a valid alternative, eg OSCE, rating scales.

The questions used must adequately reflect all the key areas of a course ie an exam must have good sampling validity.

Your assessment should cover all key aspects of the course – otherwise your trainees will only learn what is going to be assessed.

[◀ Back](#)[Forward ▶](#)

[Home](#)[Units](#)[Snippets](#)[Core](#)[Examples](#)[Practical Tips](#)[Opportunities](#)[Activities](#)[Don't Forget](#)

Introducing assessment

Assessment has many purposes and therefore can be used in different ways. It can be used to highlight trainee strengths and weaknesses, and to acknowledge their achievements. It can also be used to measure of the effectiveness of training, thus offering a way of informing the public that the teaching is of a good standard and the professionals exiting the system are highly competent. Resources are often allocated on the basis of such assessment.

Some key concepts in assessment which are explored further in the Core section are:

- The standards used
- Validity
- Reliability.

Assessment may be described as being formative or summative.

Formative assessment

Summative assessment



Click for further information



Back



Forward

[Home](#)[Units](#)[Snippets](#)[Core](#)[Examples](#)[Practical Tips](#)[Opportunities](#)[Activities](#)[Don't Forget](#)

Formative assessment
Summative assessment



In postgraduate training, trainees are usually assessed on a regular basis and given feedback on their strengths and weaknesses. This is known as formative assessment. It measures learning at various points during the training phase and is part of the learning process. It is primarily diagnostic and should highlight those areas that need 'working on'.

 Back

Forward 

[Home](#)[Units](#)[Snippets](#)[Core](#)[Examples](#)[Practical Tips](#)[Opportunities](#)[Activities](#)[Don't Forget](#)

Formative assessment
Summative assessment



Summative assessment is usually employed at the end of a course or a period of training. It determines who has passed or who has failed. It ensures that a sufficient standard has been reached before moving on to another level, or acknowledges a certain standard of performance. The latter may be in the form of a degree or certificate. With summative assessment the student is frequently given a mark or a grade and the intention is to discover “what has been learnt”.

 [Back](#)[Forward](#) 

A

ssessment in action

Standards used in grading

A raw score or grade is meaningless unless it is related to some standard of performance. The two key methods of referencing are:

Norm referenced
assessment

Criterion referenced
assessment



Click the appropriate option if you wish to find out more

[Home](#)[Units](#)[Snippets](#)[Core](#)[Examples](#)[Practical Tips](#)[Opportunities](#)[Activities](#)[Don't Forget](#)

Back

Forward

[Home](#)[Units](#)[Snippets](#)[Core](#)[Examples](#)[Practical Tips](#)[Opportunities](#)[Activities](#)[Don't Forget](#)

Norm referenced assessment

Criterion referenced assessment



Norm referenced assessment is when you compare an individual's performance in relation to their colleagues. It ranks students/trainees and allows you to say that person A is better than person B, eg:

A trainee has carried out a physical examination of the knee better than 90% of the other trainees.

Clift & Imrie (1981) criticise this method. Find out what they say by clicking [HERE](#).



Back



Forward

[Home](#)[Units](#)[Snippets](#)[Core](#)[Examples](#)[Practical Tips](#)[Opportunities](#)[Activities](#)[Don't Forget](#)

Norm referenced assessment

Criterion referenced
assessment



- the final grade may conceal poor study skills
- the level of motivation can drop
- it may conceal the fact that some courses or training are poor while others are good.

 [Back](#)[Forward](#) 

[Home](#)[Units](#)[Snippets](#)[Core](#)[Examples](#)[Practical Tips](#)[Opportunities](#)[Activities](#)[Don't Forget](#)

Norm referenced
assessment

**Criterion referenced
assessment**



Criterion referenced assessment measures a student's/trainee's ability by placing him along a specific skill or knowledge continuum, eg:

A trainee has carried out an error-free physical examination of the knee without missing any of the key stages.

continued...

 Back

Forward 

[Home](#)[Units](#)[Snippets](#)[Core](#)[Examples](#)[Practical Tips](#)[Opportunities](#)[Activities](#)[Don't Forget](#)

Norm referenced
assessment

**Criterion referenced
assessment**



It allows you to look closely at what has been learnt and to get an insight into an individual's strengths and weaknesses. If you are specifically interested in detecting whether mastery of a topic or skill has been achieved then criterion referencing should be used. To carry out such an assessment it is essential to have well defined learning outcomes for your course or training programme and to have a standard which indicates an acceptable level of performance.

 [Back](#)[Forward](#) 

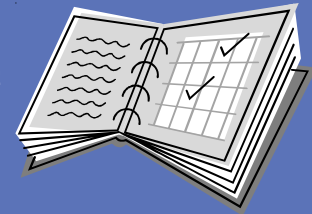
[Home](#)[Units](#)[Snippets](#)[Core](#)[Examples](#)[Practical Tips](#)[Opportunities](#)[Activities](#)[Don't Forget](#)

Validity

Validity is simply the extent to which the assessment measures what it is supposed to measure.

If you want to find out whether a trainee can perform a particular psychomotor skill it would be inappropriate to give him a written examination.

Multiple choice questions (MCQs), for example, would probably be valid for assessing knowledge about the skill but invalid for finding out how effectively the skill is carried out. An observation checklist would be a better choice.



continued...



Back



Forward

[Home](#)[Units](#)[Snippets](#)[Core](#)[Examples](#)[Practical Tips](#)[Opportunities](#)[Activities](#)[Don't Forget](#)

Validity continued...

There are different types of validity:

[content](#)[concurrent](#)[face](#)[predictive](#)[construct](#)

The most important type when looking at achievement tests is content validity. To find out more click [HERE](#).

[Back](#)[Forward](#)

[Home](#)[Units](#)[Snippets](#)[Core](#)[Examples](#)[Practical Tips](#)[Opportunities](#)[Activities](#)[Don't Forget](#)

Validity continued...

Integral to Content Validity are two aspects:

- It is crucial that all the questions relate to the topic, ie your assessment has good item validity.
- The questions adequately reflect the key learning outcomes, ie has good sampling validity.

Content validity is obtained through expert opinion. Your course and learning outcomes are placed alongside your assessment and experts in the topic judge as to its validity.

[Home](#)[Units](#)[Snippets](#)[Core](#)[Examples](#)[Practical Tips](#)[Opportunities](#)[Activities](#)[Don't Forget](#)

Reliability

Reliability is about being able to trust the consistency of your assessment instrument. For example, if a student scored 70 out of 100 in a MCQ test and shortly afterwards scored 20 out of a 100 you should seriously worry about the test's reliability.

You can also have scorer/rater reliability. If for example you are using two examiners you can check how well their scoring tallies. This is particularly important if the marking involves a certain amount of subjectivity and is known as inter-rater reliability. Intra-rater reliability is where you check to see that a marker gives the same score to a trainee when the work is marked for a second time at a later date. For example you may assess a particular trainee on video-tape. Would you give this individual the same score a week later upon watching the same tape?



[Home](#)[Units](#)[Snippets](#)[Core](#)[Examples](#)[Practical Tips](#)[Opportunities](#)[Activities](#)[Don't Forget](#)

Types of assessment

There are a wide range of ways in which you might assess. These include essays, orals, Multiple Choice Questions (MCQs), Patient Management Problems. A fuller list is given in [Examples in Practice](#).

Some types of assessment are more objective than others. Much will depend on what it is you are assessing as to whether you will be able to use objective tests.

[continued...](#)



Back



Forward

[Home](#)[Units](#)[Snippets](#)[Core](#)[Examples](#)[Practical Tips](#)[Opportunities](#)[Activities](#)[Don't Forget](#)

Types of assessment continued...

Four of the most common types of objective test are:

- Short Answer Items
- True/False Items
- Matching Exercises
- MCQs.

The True/False type should be avoided if possible as they are open to guessing, tend to measure very simple factual recall, misinform (one may know that something is false but not know the correct answer), and assume that all knowledge has no shades of grey.



E

xamples in practice

Developing assessment tools

First ask “*What do I want to assess?*” and “*Why do I want to assess it?*” This will encourage you to focus on certain types of assessment.

There is a wide range of ways in which you might assess. Some types will be more appropriate for measuring knowledge, eg MCQs, others more suited to looking at performance skills, eg checklists and others best for focusing on attitudes, eg rating scales.

Some will also take longer to develop than others. For instance coming up with a series of essay titles may take only a few minutes but designing a marking template may be more time-consuming. Writing good MCQs is not as easy as it appears and it may be a lengthy process building up a comprehensive database.

[continued...](#)

[Home](#)[Units](#)[Snippets](#)[Core](#)[Examples](#)[Practical Tips](#)[Opportunities](#)[Activities](#)[Don't Forget](#)

[Home](#)[Units](#)[Snippets](#)[Core](#)[Examples](#)[Practical Tips](#)[Opportunities](#)[Activities](#)[Don't Forget](#)

Some assessment tools

- Essays
- Orals
- MCQs
- Objective Structured Clinical Examinations (OSCEs)
- Modified Essay Questions
- Rating Scales
- Checklists
- Patient Management Problems (PMPs)
- Log Diaries
- Trainer's Report
- Audit
- Simulated Patient Surgeries
- Long Case/Short Case
- Video Assessment
- Simulators
- Student Projects
- Critical Reading Papers
- Self-assessment
- Peer-assessment
- Standardised Patients

Home

Units

Snippets

Core

Examples

Practical Tips

Opportunities

Activities

Don't Forget

Focusing on these tools

Here are examples of three assessment tools.

MCQs

Checklist

Rating scales



Click for more information



Back



Forward

[Home](#)[Units](#)[Snippets](#)[Core](#)[Examples](#)[Practical Tips](#)[Opportunities](#)[Activities](#)[Don't Forget](#)**MCQs**

Checklist

Rating scales



The Multiple Choice Question can be used to assess simple recall of facts or the application of knowledge. Case and Swanson (1996) give the following example.

A previously healthy 33-year-old man has abdominal pain that he describes as steady with occasional cramping. His aunt, uncle and cousins have had similar episodes. His abdomen is distended, and bowel sounds are decreased. Neurological examination shows mild weakness in the upper arms. His urine is a faint reddish colour. These findings suggest a defect in the biosynthetic pathway for:

- | | |
|------------------|------------------|
| A collagen | D* heme |
| B corticosteroid | D thyroxine (T4) |
| C fatty acid | |

Back

Forward

Home

Units

MCQs

Checklist

Rating scales

Snippets

Core

Examples

Practical Tips

Opportunities

Activities

Don't Forget

The checklist can be used to assess learning outcomes relating to skills. Below is an example from a checklist for a neurological examination of the lower limbs.

Please tick appropriate box.

	Carried out satisfactorily	Attempted not satisfactorily	Not attempted
Inspection of legs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Test for tone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Test for clonus	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Test power-ankle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Test power-hip	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Test power-knee	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Test reflexes-ankle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Test reflexes-plantar	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(Taken from Harden RM and Gleeson FA, 1978)

 Back

 Forward 

Home

Units

Snippets

Core

Examples

Practical Tips

Opportunities

Activities

Don't Forget

MCQs

Checklist

Rating scales



If you want to look at attitudes you might decide to use a rating scale. The scale below looks at attitudes towards family doctors.

	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
I trust GPs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I think GPs are competent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
GPs provide a valuable service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Note...

You may wish to involve your trainees in the assessment process by getting them to assess themselves and each other. This is an excellent way to encourage self-directed learning and lifelong learning.



Back



Forward

P

ractical tips

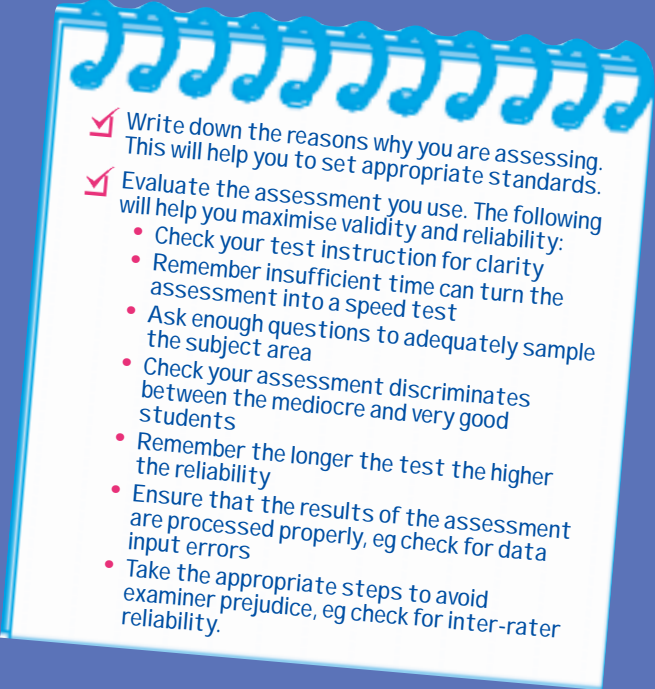
[Home](#)[Units](#)[Snippets](#)[Core](#)[Examples](#)[Practical Tips](#)[Opportunities](#)[Activities](#)[Don't Forget](#)

- ✓ Consider carefully when to employ assessment – before, during or after a course or all three.
- ✓ Look at what you want to assess – is it knowledge, skills or attitudes or a combination of all three? Design your assessment accordingly.
- ✓ Ask yourself “Is the assessment I am using measuring the desired outcomes?”
- ✓ Always ask yourself about the feasibility of the method you select. Have you the resources and time to implement it fully?
- ✓ If it is feasible use more than one method of assessment. The more methods you use the more confident you can be that the result is a fair reflection of ability.

continued...

[◀ Back](#)[Forward ▶](#)

[Home](#)[Units](#)[Snippets](#)[Core](#)[Examples](#)[Practical Tips](#)[Opportunities](#)[Activities](#)[Don't Forget](#)

- 
- ✓ Write down the reasons why you are assessing. This will help you to set appropriate standards.
 - ✓ Evaluate the assessment you use. The following will help you maximise validity and reliability:
 - Check your test instruction for clarity
 - Remember insufficient time can turn the assessment into a speed test
 - Ask enough questions to adequately sample the subject area
 - Check your assessment discriminates between the mediocre and very good students
 - Remember the longer the test the higher the reliability
 - Ensure that the results of the assessment are processed properly, eg check for data input errors
 - Take the appropriate steps to avoid examiner prejudice, eg check for inter-rater reliability.

[Back](#)[Forward](#)

Other learning opportunities

There are many books and other resources on Assessment. Here is a short resume of our suggestions.



Click the appropriate button if you wish to find out more

[Home](#)[Units](#)[Snippets](#)[Core](#)[Examples](#)[Practical Tips](#)[Opportunities](#)[Activities](#)[Don't Forget](#)[Back](#)[Forward](#)

[Home](#)[Units](#)[Snippets](#)[Core](#)[Examples](#)[Practical Tips](#)[Opportunities](#)[Activities](#)[Don't Forget](#)
[Books](#)[Journals](#)[Web](#)

Dent JA & Harden RM (Eds) (2001). *A Practical Guide For Medical Teachers*. Churchill Livingstone, Edinburgh

A good general textbook which will be of help to any medical teacher.

Jolly B & Grant J (Eds) (1997). *The Good Assessment Guide*. The Joint Centre for Education in Medicine, London

A practical account of the range of assessment methods available. An excellent reference book.

Harden RM & Gleeson FA (1978) *Assessment of medical competence using an objective structured clinical examination (OSCE)*. ASME Medical Education Booklet, Number 8. Association for the Study of Medical Education, Edinburgh)

A seminal paper describing the components of the OSCE.

 [Back](#)[Forward](#) 

[Home](#)[Units](#)[Snippets](#)[Core](#)[Examples](#)[Practical Tips](#)[Opportunities](#)[Activities](#)[Don't Forget](#)[Books](#)[Journals](#)[Web](#)

Fallows S & Chandramohan B (2001). Multiple Approaches to Assessment: reflections on use of tutor, peer and self-assessment. *Teaching in Higher Education* 6(2): 229-246

This paper looks at the introduction of both self-assessment and peer-assessment into a university course and describes the practical aspects and outcome.

Fowell, SL and Bligh, JB (1998) Recent developments in assessing medical students. *Postgraduate Medical Journal* 74: 18-24

This paper looks at the different methods available for assessing medical education.

Sloan DA, Donnelly MB, Schwartz RW, Felts JL, Blue AV & Strodel WE (1996). The Use of the Objective Structured Clinical Examination (OSCE) for Evaluation and Instruction in Graduate Medicine. *Journal of Surgical Research* 63: 225-230.

This paper determines the reliability and validity of the OSCE in assessing the performance of trainees.

Case S & Swanson D (1996). Constructing *Written Test Questions for the Basic Sciences*. <http://www.nbme.org/iwg.htm>

A manual produced to help medical teachers improve the quality of their objective tests.

[Back](#)[Forward](#)

[Home](#)[Units](#)[Snippets](#)[Core](#)[Examples](#)[Practical Tips](#)[Opportunities](#)[Activities](#)[Don't Forget](#)[Journals](#)[Book](#)[Web](#)

The international database TimeLIT (Topics in Medical Education Literature) www.timelit.org gives free access to articles relating to education in medicine, dentistry, nursing, patient health and the professions allied to medicine.

Other useful websites for those interested in Medical Education are that of the Association for the Study of Medical Education www.asme.org.uk and that of the Association for Medical Education in Europe www.amee.org

[Back](#)[Forward](#)

Home

Units

Here is another Developing the Teaching Instinct unit which is relevant to the topic of assessment. You might wish to look at it.

Aims & Objectives



Click to see a summary of the unit

Snippets

Core

Examples

Practical Tips

Opportunities

Activities

Don't Forget

 Back

Forward 

Home

Units

G

roup activity

Snippets

Core

Examples

Practical Tips

Opportunities

Activities

Don't Forget

Think about the key learning outcomes for your trainees.

Group them into the following categories:

- **knowledge**
- **skills**
- **attitudes.**



Decide what assessment tool is most appropriate for each one.

◀ Back

Forward ▶

Home

Units

Snippets

Core

Examples

Practical Tips

Opportunities

Activities

Don't Forget



Good assessment is about measuring what you are supposed to measure and doing so consistently.

◀ Back

Forward ▶