When teachers discuss and consider Action Research (AR), there is sometimes a prevailing view that it is just about being active in carrying out research! That is, data and evidence are actively gathered to inform the making of a conclusion about improving something related to practice.

In other words, rather than being passive, teachers might energetically collect, scrutinise and analyse evidence (perhaps test results or homework quality, for example) that edifies an aspect of their students’ learning and consider that they have carried out ‘Action Research’. This, however, is a form of evaluative or practitioner research. It is not AR in the accepted sense (McNiff & Whitehead, 2002) unless there is clear recognition of influential factors (that are purposely changed or altered in some way) and the impact of this modification systematically assessed.

**Defining Action Research**

AR is an approach designed to investigate the impact of some kind of intervention or change in practice. In science classrooms, this could involve a teacher changing his/her approach to formative assessment (or Assessment for Learning – AfL) and judging (through varied kinds of evidence) how the altered practice influenced their students’ learning. However, to make clear evaluative measures of impact, the teacher would need to ensure that all students received and/or engaged with formative assessment in similar ways. This would be a challenge as, ideologically, formative assessment should be personalised to support individualised development; therefore, how can a teacher make clear and easy (generalised) assertions from their changed practice? Thus, there are many pitfalls and dilemmas within AR. As a research approach, it requires a systematic methodology that validates and verifies the assessment of the effect of some aspect of altered practice; it requires criticality to ensure that the research is focused and evaluates the outcomes that are directly related to the new practice. Exploring, for example, how the AfL use of two stars and a wish, or comments rather than marks on written work, might improve students’ work would require careful focus on whether practical skills, written work and/or knowledge and understanding are being developed. Findings from the research would then confirm that the change in a teacher’s practice had resulted in x or y outcomes. McNiff and Whitehead (2005) suggest that there is a series of questions that can structure progress through an AR approach to develop practice:

- What evidence do I have that the situation has improved?
- What will I do about it?
- What kind of evidence would show that the situation has improved?
- What am I currently concerned about?
- Why is this issue a worry or concern?
- What evidence do I have that illustrates this issue or concern?
- What could I do to improve the situation?
- What evidence do I have that illustrates this issue or concern?

As Taber (2013) suggests, AR is a common (sense) approach for practitioners to research their teaching. He lists possible kinds of issues that a teacher might address through this approach: poor student behaviour; limited student understanding of a topic; lack of interest in a topic; poor quality homework; not enough student involvement in discussion; boys more engaged in practical work, etc. For science teachers, the questions identified above could help shape their AR approach to develop their practice (McGregor & Cartwright, 2011). AR enables teachers to:

- systematically examine an aspect of their teaching;
- collect information and evidence about a situation;
- enact a changed (or potentially improved) aspect of practice;
- evaluate and analyse the (new) information (or data generated) in order to review whether the situation has improved or not; and
- use the fresh evidence to substantiate the changed practice.

The steps outlined above are depicted in Figure 1. AR, then, is not characterised by particular data collection techniques, but by the attitude to the evidence generated after changing some aspect of practice. As McNiff and Whitehead (2005: 1) describe, it is ‘...a common sense approach to personal and professional development that enables practitioners everywhere to investigate and evaluate their work, and to create their own theories of...’

**Figure 1. Reflective review adapted from the Action Research cycle (McNiff with Whitehead, 2002: 41).**
This kind of research can include perusal of literature as it provides clear theoretical guidance that can be gleaned to help inform and develop understanding, conceptions and beliefs. The findings from the study highlighted how new understandings can be gleaned to help inform and develop teaching in science classrooms.

References


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