

# Session 4 Teaching so that learners learn

## Setting the context

Some teachers and trainers see their role as being to only transmit knowledge. In Sessions 2 and 3 the activities modelled a different approach. They required inductive 'learning by doing'.

Prepare yourself for Session 4 by reading about active approaches to learning in Section 3: *Learning by doing* (pages 3.1 to 3.13).

## Purpose

- To analyse beliefs about what makes for effective teaching.
- Plan to increase the use of strategies that encourage learners to try things out, think for themselves and support each other.

## Materials needed

- Sheet 2.1 The reflective cycle (Section 2: *CPD Case studies* in ringbinder, page 2.15)
- Sheet 2.2 The GROW model (Section 2: *CPD Case studies* in ringbinder, page 2.9)
- Sets of cards made from Sheet 2.15 *Beliefs about teaching and learning*, page 5.23
- DVD *CPD Learning by doing*

## Activities

What do we believe about teaching and learning?

Teachers and trainers often have very different beliefs about what makes for effective teaching and learning. This activity explores participants' beliefs, and the effects these are likely to have on classroom practice and on learners' learning.

To prepare for this activity, reproduce colour copies of Sheet 2.15 *Beliefs about teaching and learning* and make up sets of cards. Shuffle the sets to intersperse green and blue cards.

### Instructions

Invite participants to work in pairs. Give each pair a set of cards.

Ask them to consider each card in turn, discuss their responses to it and then put it into one of the following three categories.

- We both agree that this statement describes our beliefs and/or what we do in the classroom.
- We both agree with this statement does not describe our beliefs and/or what we do in the classroom.
- We differ in our responses to this statement.

Ask each pair to say:

- how many green cards they agreed on
- how many blue cards they agreed on
- how many green cards they disagreed on
- how many blue cards they disagreed on.

Then ask them to share their conclusions from the activity.

### Supporting the discussion

A teaching style based on transmitting information is likely to encourage learners to become:

- passive
- dependent on the teacher or trainer for solving their problems
- concerned that retaining information rather than understanding concepts
- preoccupied with giving the right answer rather than trying to understand the principles.

The green cards embody the transmission approach to teaching. They reflect the belief that learners learn when the teacher or trainer transmits information.

Professional engineers need the ability to work from basic principles, to solve problems, to hypothesise and try things out, and to learn from experience. The style of teaching that builds this ability is one that:

- involves learners in activities and problem solving
- encourages them to think for themselves
- creates a climate in which making mistakes is a valuable and necessary part of the learning process
- helps them make connections between different facets of their knowledge and experience
- encourages them to collaborate with each other
- invites them to put their thoughts into words so that they help themselves talk through a problem
- supports learners with questions, probes and guidance rather than correction.

The blue cards represent the constructivist approach to teaching. They reflect the belief that learners learn when the teacher or trainer helps them to construct meaning from information, and make connections between different aspects of their knowledge and experience.

## Learning by doing

Aspects of this approach are illustrated in the first section of the DVD *CPD Learning by doing*.

## Instructions

Show the part of the DVD *CPD Learning by doing* that features the CEME project. Ask participants to consider these questions as they watch.

- How had the teacher structured the sessions?
- To what extent was he in 'transmission' mode and to what extent was he encouraging active learning?
- Is there anything you would like him to have done differently?
- What was the response of the learners?

Whilst there will be times when it is appropriate to present information, to guide learners through a particular process and to prevent errors, these occasions are few in comparison with the opportunities for active, learner centred learning.

The next stage of the activity looks at these possibilities in greater depth and in the context of participants' own lessons.

## Instructions

Working in the same pairs, invite participants to reflect on a session they have run recently by describing to each other:

- the structure of the session
- the extent to which their approach at each phase of the lesson was to transmit information, sort out misconceptions and correct errors, or to help learners learn actively, collaboratively and creatively.

Give participants a copy of Sheet 2.3 *Reflecting on experience*, page 2.15, to structure their discussion.

Then ask them each to select instances in which they were in ‘transmission’ mode, and to discuss how they could change this to a more learner-centred style of teaching.

Round off the session by asking for volunteers to share the outcomes of their discussion in the whole group.

Talk through any problems or reluctance to make the changes.

## Reflection, sense making and planning

Invite participants to reflect on the activities so far, in terms of how they were structured to support learning, and how similar approaches might be used in their own teaching.

What is modelled in this session?

This activity is an example of where the discussion is more important than getting a right answer. Listening to the way participants talk will reveal important aspects of their thoughts, feelings and beliefs.

Transfer of learning

At the end of the session, discuss with them where they might use this approach in their own lessons. Use the GROW model (Sheet 2.2) to do this.

### One-to-one coaching

If you are working on a one-to-one basis with a colleague, you may find that this person will want to sort the cards on their own. Your role will be to encourage them to articulate and explore the thinking that lies behind each choice. Take care to facilitate the discussion in a non-judgemental way, looking for options and possibilities.

Use Sheet 2.3 *Reflecting on experience*, page 2.15, to help them reflect on a recent session they have delivered. Use the GROW model (Sheet 2.2) to structure the discussion about change.

# Sheet 2.15

## Beliefs about teaching and learning

### Category cards

We both agree that this statement describes our beliefs and/or what we do in the classroom
We both agree with this statement does not describe our beliefs and/or what we do in the classroom
We differ in our responses to this statement.

When I introduce a new topic, it's really important that I start things off by explaining it simply and clearly, so that they don't pick up inaccurate information.	When I introduce a new topic, it's really important that I find out what learners know about it already
When I introduce a new topic, I assume that learners know little or nothing about it already, so I start from scratch in giving them information	When I introduce a new topic, it's really important that I introduce it with a story or some other way of connecting it to everyday life
When I introduce a new topic, I like to tell them about it first, and then give them some practical exercises on which to apply and practice using the new information.	Knowing that there are different levels of knowledge and skills in the learners in my class, I set learning objectives that have different levels of achievement built in
Knowing that there are different levels of knowledge and skills in the learners in my class, I pitch things at a level that the less advanced learners can cope with, so that I can make sure they all move forward together	Knowing that there are different levels of knowledge and skills in the learners in my class, I make sure that I build in ways for the more advanced learners to help the less advanced

<p>When I listen to them talk, I'm often dismayed by how little they've remembered of what I've told them</p>	<p>Finding out how learners try to make sense of things, even when their attempts at sensemaking fly in the face of science, helps me shape the lesson so that they can reach a different understanding</p>
<p>Finding out how learners try to make sense of things, particularly when their attempts at sensemaking fly in the face of science, tells me just how I should make things clearer</p>	<p>The activities I set for learners often include opportunities for them to struggle, and to make mistakes</p>
<p>When I listen to what learners are saying to each other as they work together, I realise just how much I need to clarify</p>	<p>When I listen to what learners are saying to each other as they work together, I find out what they do and don't understand, and can then ask probing questions to help them reappraise their thinking processes</p>
<p>When I hear what learners are saying to each other as they work together I intervene to correct their misconceptions</p>	<p>I believe that making mistakes is an essential part of the learning process</p>
<p>I don't like to show up the weaker learners, so I when I introduce a new topic, I start from scratch, and assume that as a group, they don't know anything about it.</p>	<p>When I'm moving on to a new topic I find informal ways of discovering how much they know already</p>
<p>To find out what learners have learned, I set assessment tests at the end of each module</p>	<p>Before I tell them anything about a new topic, I usually explore what they know about it already.</p>

<p>I like to build up their skill level step by step, with problems and activities graded according to level of difficulty. This way they learn with the minimum number of mistakes.</p>	<p>I want to create an atmosphere in which learners feel free to say whatever they're thinking, and not just try to give me the 'right' answer.</p>
<p>I go through the theory first then do an activity at the end to revise</p>	<p>I get my learners to work together as much as possible</p>
<p>Teaching engineering is about passing on a body of knowledge</p>	<p>Teaching engineering is about getting learners to think about everyday problems and how they can use their theoretical knowledge to solve them.</p>
<p>If I start a new topic by getting learners talking to each other about what they know, they'll just confuse one another. So I make sure I put across the information clearly and accurately</p>	<p>I have got lots of informal ways of finding out how much they are learning without interrupting the lesson to administer a test</p>
<p>PowerPoint presentations are a really useful way of putting across information, and I use them frequently</p>	<p>Instead of giving a presentation, I get them doing things, often with the aid of worksheets, and then we discuss afterwards what they've found out</p>
<p>Periodic testing is the best way to find out how much they're learning</p>	<p>From time to time, I like to give my learners a complex activity to get their teeth into, and stretch their thinking, even though we might not have covered all the necessary information yet</p>
<p>You need to be careful when learners start to explain things to each other because they could pass on misconceptions</p>	<p>Tests only tell me whether they can give the right answer or not. I'm more interested in the way they're thinking and what they really understand</p>