BOWLAND MATHS
Professional development

Tackling unstructured problems

'Do I stand back and watch, or intervene and tell them what to do?'

Follow-up session

Activity 1 — Report and reflect on the lesson — 20 minutes

Take it in turns to share stories of what happened in your lessons. Give factual, descriptive accounts avoiding unhelpful judgements such as 'it went well'.

Now you have taught the lesson, it is time to reflect on what happened.

- What range of responses did pupils have to this way of working? Did some appear confident? Did some need help? What sort of help? Why did they need it?
- What support and guidance did you feel obliged to give? Why was this? Did you give too much or too little help?
- What different strategies did pupils use? Share two or three different examples of pupils' work.
- What do you think pupils learned from this lesson?

If there is time, you may also like to watch the videos of the teachers as they reflect on their own lessons with the *Table tennis* and *Sweet box* problems.

Activity 2 — Observe teacher interventions — 10 minutes

The video shows teachers questioning pupils while they worked on the three problems.

Consider the following issues:

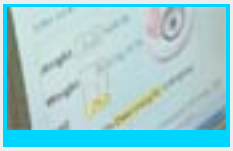
- What kinds of questions were they asking pupils?
- What was the purpose of these questions?
- How do these questions compare with those you asked in your lesson?

Activity 3 — Consider strategies for offering help — 10 minutes

Pupils unused to working on open problems often seek reassurance from the teacher that they are heading in the right direction: "Is this right?" "What do I do next?"

- What strategies can you use to help pupils to work more autonomously and independently?
- Do you think it is better to 'throw pupils in at the deep end' and give them unstructured problems straight away, or to *gradually* remove the scaffolded support over a period of time? How would you do this?

Activity 4 — Discuss how you handle sensitive issues — 10 minutes



One of the problems, *A Body Mass Index calculator*, was not used by some teachers because they felt that it might cause embarrassment or disturb pupils who are sensitive about their own bodies. Others felt that such sensitive issues should be tackled head on, and addressed directly.

- Do you feel that sensitive issues should be addressed in the mathematics classroom? Why or why not?
- They are addressed in other subjects, including English and Science. Why are these different?
- Would you feel comfortable using this particular resource in your classroom?
- Would working with a PSHE teacher help?
- Would you make any special arrangements before using such a resource?

The case studies themselves do contain some issues that may be considered sensitive to some pupils. *How Risky is Life?*, for example, considers the likelihood of unexpected death from various causes and this may be sensitive to those who have been recently bereaved by an accident. The PSHE KS3 programme of study specifically says that "*pupils should be taught to recognise and manage risk and make safer choices about healthy lifestyles...*"

Activity 5 — Plan strategies for future lessons — 10 minutes

Plan some ways of applying what you have learned in this PD module to the other mathematics lessons that you teach.

- Take examples of activities that you normally use in mathematics lessons and consider how they may be made less structured.
- Develop 'suggestions' to be given orally or in writing to pupils who demonstrate that they really need more support as they work on unstructured problems.

Further Reading

See Handout 5 for suggested further reading.