

Writing Learning Outcomes

Learning outcomes are the backbone of our curriculum and allow both students and teachers to focus their attention on what matters. There are many excellent resources that describe the theory and practice of developing learning outcomes, and you will find links to some of these at the end of this document. Here we will describe the process of developing learning outcomes for the School of Medicine at Liverpool University, and how new changes to the curriculum are implemented.

Assessment drives learning, so this is where you should start when developing your outcomes. Answering these questions can help with deciding on what the focus, and therefore the outcome, of your teaching should be:

1. What do you want to assess?
2. How will you assess it?
3. What will you assess? E.g knowledge, ability to demonstrate a skill, or a mixture of both
4. What level do you expect the students to have achieved by this point in their learning?

For example:

A

1. What do you want to assess? [Identification of acid base abnormalities seen on blood gas analysis](#)
2. How will you assess it? [Written MCQ at end of year 2](#)
3. What will you assess? E.g knowledge, ability to demonstrate a skill, or a mixture of both [Knowledge](#)
4. What level do you expect the students to have achieved by this point in their learning?

[Identification of metabolic acidosis and alkalosis, and respiratory acidosis and alkalosis](#)

B

1. What do you want to assess? [Ability to perform arterial blood gas sampling from the radial artery](#)
2. How will you assess it? [OSCE at end of year 4](#)
3. What will you assess? E.g knowledge, ability to demonstrate a skill, or a mixture of both. [Ability to demonstrate a skill](#)
4. What level do you expect the students to have achieved by this point in their learning? [Ability to independently and safely obtain an arterial blood gas sample from the radial artery of a manikin](#)



With this in mind, it is important to link in with your assessment lead early when you are developing the curriculum for your area:

Year 1 – Dr Stuart Oultram

Year 2 – Dr Bill Greenhalf

Year 3 – Dr Fiona Greeley

Year 4 – Dr Jane Wilcock

Once you have answered all four questions you are ready to write your learning outcome. Remember to start with a verb that defines how the student will demonstrate their learning, the specific subject material you want it to demonstrate, and the context in which the learning will be demonstrated.

Using the examples above, you could create the following learning outcomes:

A

At the end of this lecture you will be able to identify metabolic and respiratory acidosis and alkalosis from example arterial blood gas analyses.

B

At the end of this theme you will be able to independently safely obtain an arterial blood gas sample from the radial artery of a manikin.

It is easy to get stuck using the same terms repeatedly. For example:

Cartilage and Bone Growth

- *Describe the embryology of normal limb growth*
- *Describe the function and structure of different types of cartilage*
- *Describe the functional importance of epiphyseal plates and the process of growth*
- *Describe the structure, function and role of chondrocytes in growth*
- *Describe how hormones control and modify bone growth*
- *Describe the differences between membranous and endochondral ossification processes*
- *Describe the process of bone growth, modelling and remodelling*

Could be better expressed as:

- *Understand the embryology of normal limb growth*
- *Explain the function and structure of different types of cartilage*
- *Understand the functional importance of epiphyseal plates and the process of growth*
- *Understand the structure, function and role of chondrocytes in growth*
- *Describe how hormones control and modify bone growth*
- *Differentiate between membranous and endochondral ossification processes*
- *Describe the process of bone growth, modelling and remodelling*

It can be helpful to express learning outcomes for practical skills using a similar approach. Here is an example:

On qualification, a doctor should be able to:

Limb realignment:

- Explain the principles of emergency limb realignment.
- Describe reduction of a long bone fracture and joint relocation procedures e.g. shoulder
- Outline immobilisation techniques
- Splinting:
 - Apply principles of splinting including
 - Plaster of Paris and fibreglass as well as pre-formed splints
 - Explain splinting techniques including the advantages and disadvantages of backslab and full cast
 - Safely use splint removal equipment

For each theme there should be two levels of learning outcomes. These will be overarching outcomes that explain what will be learned during the whole theme, and then more detailed learning outcomes that apply to a specific encounter such as a lecture or CBL. As a guide, there should be no more than three learning outcomes for a 45 minute lecture, or five learning outcomes for a 90 minute CBL.

Where a theme spans several years of study, or crosses several areas of the curriculum, it is important that students can clearly see what they are expected to have learned at each stage of their training. For example, in the case of respiratory medicine and cystic fibrosis, in year 1 in Molecular biology of the cell, a learning outcome is to “Define two major disorders that arise from DNA mutations affecting a single gene that affect protein function: - sickle cell anaemia and cystic fibrosis”. In Year 3 students “Review autosomal recessive inheritance and basic risk calculation and discuss genetic respiratory disorders and modes of testing and inheritance including cystic fibrosis...”

Any proposal to curriculum changes need to be finished at least 9 months ahead of their planned implementation date. Any significant change (that is change to delivery method, content, learning outcomes or assessment timing or method) needs to be approved by the Board of Studies (School of Medicine). This meets monthly and Val Bartley (barleyv@liverpool.ac.uk) keeps the list of dates. The proforma (which can be found in the same folder on VITAL as this document) must be complete, with details of the proposed change and reasons for that change, as well as the implications of your proposal. If approved by the Board of Studies, the proposal passes to the School of Medicine Curriculum Board, then the Faculty Scrutiny Panel (external), the FAQSC (Faculty Academic Quality Standards Committee). You will receive feedback at this stage as to whether your suggested changes are approved or if they require further clarification. Large programme level changes are approved at a further committee, the AQSC (University Academic Quality and Standard Committee). Please note that these committees do not meet over the summer months – changes therefore need to be signed off the academic year ahead of implementation. If you

have any queries about the processes above, please contact Dr Viktoria Joynes, Director of Studies for the MBChB Programme (Viktoria.joynes@liverpool.ac.uk).

If you need advice, please use the School of Medicine diagram (which can be found in the same folder on VITAL as this document) to seek your source of support. For example, if writing learning outcomes for a year 3 CBL on Respiratory Medicine you could seek support from the Respiratory Medicine Theme lead, or Director and Deputy Director of Year 3.

The references list contains links to online resources that are a source of further help and advice and the flowchart summarises the process of making curriculum changes. Both these documents can be found in the same folder on VITAL as this document.