

A Professional Development Module

Overview

One of the ever present challenges for the secondary teacher is to demonstrate relevance in their subject content; none more so that mathematics. This is a subject that embraces all aspects of learning styles from the acquisition of simple knowledge to the forming of complex concepts and requires creative thought to transfer the skills learned, to the solving of problems. To achieve success, the mathematics teacher must be hugely resourceful in terms of teaching and learning styles, whilst standing firmly in the real world of applied mathematics. Maths in Work has been designed to offer glimpses of the real world of work via video clips, to help students appreciate not only the relevance of mathematics but its importance in every day life. The clips feature the people who are actually 'doing the job' and explain some of the maths processes that they are involved with on a daily basis. There is a brief synopsis of each clip which identifies the maths topics covered, and all clips end with the simple question, "What mathematics would be involved in the work you have just watched?" The teacher is free to approach the viewing in whatever way seems appropriate to his/her circumstances.

Where are you now?

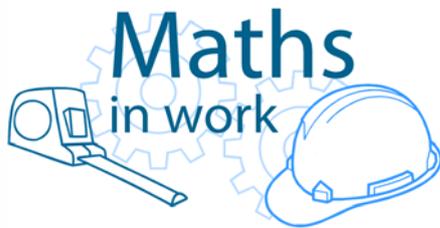
If professional development is to be worthwhile, it is the start of a process of change. Using this resource can be simply a one-day novelty – a token activity acknowledging the concern of some students, or it can be part of a determined effort to ever improve the way in which we match our teaching styles to the needs of our students. A possibly painful, but productive task which forms the basis of the first activity is to reflect on one's current pedagogical style.

Activity 1

Choose a lesson recently delivered, preferable within the last day or two (or maybe an average of several lessons) and partition them in terms of the percentage of time spent in each of the following ways. This task requires brutal honesty!



- administration and other non-learning pursuits
- outlining the lesson's learning objectives to the students
- teaching by instruction with no visual or kinaesthetic input
- promotion of discussion with the class or with an individual
- implementation of activities on a paired or group basis
- setting of solitary practice to consolidate processes learned
- revisiting learning objectives to draw out main points and to move learning forward.



Discuss your priorities with your colleagues:

- can major differences of style be justified in terms of student benefit?
- which was the most productive part of your lesson in terms of moving student understanding forward?
- could your time balance within the lesson be improved with different planning?

All the above may have their place in a successful lesson, but to commit a large part of the lesson to VAK content such as 'Maths in Work' rather than instruction, requires a conviction that such input is as valuable and possibly more valuable than traditional instruction.

Activity 2

Select one or more video clips (this selection may be best approached as a random allocation by the person leading the PD session). Plan a lesson or set of lessons relating to the maths content.

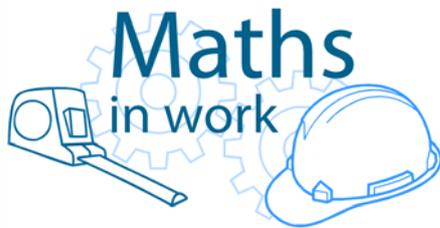


Planning should include:

- approximate time allocation for each task
- key questions
- simulation of similar activities (within the limitations of the classroom) to those shown on the clip
- an assessment activity to establish whether student attitudes change during the lesson

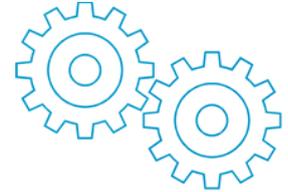
Reflection

- is the time taken to view and discuss the video clips justified?
- should they form part of a programme of study?
- what changes in pedagogical style are appropriate for you, or the department as a whole – if any!



Continuing Professional Development

<http://www.mathscareers.org.uk/> This is a particularly useful site and deals with such topics as:



- What is the use of quadratic equations?
- What is the use of statistics, data handling and probability?
- What is the use of learning about proofs?
- What is the use of trigonometry?
- What is the use of vectors?

TDA Mathematics training opportunities:

<https://cpdsearch.tda.gov.uk/SearchResult.aspx?e=AZ80+TykJ7PKxQGsaTfNvDncmKPTCxylWVvC+IRXZXFH/jdo3DZWv820eok4Xmea>

Other sites that demonstrate the link between mathematics and the real world of work and beyond, and offering motivational materials:

<http://www.ima.org.uk/>

<http://image.gsfc.nasa.gov/poetry/MathDocs/spacemath.html>

<http://www.ams.org/mathmoments/>

<http://motivate.maths.org/>

http://www.homeschoolmath.net/teaching/why_need_square_roots.php