

# Lesson Planning

## Overview

- Review a structured approach to clinical skills teaching and how it works in an ultrasound context
- How to write learning objectives
- A 6 step process for developing practical lesson plans

## A structured approach to clinical skills teaching

- George and Doto (2001) propose a simple 5 step method for teaching clinical skills
- **Step 1 – conceptualisation**
  - To be motivated to learn, the learner must understand why the skill is needed. The learner must understand the cognitive elements of the skill, why it's done, when it's done and when it's not done and the precautions involved. The learner must also know the instruments and tools involved in the skills performance
- **Step 2 – Silent demonstration**
  - The learner must see the skill performed in its entirety from beginning to end so that they have a model of performance. The silent demonstration gives the student a mental picture of the skill performed correctly which allows them to self evaluate their own performance when they perform the skill. This leads to learner imitation.
  - In an ultrasound context. Learners will have an exemplar of the ideal scan on the particular patient with the specific body habitus. They see you perform (with expert skill) and can understand what represents diagnostic pictures in this specific context
- **Step 3 – Narrated demonstration**
  - The tutor describes each step in the process as they perform a second demonstration so that learners can see how each step fits into the optimal sequence. This also gives students the opportunity to clarify steps of the procedure
- **Step 4 – Learner narrates the demonstration**
  - Students talk through the skills. If they can narrate the steps there is a greater likelihood that they can perform the skill correctly. By asking the students to describe step by step how to perform the skills, teachers ensure that students remember each step in sequence. This also helps with committing the process to memory.
  - In an ultrasound context, this can be achieved by observers in the group to promote engagement
- **Step 5 – Student performs the skill**
  - The learner, having seen the skill, heard a narration and repeated the narration now performs the skill and practices each individual element, then small portions linked together until eventually the whole skill is performed in its entirety.
  - Ask learners to think out loud so that you can evaluate the thinking processes and provide immediate feedback.

## Lesson planning – getting prepared

- Define your topic
- Define what you want the learners to learn
- What do you want learners to be able to understand at the end of the training session?
- What do you want learners to be able to do at the end of the session?
- What are the key take home messages?

Once you have answered these questions, rank the list in order of importance. Question why are they important? If you ran out of time, which ones could not be omitted?

## A 6 step strategy for designing effective lesson plans

### 1 – Write your SMART learning goals

- Writing SMART learning goals help improve the chances of succeeding in accomplishing a goal.
  - **S**pecific - should answer all the “w” questions – who needs to achieve the goal, what are you trying to accomplish, when will you achieve it by, where – not always relevant, which requirements or obstacles are related and why – what is the reason for the goal
  - **M**easurable – What metrics are you going to use to determine if you meet the goal? This makes a goal more tangible because it provides a way to measure progress.
  - **A**chievable - The goal is meant to inspire motivation, not discouragement. Making a goal achievable focuses on how important the goal is to the learner and what you can do to make it attainable.
  - **R**elevant – focuses the goal on something that fits in with daily clinical workplace
  - **T**ime-bound – provide a target date and time for achieving the goal. Check that your goal can be achieved in the specified timeframe
- Another way to write effective learning goals is to follow a 3 step process.
  - **Step 1** – specify the who and a timeframe
  - **Step 2** – choose your specific verb that defines what you want learners to be able to do. This should be achievable in the timeframe and reflect the learning activity complexity
  - **Step 3** – use 7 words to detail the context of what you want them to do

### 2 – Introduction

- State the learning objectives for the session
- Check where the learners are at and what they need assistance with.
- Spend 3 – 5 mins to perform the demonstrations and outline common scanning mistakes that novices make when performing this type of scan?
- Perform a silent demonstration
- Perform a narrated demonstration

### 3 – Plan the activity

- How much time do you have?
- How many learners?

- How will you evenly split the time between your learners?
- What will be the focus of each turn that learners take?
- What are the 2 – 3 key teaching points you need to cover?
- What resources do you need?
- How will you fill the dead time?
- What clinical cases are relevant for this session?

#### 4 – Plan for heterogeneity

- A multi-level lesson plan will allow you to cater for different skill levels in the group. Do your learners know...
  - Nothing about the topic? Are they complete novices?
  - 1 thing – Have they covered the basics?
  - Several things – have they scanned before and have some skills
  - Can they relate these things to each other – can they scan different body shapes, can they purposely move the probe to achieve the views
  - Can they apply the stuff they already know to other situations? Can they scan difficult cases?
  - Solo Taxonomy - Biggs and Collis 1982

#### **\$10 bill principle – as applied to ultrasound**

(First describe in Keith Code's Twist of the Wrist – The Basics of High-Performance Motorcycling)

Everyone only has so much "attention" or cognitive space to spend on the actions of performing an ultrasound exam. If you start out with \$10 and spend all of this on getting an image, there is no leftover cognitive space to optimise the view, the image or document the image. Once the learner is only spending \$3-5 on acquiring an image, they then have cognitive space to be able to optimise the view. Once the learner is spending only \$3-\$5 of their \$10 on getting and optimising the view, they then have cognitive space to optimise the image. As their skills progress and they spend less and less of their \$10 on image acquisition and optimising, then they have cognitive space or attention to concentrate on the various aspects of image documentation.

#### **The GOOD principle**

Based on the Keith Code \$10 bill analogy, we can create a multi-level lesson plan that can easily adapt to different skills levels of our ultrasound learners. Learners can only move up a level once they are spending \$3-\$5 of their \$10 bill of attention on the level they are working at.

**G**et the view

**O**ptimise the view

**O**ptimise the image

**D**ocument the image

### **G**et the view

Novice learners will spend most of their time just trying to find the target structure and put it in the middle of the screen

### **O**ptimise the view

Once learners can easily find the structure, you can challenge them to explore the various probe moves and to make mistakes and fix it. This will build their confidence in consistently and purposefully finding the target structure.

### **O**ptimise the image

Once learners can easily get the view and purposefully manipulate the probe to perform various probe manoeuvres, then they can focus on optimising the image by adjusting the machine controls.

### **D**ocument the views

Once learners can easily get the view and optimise the view and the image, they can be further challenged to document the view.

This requires three distinct processes.

- 1) They need to decide on the best view in the circumstances and evaluate whether this is in fact diagnostic. Freezing the image forces them to commit to their assessment of the anatomy as adequate and diagnostic.
- 2) Once the image is frozen, learners need to navigate the controls to annotate the image, make any required measurements and store the image. This also requires knowledge of what the ideal imaging sequence is to accurately record a determinate scan.
- 3) Having store the images, learners need to be able to document the findings in the patient's notes and communicate with other care providers to clinically integrate the information.

## **5 – Check understanding**

- How will you check that your learners understand what you have taught them?
- Question them on the clinical application of the topic.
- Have them practice making probe manipulation errors and fixing them. Deliberately exaggerate the probe moves in each direction so that learners test the boundaries of their spatial reasoning.

## **6 – Conclusion**

- Spend a few minutes at the end of the session to summarise the key learning points and give a teaser of the next session.