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## Original Citation

McGregor, Debra and Woodhouse, Fiona (2016) Action Research in the classroom : Thinking about different kinds of evidence to measure impact. Education in Science, 264. pp. 32-33. ISSN 0013-1377

This version is available at http://eprints.hud.ac.uk/id/eprint/33767/

# Action Research in the classroom

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## Thinking about different kinds of evidence to measure impact

*This article suggests how teachers could embark upon collecting data for action research (AR) projects related to science teaching. Previous articles (EiS, May & Nov 2015) provided an overview of some of the issues useful for teachers to consider before embarking on data or evidence collection in their classroom or school. This follow-on article develops some ideas further by outlining diverse kinds of data that could be collected. Before gathering any evidence for a research study, however, it is important that would-be researchers gain ethical approval (and permission from participants and headteachers) to ensure that the research process and outcomes do not distress or disadvantage those involved in any way (see https://www.bera.ac.uk/).*

### Questionnaires

Questionnaires can be used to gather data from many participants, rapidly. The styles of questions that students can complete most swiftly are those with pre-determined choices to select from, usually referred to as Likert (1932) scale questions, multiple-choice rating or rank ordering. There can be a range of choices: three options (see Figure 1) can work well to encourage respondees to make a definite choice; however, many surveys use 5 choices (see Figure 2). These can be effective for seeking views, opinions or understandings from older pupils.

Older students can also be offered questionnaires to complete online, which can provide more autonomy in garnering pupils' views. Google Forms and Survey Monkey (https://www.survey monkey.com/) can provide teachers with tools to develop online questionnaires.

Seeking views or opinions from younger pupils can be more of a challenge. A popular approach is to provide pictorial options (see Figure 3) and/or reading out the questions and explaining verbally what they should do to share their thoughts. The children can respond by selecting a picture that represents their response. The pictures can be added to a questionnaire or alternatively set out on a desk for them to select. Hopkins' (2008) guide to classroom research offers a range of 'tools', which can be adapted to gather data that can inform the impact of AR interventions.

### A gallery approach

Using a gallery approach to seek opinions or understandings can be a useful approach with younger students. With very young children, there are pictures around the classroom and the children are asked to stand next to the picture resembling how they are feeling at the time of the lesson. This kind of approach can also be adopted with older students or adults, whereby 'statements', 'facts' or 'quotations' can be mounted on posters around the room, and the participants asked to stand by those that do or do not represent their view (or even suggest something they had not thought about). Students' views can be explored further by then asking them (in focus groups or individual interviews) about why they thought about something in a particular way. This can offer more ethnographic (or personalised) qualitative information.

### Interviewing

Interviewing individual children for your own action research is often difficult (because you have a professional teaching relationship with them) and they may wish to please you by telling you what you want to know (rather than remaining completely objective). Asking questions immediately after a really successful lesson or a week after a specific activity will elicit different levels of enthusiasm and accuracy of recollections, so thinking about the timing of the interviews as well as whether you or someone else asks the questions is as important as the questions themselves. Carefully crafting the sequence of questions too is helpful, to encourage your interviewees to 'open up' and share insightful reflections. Opting for a more 'unstructured' approach to questioning can take you into interesting unforeseen areas, but it may mean that you do not elicit 'comparative' data (or information that is verified by your interviewees) to write about (confidently) later. Providing stimulus material can help remind interviewees (through a stimulated recall technique) with both one-to-one and group interviews. If you audio-record their discussions (or photograph an experiment) during some practical work and replay this, interviewees can 'explain', 'reason' or 'justify' their thoughts and actions more precisely.

### Focus group interviews

Focus group interviews can be exploratory (seeking the range of views of the collective) or they can seek consensus opinions about something. Again, how you pose questions can be very influential. Asking *'What were your difficulties with the homework set last week?'* or *'I want to find out why everyone struggled with the homework last week; can you each tell me something different that you found challenging'* will elicit quite different levels of responses. It is important to also consider who is in your focus group and how the dynamics of the people in it will affect what is said. Audio-recording

conversations like this are key, because the 'richness' of direct quotations can adeptly highlight key issues or points for consideration. These kinds of discussion groups can be led by the teacher or even, perhaps, older pupils (with a clear script to follow).

| | Often | Sometimes | Never |
|---|---|---|---|
| How regularly do you think about what you have learned in science and use it to explain life outside school? | | | |

Figure 1: Example question with three options to explore learners' views.

| | a | b | c | d | e |
|---|---|---|---|---|---|
| What is in an empty conical flask? | nothing | air particles | different-sized gas particles | oxygen and carbon dioxide | nitrogen, oxygen and carbon dioxide |

Figure 2: Example question with five options to explore learners' knowledge.

| How do you feel when doing science? | | | | |
|---|---|---|---|---|

Figure 3: An extract from a pictorial representation of 'choices' that young students can make.

## Observations

Observations are useful ways of collecting a variety of data; you can watch others (teach your class) or you can ask others to observe activities for you. IRIS[1] is a useful tool, increasingly being adopted in schools for this purpose. There are a variety of observations that can be made (for example, what kinds of questions are asked; how is formative assessment enacted; how does each member of a group contribute to practical work) of teaching (focused on teacher talk and/or actions) or learning (students' talk and/or actions). Deciding what 'data' are important and how best to capture them is not always straightforward. Hopkins (2008) and Thomas (2013) offer a variety of methods to observe happenings in classrooms.

## Pupils' work

Pupils' work that is reviewed to assess and monitor progress can be included as part of your data set. This could include (written or drawn) classwork, homework in exercise books (even 'free writing' described by Beishuizen et al, 2001), responses to marking, displays (which can be photographed), project or practical work, as well as tests and exam marks. Pupils can be audio- or video-recorded carrying out an activity and then invited to provide a narrative explaining what they are doing and why. Data can include aspects of learning that might not be initially obvious, including scribbled notes (concept maps or graffiti walls), as students grapple with understanding complex concepts in science. Drawing diagrams (see Chambers, 1983) can be used directly or as a stimulus to further question pupils about their ideas.

Pupils can also be researchers themselves, photographing aspects of learning they think are important; reflective discussion and/or analysis can examine their thinking from these photographs. Action research can include exploring pupil voice (Flutter, 2007).

## Narratives

Narratives can include your 'story' (Carr, 2001) as a researcher trying out a new pedagogical approach, or your students' responses to an innovation in the classroom. There might also be other professionals, such as Learning Support Assistants, offering an additional pair of eyes through which you can also garner perceptions of the dynamics of a classroom (Brookfield, 1995).

## Journals/reflective logs

Journals/reflective logs are an increasingly popular way of recording personal thoughts along a research journey. These link back to the work of Schön (1983). Journals can take a variety of forms, including written notes, jottings on lesson plans, or recorded memos into smart phones. There are many ways of recording your observations and thoughts as they come to you during your research endeavours. These can then become 'data' upon which to reflect. Learners can also be encouraged to do this and can use pictorial images to show how they feel about activities, or creatively complete outline pictures or empty cartoon speech bubbles.

## Conclusion

There are a wide variety of ways to research the impact of an intervention. Becoming a teacher-researcher can enrich your practice and knowledge of existing evidence out there. Engaging with research, as Carter (2015) suggests, can support teachers and encourage them to utter 'I have relished the chance to read current research, something I rarely have time to do normally' (Jagger, 2012).

## References

Beishuizen, J.J., Hof, E., van Putten, C.M., Bouwmeester, S. & Asscher, J.J. (2001) 'Students' and teachers' cognitions about good teachers', *British Journal of Educational Psychology,* **71**, 185–201

Brookfield, S. (1995) *Becoming a critically reflective teacher.* San Francisco: Jossey-Bass

Carr, M. (2001) *Assessment in Early Childhood:* Learning Stories. London: Sage

Chambers, D.W. (1983) 'Stereotypic images of the scientist: The Draw a Scientist Test', *Science Education,* **67**, (2), 255–265

Flutter, J. (2007) 'Teacher development and pupil voice', *Curriculum Journal,* 18, (3), 343–54

Hopkins, D. (2008) *A Teacher's Guide to Classroom Research.* Buckingham: Open University Press

Jagger, S. (2012) *An investigation to establish the teaching and learning strategies that contribute to motivating, inspiring and enabling boys to achieve their potential.* Unpublished MA thesis. Huddersfield University

Likert, R. (1932) *A technique for the measurement of attitudes.* New York: Columbia University Press

Schön, D. (1983) *The Reflective Practitioner: How professionals think in action.* London: Temple Smith

Thomas, G. (2013) *How to do your research project.* London: Sage

[1]Iris is a classroom video system that offers teachers a range of observational opportunities

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