

How can we help students carry out science investigations?

Research taster

Students often show greater interest in science investigations when they are offered the opportunity to find ways of tackling problems for themselves. But do your students know what they are looking for and do they know how to go about finding it?

Your evidence

Giving students the opportunity to plan their own approaches to tackling a science problem means they have to be clear about the learning objectives and outcomes of each stage of the problem.

It is highly likely that you have key objectives concisely written in your lesson plans.

The ability to translate these into a meaningful form for the pupils often means that we must make clear the anticipated outcomes for the activity. Many schools adopt WILF, a fictitious character (usually a dog for some reason!) that represents "What I'm Looking For" to the children, often with his picture and a series of statements on the class or desk whiteboard.

Try out this simple idea and record the results, in terms of pupil involvement and clarity in interpreting the requirements of the lesson. What are the limitations/problems with this approach?

(Adapted from Reflective Activity 9-3c)

Moving forward

Would it be a helpful idea to train your students in the specific tasks you identify as necessary for them to plan to tackle problems in their own way? Is this an issue you could share with colleagues and plan for at a department or subject level? Perhaps your school leaders could provide professional development in this area, this might draw in support and expertise from an external specialist?

Key issues for you to think about might include:

- Making sure students can interpret the task requirements
- Encouraging them to draw on previous knowledge
- Helping them identify what to change, what to control and what to measure as outcome (if appropriate?)
- Helping them work out a suitable scale of operations, including quantities of materials, apparatus, time scale
- Raising their awareness of safety issues as appropriate
- Helping them make sense of their results

Find out more

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>

Osborne, J., Ratcliffe, M., Bartholemew, H. (2003) Teaching pupils ideas- about science: case studies from the classroom. Paper Presented at the Seventh International History, Philosophy & Science Teaching Conference, July 30-Aug 3, 2003

