

The Relevance of Learning Outcomes to Professional Practice

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Setting the Scene

- Look at the vocabulary of learning outcomes
- Show the link to teaching and assessment
- Demonstrate how they can be applied to standards of practice
- Suggest how they can be used to benchmark professional qualifications

Competence

A general description of the behaviour or actions needed to successfully perform within a particular [work] context (e.g. job, group of jobs, function)

Attitude (affective)

Skills (psychomotor)

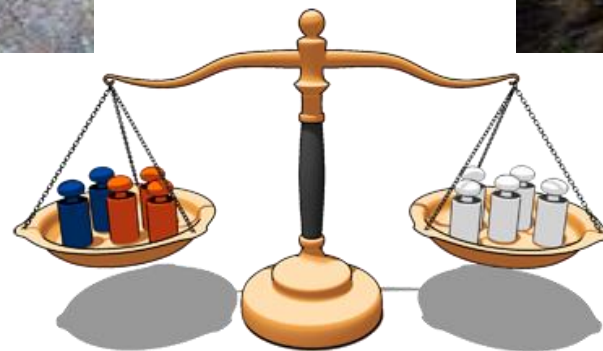
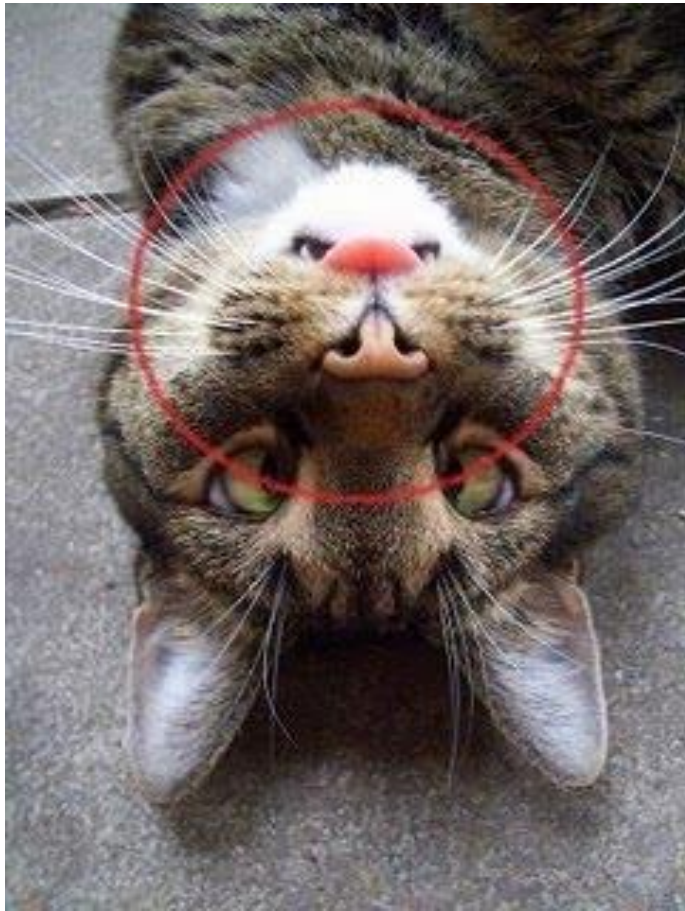
Knowledge (cognitive)

Can also be thought of as:

- “fitness to practice”
- “fitness for purpose”

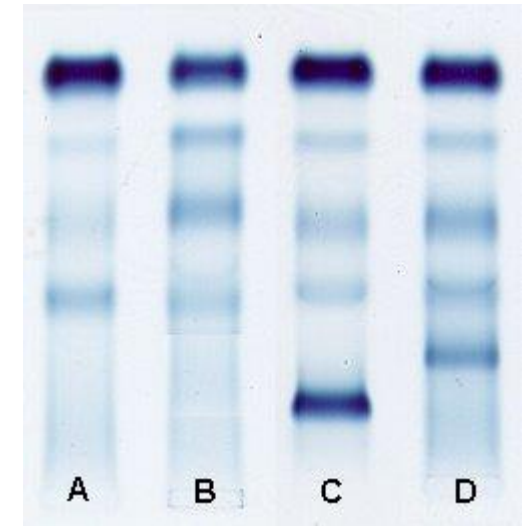
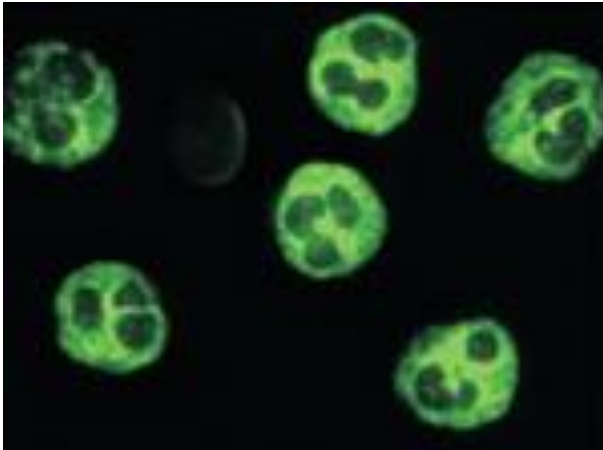
Some thinking on competence

- "... to be competent we must constantly review & change our practice"
(Hodkinson & Issit, 1995)
- "The distinguishing characteristics of the professional is that he does what he does intelligently not routinely"
(Pearson, 1984)



$$3 + 2 = 5$$

Scope of practice



Range

T cells 1718 cells/ μ L

B cells 1970 cells/ μ L

NK cells 1057 cells/ μ L

CD8+ T cells 44 cells/ μ L

CD4+ T cells 1494 cells/ μ L

Reference Range

1400-8000

600-3100

100-1400

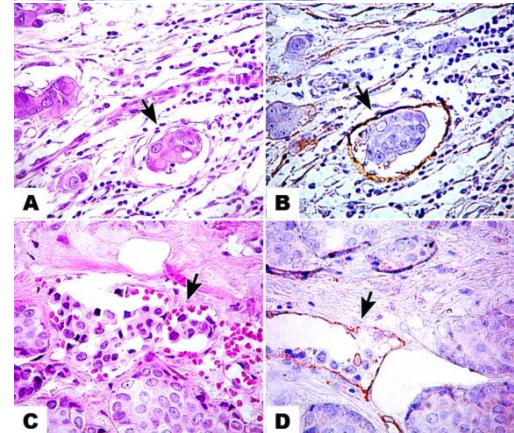
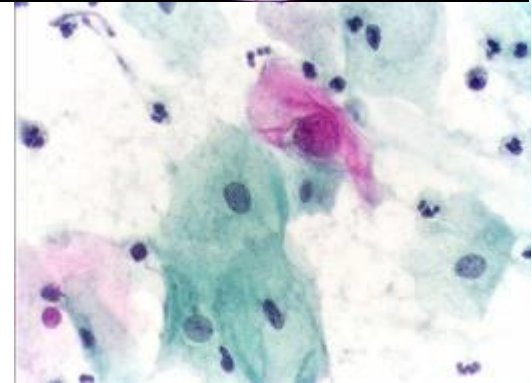
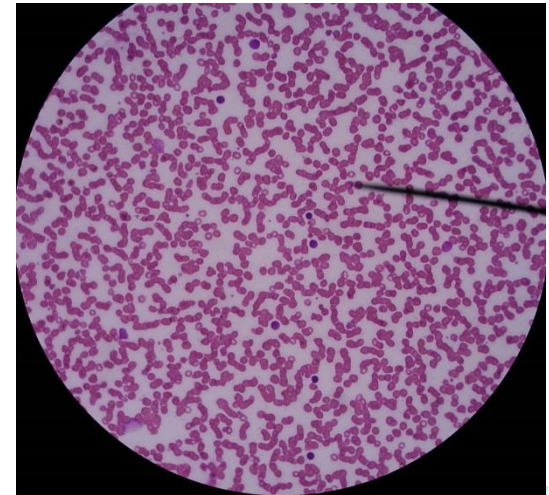
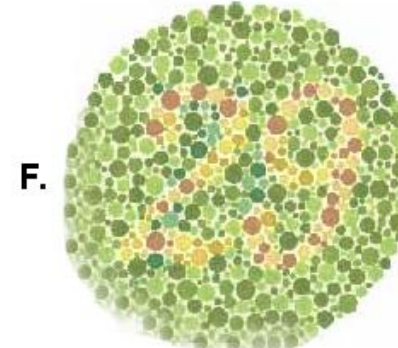
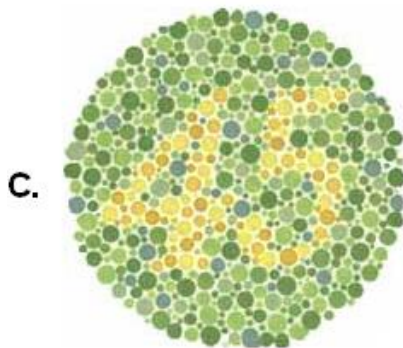
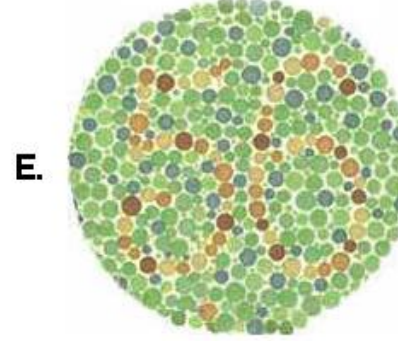
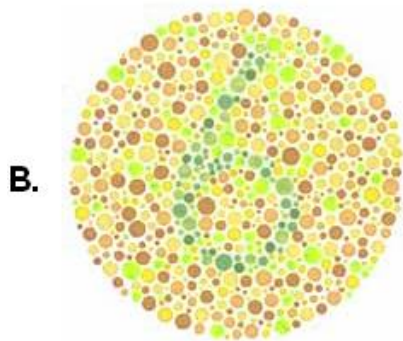
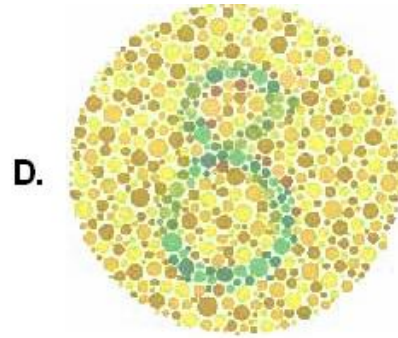
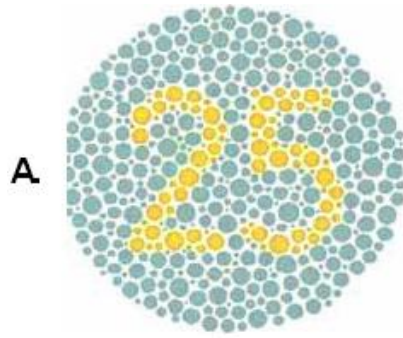
400-2300

900-5500

Experience



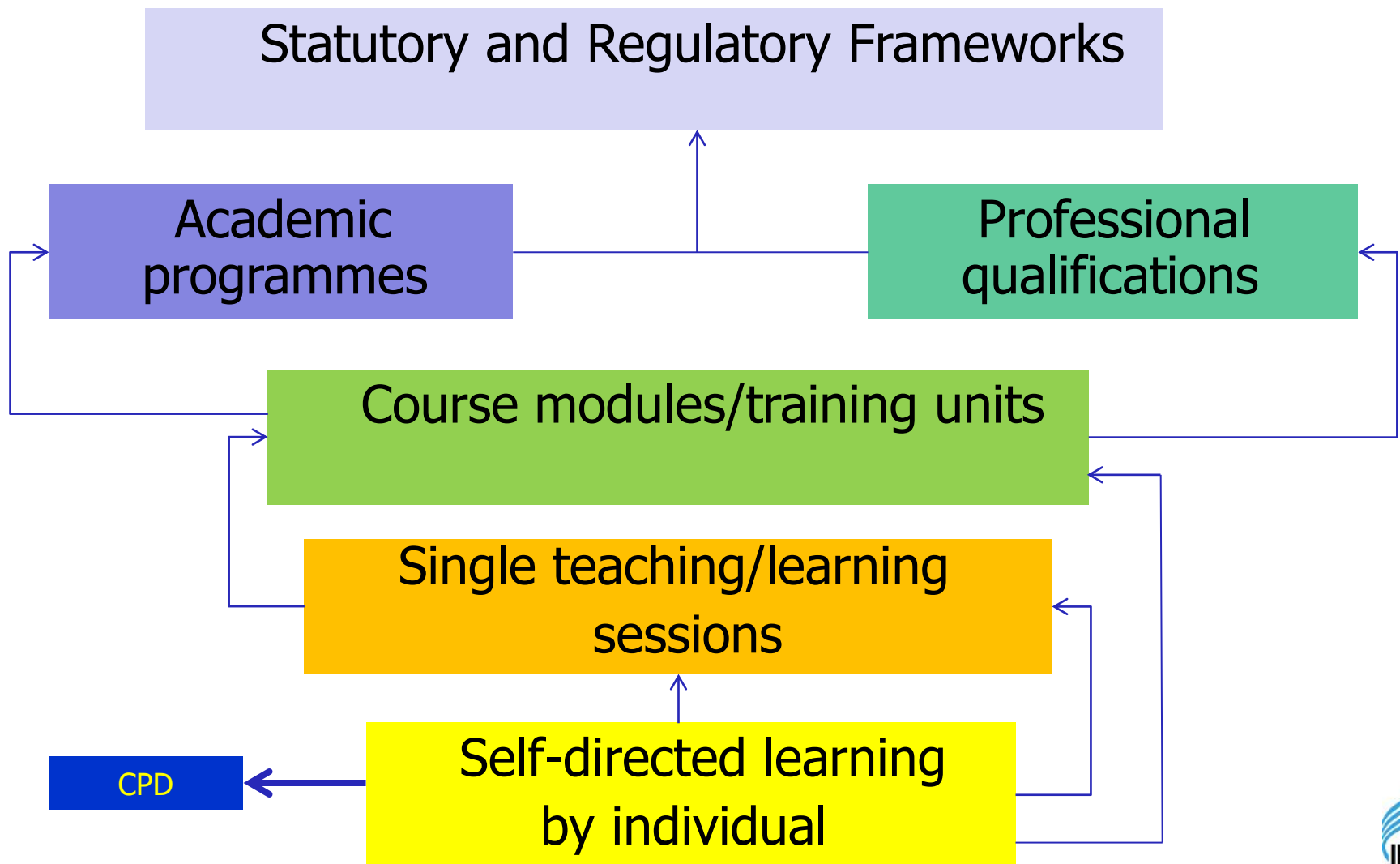
Ability



In general

- Just as the ECTS credit system is the common currency for education in Europe:
 - Learning outcomes are the common language for education
 - Facilitate comparability across the various systems in different countries
 - Facilitate diversity – formal learning, informal learning, life long learning, etc.

Levels at which learning outcomes are defined



Learning outcomes

- Are specific intentions of a programme, course, teaching or training
- Statements of what an individual should know, understand, or be able to do
- Help guide choice
- Help to focus on what is to be taught/achieved
- Provide a practical guide to employers

Learning outcomes

- At programme level are categorised in terms of:
 - Knowledge and understanding
 - Intellectual skills
 - Practical skills
 - Key/transferable skills
- At modular level:
 - Should show clear alignment with teaching methods and assessment criteria

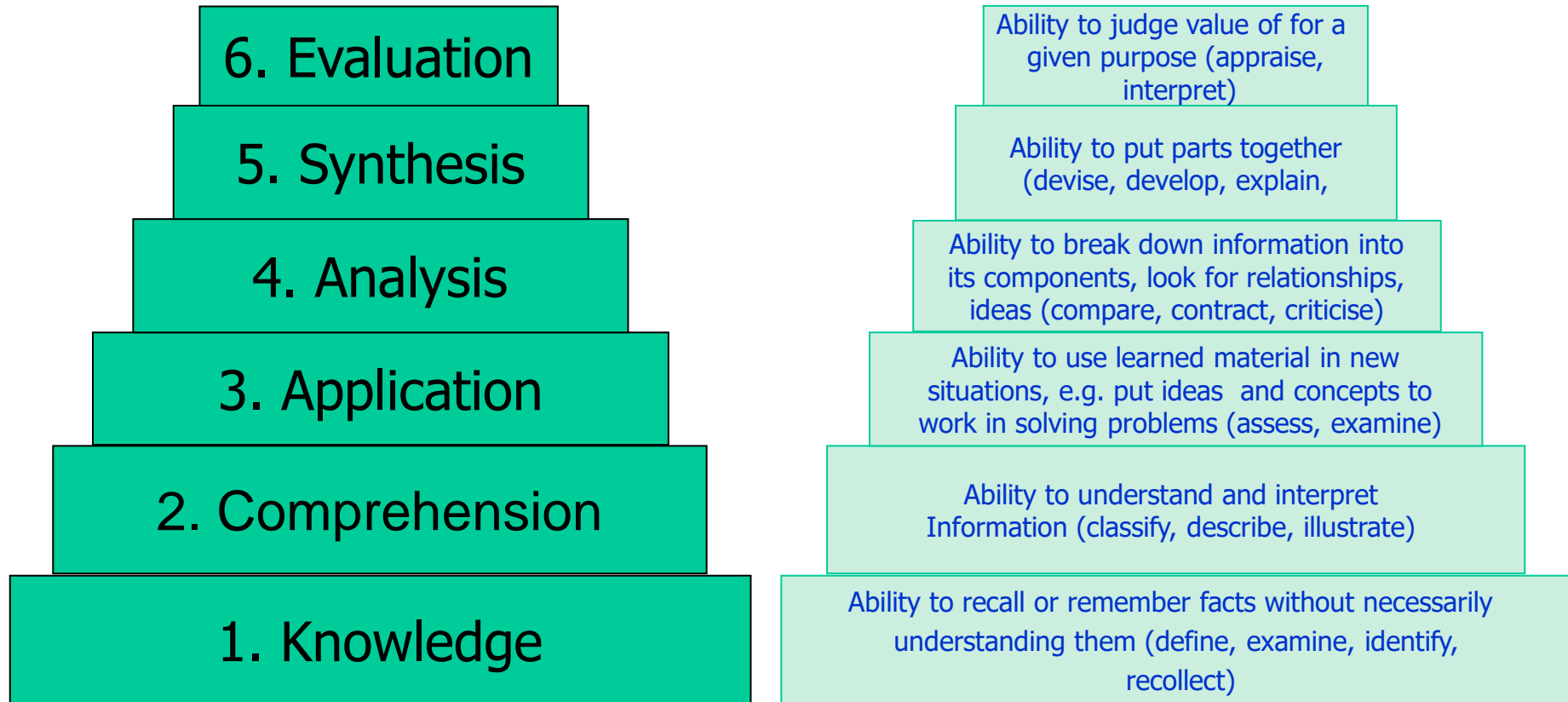
Learning outcomes

- Should indicate the nature and/or level of learning required to achieve them successfully
- Should be SMART
 - Specific
 - Measurable
 - Achievable
 - Realistic
 - Timeframed

Learning outcomes

- Should be quantifiable or observable outcomes
 - Action verbs: analyse, apply, calculate, critique, demonstrate, design, discuss
 - Related to (Bloom 1956)
 - Cognitive (knowledge and intellectual skills)
 - Psychomotor (physical)
 - Affective (feelings and attitudes)
- To note: understand, appreciate, realise are less easy to observe, measure or assess.

Bloom (1956) proposed that the cognitive domain is composed of six successive levels arranged in a hierarchy.



Examples

Recall the characteristics of a perfect fixative

Explain the criteria to be taken into account when dealing with patient samples

Apply principles of evidence-based medicine to determine clinical diagnoses

Critically *analyse* the advantages and disadvantages of laboratory screening methods for bowel cancer

Propose solutions to address a long-term shortage of qualified staff

Evaluate proposals for introducing new automated analysers.

PSYCHOMOTOR ("Doing") DOMAIN

Involves co-ordination of brain and muscular activity.

Active verbs for this domain: bend, grasp, handle, operate, perform, reach, relax, shorten, stretch, differentiate (by touch), perform (skilfully).

This work was not completed by Bloom.



Examples

Laboratory skills

- *Operate the range of instrumentation specified in the module safely and efficiently in the chemistry laboratory.*
- *Perform titrations accurately and safely in the laboratory.*

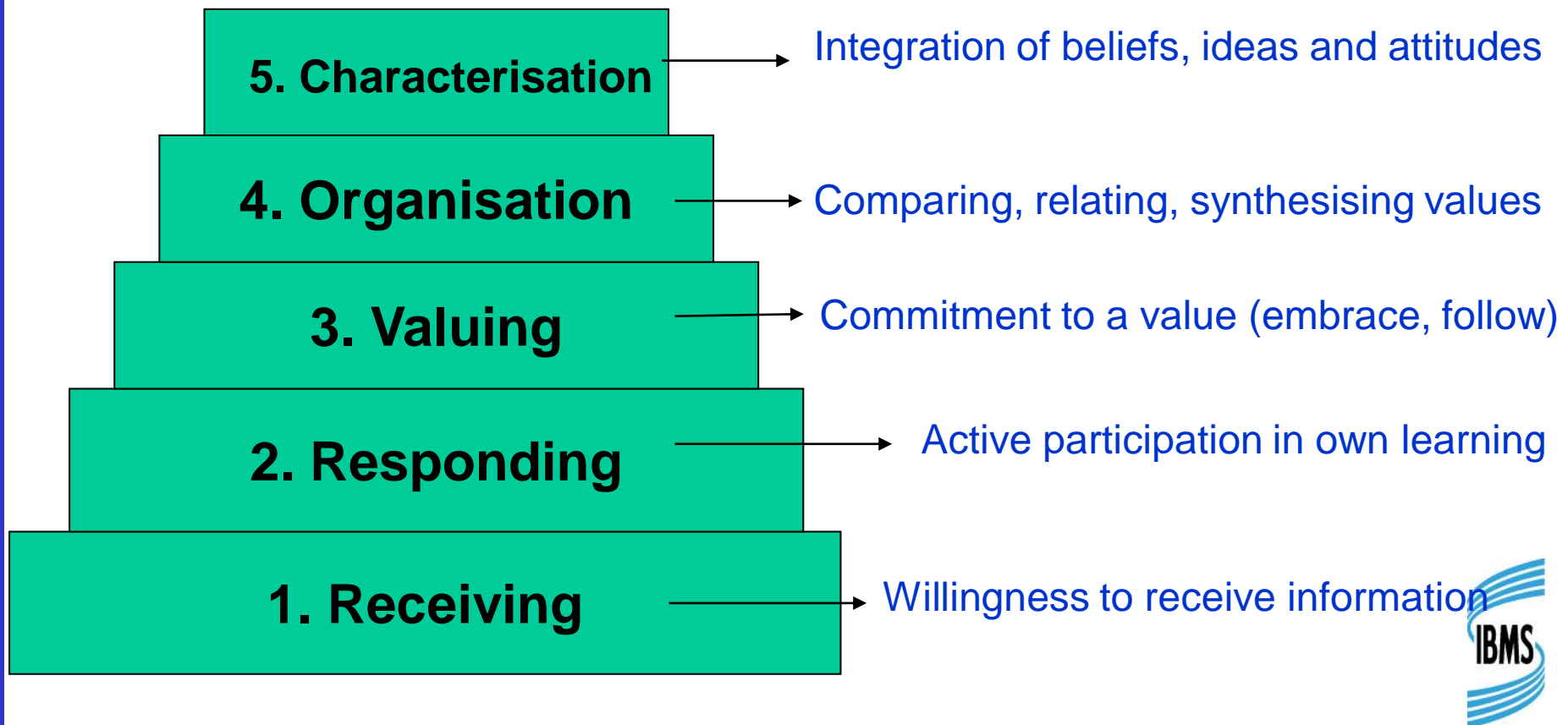
Clinical Skills

- Perform a comprehensive history and physical examination of patients in the outpatient setting and the general medical wards, excluding critical care settings.
- Perform venepuncture and basic CPR.

Presentation skills

- Deliver an effective presentation i.e. getting the message across
- Demonstrate a range of graphic and verbal communication techniques.

AFFECTIVE DOMAIN ("Feeling") concerned with value issues: involves attitudes.



Examples

- Accept the need for professional ethical standards.
- Appreciate the need for confidentiality in the professional client relationship.
- Display a willingness to communicate well with patients.
- Relate to colleagues, patients and service users in an ethical and humane manner.
- Resolve conflicting issues between personal beliefs and ethical considerations.
- Participate in class discussions with colleagues and with teachers.

The Qualification Credit Framework

The Qualification Credit Framework (QCF)

- credit transfer system developed for qualifications in England, Wales and Northern Ireland
- covers all levels of learning in secondary education, further education, vocational and higher education
- broadly aligned with the Framework for Higher Education Qualifications (FHEQ), allowing levels of achievement to be compared
- 4 domains
 - summary
 - knowledge and understanding
 - application and action
 - autonomy and accountability

3 (NVQ3)	5 (FD)	6 (BSc)	7 (MSc)
Ability to identify and use relevant understanding, methods and skills to complete tasks	Ability to identify and use relevant understanding, methods and skills to address broadly defined complex problems	Ability to refine and use relevant understanding, methods and skills to address complex problems	Ability to refine and use relevant understanding, methods and skills to address problematic situations that involve many interacting factors
Use factual, procedural and theoretical understanding to complete tasks	Use factual, procedural and theoretical understanding to find ways forward	Refine and use practical, conceptual or technological understanding to create ways forward	Use practical, conceptual or technological understanding to create ways forward
Review how effective methods and actions have been	Evaluate actions, methods and results	Evaluate actions, methods and result and their implications	Critically evaluate actions, methods and results and their short- and long-term implications
Take responsibility for initiating and completing tasks and procedures. Exercise autonomy and judgement within limited parameters	Take responsibility for planning and developing courses of action. Exercise autonomy and judgement within broad parameters	Initiate and lead tasks and processes, taking responsibility for work of others. Exercise broad autonomy and judgement	Take responsibility for planning and development. Exercise broad autonomy and judgement across significant area of study. Initiate and lead complex tasks.

Linking Learning Outcomes, Teaching and Learning Activities and Assessment

Learning Outcomes	Teaching and Learning Activities	Assessment
Cognitive (Demonstrate: Knowledge, Comprehension, Application, Analysis, Synthesis, Evaluation)	Lectures Tutorials Discussions Laboratory work Seminar	<ul style="list-style-type: none"> • End of module exam • Multiple choice tests • Essays • Reports on lab work and research project
Psychomotor (Acquisition of physical skills)	Peer group presentation Group work Clinical work	<ul style="list-style-type: none"> • Presentation • Portfolio • Performance • Project work
Affective (Integration of beliefs, ideas and attitudes)		<ul style="list-style-type: none"> • Interviews/viva • Practical assessment • Poster display • Fieldwork • Clinical examination

Learning outcomes in professional practice

- Degree accreditation
 - programme aims, LO, assessment
- IBMS qualifications
 - relevance to job roles
 - professional standards
- CPD
 - reflective learning
 - quality assured/credited activities

IBMS degree accreditation

- *"The programme specification must highlight the distinct features of the biomedical science honours degree courses, including overall learning outcomes"*
- *"There must be clear descriptors of the module content and mode of delivery with learning outcomes and methods of assessment"*
- *"Assessment methods should be clearly related to aims and objectives of the programme and its specific components and related learning"*

Institute of Biomedical Science criteria and requirements for degree accreditation (2007)



IBMS Membership & Qualifications

Higher Specialist Diploma or
DHSP

Certificate and Diplomas of Expert Practice

Specialist Diploma or DSP

Certificate of Competence

Certificate of Achievement
Part II

Certificate of Achievement
Part I

Fellow

CSci

Member

Professional Regulation

Licentiate

RSci

Associate

RSciTech

PhD

MSc

BSc

FD

NVQ3



Barriers to Qualifications and Standards

- Relationships
 - professional protectionism
 - lack of stakeholder engagement
- Resources
 - unqualified staff, too few staff
 - attitudes
 - staff turnover, loss of expertise
 - lack of equipment, time, motivation
- Recognition
 - Academic v Vocational
 - not valued due to lack of opportunities for progression and career development

Drivers for Qualifications and Standards

- Nature of biomedical science
 - advances in technology
 - advances in science
- Healthcare
 - patient well being and satisfaction
 - evidence based practice
- Professional/regulatory bodies
 - improved standards
 - professional representation
- Individuals
 - motivation
 - valued for career development and recognition

IBMS Qualifications

- Linked to academic and regulatory standards
- Portfolio based
 - Modular based on key areas of practice
 - Knowledge and Competence statements
 - Evidence based assessment
 - case studies, direct observations, critical reflection etc
 - External peer review
- Written or oral examination

Example: IBMS Specialist Portfolio

7.2i Carbohydrates and Mucins

Be able to demonstrate a range of carbohydrates in tissue sections.

KNOWLEDGE

- Understand the principles of carbohydrate demonstration.
- Know the principles of the pathophysiology of carbohydrate formation and the pathological significance of variations of expression of carbohydrate.
- Know the types of carbohydrate present in different tissues.
- Know the principles and practice of routine staining and impregnation methods for the demonstration of carbohydrate.
- Know the relevant quality control procedures.
- Know the risks and hazards associated with carbohydrate demonstration methods.

COMPETENCE

You must be able to:

- a) Follow demonstration method protocols accurately and safely.
- b) Select and use the correct staining or impregnation method to demonstrate carbohydrate present in different tissues.
- c) Select and use the appropriate control materials.
- d) Use appropriate microscopy techniques to visualise methods.
- e) Identify stained carbohydrate present in different tissues.
- f) Assess stained sections for quality.
- g) Resolve any problems associated with the staining methods.
- h) Safely dispose of waste reagents.

- It includes a ***Knowledge and a Competence component***
- **Evidences** that trainee has met the competences

Assessment and Evidence

EVIDENCE OF ACHIEVEMENT

This section requires the trainer to sign that competence has been successfully achieved on more than one occasion. Supporting evidence should be collected and prepared as indicated below as a portfolio.

- i) Observed by trainer to perform demonstration methods for carbohydrates in accordance with standard operating procedures, and assess stained sections for quality.

Date of completion:

Trainer's name:

Trainer's signature:

- ii) Answered questions set by the trainer based on the theory and practice of carbohydrate demonstration.

Date of completion:

Trainer's name:

Trainer's signature:

- iii) Prepared a list of tests to demonstrate carbohydrates in tissues and their results.

Date of completion:

Trainer's name:

Trainer's signature:

Portfolio and evidence of competence for this standard assessed and passed by:

Internal Assessor's
signature: _____

Internal Assessor's
name: _____

Date: _____

Reflective Log

- Opportunity for trainees to critically reflect, explore and challenge perceptions of their experiences
- Opportunity for peer reviewers to recognise consolidation of training into professional practice



Professional attitude – your best asset

- Skills and knowledge
- Flexibility and adaptability
- Multi-professional team working
- Reflective practitioners/commitment to CPD
- Self-motivation

In conclusion

- Approached learning outcomes from view of **relevant vocabulary**
- and expressing what an individual should be **able to do as a result of a learning activity**.
- Not looked at assessment or curriculum design but LO's can have significant implications for all aspects of these
- Similarly, in the design of professional qualifications they can help to develop, guide, and standardise training, assessment, CPD and recognition of awards.