

Could you do more to uncover and build on your pupils' misconceptions?

Research evidence

Asking questions designed to probe pupils' existing beliefs and misconceptions about maths is important for moving their thinking forwards, as in this example.

Teacher: You each have an isosceles triangle. What else do you notice about it? See what patterns you can make with it.

Pupil 1: (With agitation): This is not isosceles. It is scalene. (She turned the shape in her hand, touching the sides and repeated her indignant phrase).

Teacher: Why do you think it is scalene, not isosceles?

Pupil 1: (Holding the shape with the long side horizontally in one hand and running fingers from either end of the base to meet higher up in the air). Isosceles will be there.

Pupil 2: (Running a finger over the two equal sides of the plastic triangle). These two sides are the same.

Pupil 1: (Suddenly changes her mind). Ah, yes it is an isosceles.

Teacher: Can you tell me why you changed your mind? That is a useful thing to know.

Pupil 1: I have always seen isosceles with equal longer sides upwards.

Your evidence

You might like to examine how far you use pupils' existing beliefs and misconceptions about contexts and subjects. You could work with a colleague to video an interactive session designed to help pupils apply their learning through, for example, solving a problem and observe or discuss with your partner the three most unexpected answers pupils gave you during that time, how you handled them and why you handled them in that way. You could use the table below to record your observations. Did you, for example, ignore the answer (because it was incorrect) and swiftly pass the question to other pupils to answer or did you prompt the pupil to give additional detail that revealed the thinking behind the answer?

Date:		
Pupil group and lesson:		
Context/subject:		
Your question	Pupil's response to the question	How you handled the pupils' surprising responses

Are there patterns in the surprising responses? Did the way pupils approached the tasks or problems you set reveal different ideas or misconceptions based on their experiences beyond school and/or your subject?

Next steps

Now that you are more aware of the issues surrounding handling pupils' unexpected answers you might like to try out different ways of responding. For example, if you are aware that you usually respond quickly and/or move on to the next question you had planned, you might like to see what happens when you:

- pause before offering a response;
- prompt pupils to explain their answer in more detail; or
- encourage pupils to put mistakes right together.

Do colleagues from different subjects have different approaches to uncovering and building on misconceptions?

You might also like to consider what both you and the pupils learned from exploring unexpected answers. You may also choose to revisit the questioning table in several weeks time to capture evidence about your pupils' development in this area.

Find out more

Research for Teachers summary 'Collaborative mathematics' available here:

<http://www.curee.co.uk/node/4832>

