

Framework for teaching science: Years 7, 8 and 9 [May 02]

Misconceptions

Some scientific ideas are difficult because they involve the learner in abandoning previous beliefs - for example, a belief that heavy objects fall faster than light ones. Pupils will not necessarily be convinced by a demonstration. They are likely to see what they want or expect to see - that the heaviest object lands first - or they will try hard to find fault with the test in order to hang on to their belief. Although pupils' ideas can be challenged by physical evidence, it is often the evidence, not the idea, which they doubt.

Teachers have to challenge pupils' thinking and give them new perspectives from which to view the evidence through a range of activities and frequent reinforcement. Pupils often need to articulate the conflicts that exist in their minds. Drawing out their thinking and talking about their difficulties in abandoning their beliefs is a key role for an adult in the room, such as the teacher, a technician or a teaching assistant attached to the science department.

One of the most common misconceptions among 11-year-olds is that they believe incorrectly that energy can be 'used up', saying, for example, that a runner has lots of energy at the start of a race but this has all been 'used up' or 'lost' by the end. The [QCA scheme of work](#) describes the most common of pupils' misconceptions connected with each unit of work. The Strategy's [programme of professional development](#) includes discussion of these common misconceptions and approaches to teaching and learning that help to identify and address them.

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