

Enhancing students' understanding – how can we build on students' ideas in science?

Research taster

Increasing the time and attention given to points of known learning difficulty pay off in better students' understanding of the explanations for the phenomena being studied. Identifying in advance areas students find difficult in science can help teachers plan their lessons more effectively. Evidence from research may help teachers do this.

Your evidence

You might find it useful to analyse the learning demands in your science lessons. During a session or series of lessons try to note down how much time you or your students spend on areas of learning difficulty. The results could be recorded on a matrix for the lesson(s). You could jot down the learning task in the matrix. You might even involve your students in doing the recording as a mini research activity!

Types of learning(purposes)	
Contexts of learning	
Whole class	
Small group discussion	
Small group practical	
For how long	
To acquire new knowledge	
To apply previous learning in a new context	
To build on previous knowledge	

Having collected the data, is it then possible to consider the range of learning experience students encounter and the demands these place on them? What were the particular learning difficulties in the lesson? How far did the learning difficulties relate to students own conceptions of science based on their everyday lives?

Adapted from Reflective Activity 13-1g

Moving forward

When you plan your lessons you might like to identify areas of likely difficulty in advance? Would it be helpful to construct a table with common student misconceptions in one column with the accepted scientific explanation in the other so that you know where these areas are likely to occur when you are planning your lesson? Could you then spend more time on those areas, particularly probing the ideas students bring to your lessons and why they believe them?

Find out more

To find out more about students' alternative conceptions in science you may find the following useful:

Leach, L., Ametller, J., Hind, A., Lewis, J., Scott, P. *Evidence-informed approaches to teaching science at junior high school level: outcomes in terms of student learning* Paper presented at the Annual Meeting of the National Association for Research in Science Teaching, Philadelphia, March 2003. It can be accessed at: <http://www.education.leeds.ac.uk/research/cssme/NARST2003Leeds.pdf>

Reports of the Towards Evidence-Based Practice in Science Education (2000-2003) project. They are accessible at: <http://www.tlrp.org/proj/phase1/phase1bsept.html>



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