

EXPANSIVE EDUCATION NETWORK Research digest

Evaluating teaching: using research to improve your practice

Summer 2015

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Message from the team

Professor John Hattie is famously quoted as concluding that:

'the biggest effects on student learning occur when teachers become learners of their own teaching' (Hattie, 2009:22)

This research digest aims to help you put his advice into practice by reviewing some of the methods you might use to learn more the impact of your teaching on students and use that evidence to change your practice.

Professional teachers who take responsibility for their own learning and development begin by understanding what is happening in their classrooms, laboratories, virtual learning environments and other learning spaces, identifying their impact on their students' learning and then reflecting on the evidence to plan future teaching activities. In other words, they are undertaking research.

In this guide we will examine a range of methods you might use to gather evidence about your teaching and consider how best to operationalise them. Finally, we alert you to some of the ethical implications of gathering and using evaluation data for classroom inquiries.

Bill Lucas, Janet Hanson and Ellen Spencer

Hattie, J. (2009) *Visible Learning: A Synthesis of Over 800 Meta-Analyses Relating to Achievement*. Abingdon: Routledge.

Why evaluate your teaching?

Self-evaluation is essential for professional development

Undertaking self-evaluation is one of the hallmarks of a profession, so teachers naturally reflect on their teaching on a daily basis and revise and update their practice based on their analysis. However, at some point it is necessary to gather information, or data, more systematically and interpret it with a specific purpose in mind. For example, you may have a concern about how effectively some of your students collaborate together when working in groups on tasks. You have made a few changes but they do not seem to have made any difference. So, prompted by your school becoming a member of the Expansive Education Network, and the opportunity to undertake supported classroom-based research activity, you decide to investigate the way you use group work to see if you can make it more effective for improving learning outcomes and ensuring that they are as expansive as possible. This research digest explains the variety of methods you might use for analysing your classroom practice, with the aim of collecting evidence that can inform your practice and contribute to professional knowledge.

We will use student collaboration and group work as a case study throughout, with examples drawn from primary, secondary and further education.

Let's start with some useful guidelines from Education Scotland on the process of reflecting on your practice more generally. The advice suggests that the following questions provide the starting point for any professional development journey:

- Where am I now in relation to my skills, capabilities and knowledge of:
 - pedagogy
 - developing the curriculum for my learners
 - the use of technology?

- What evidence do I have which supports this and what am I going to do next?
- How broad a range of strategies/resources do I currently use to support my self-evaluation activities, for example, do I use feedback from children, young people and their families?
- How well do I use self-evaluation to help plan my professional learning?
- How could I make self-evaluation a more central part of my planning?

More ideas for self-evaluation and development are available on the Education Scotland website at: <http://www.educationscotland.gov.uk/professionallearning/clpl/selfevaluation.asp>

David Hopkins (2014:77) offers some further advice about selecting a topic for classroom research. He suggests that you:

- Do not tackle issues you can do nothing about
- Take on small scale and relatively limited issues
- Choose an issue that is important to you or your students and one that you will have to be involved in as part of normal school activities
- Try to work collaboratively
- Make connections between your classroom research and the priorities of your school's improvement plan.

Remember that the key question in any evaluation (or assessment) is 'evaluation/assessment for what purposes'? In addition to your school's improvement plan we hope you will want constantly to be asking yourself the question: *which expansive outcomes – such as effective collaboration on which we focus on this digest – are you trying to cultivate in your learners?*

Self-evaluation supports your school

With the Ofsted Common Inspection, school leaders will no doubt be taking note of its expectations about teacher development. Within the Leadership and Management section of the new Framework (Ofsted, 2015: 39), the Grade Descriptors for the effectiveness of leadership and management in Outstanding schools include the following:

- Leaders and governors use incisive performance management that leads to professional development that encourages, challenges and supports teachers' improvement.
- Staff reflect on and debate the way they teach. They feel deeply involved in their own professional development. Leaders have created a climate in which teachers are motivated and trusted to take risks and innovate in ways that are right for their pupils.

Teachers engaging in classroom research related to school priority areas, with visible outcomes that are debated and shared with other teachers, provides useful evidence of the ways in which leaders are creating a climate that supports this willingness of teachers to take appropriate risks and develop innovative teaching.

Furthermore, there is plenty of evidence to suggest that teachers engaging in research is a powerful and effective form of professional development. Teaching schools now have a responsibility to lead the way in establishing research and development within their alliances so that outstanding schools continue to learn and improve by engaging in research. Louise Stoll (2015) describes how 98 teaching schools became partners in a large project across England, funded by the National College for Teaching and Leadership, that aimed to produce robust evidence on how best to build capacity for research and development among teaching school alliances (TSA). They found that key messages for great professional development include the need for teachers to be:

'...forensically clear about their starting points in order to evaluate impact ... and ...to truly look at their own practice and pre-conceptions about what they think students understand and what they actually do understand.' (Stoll, 2015:13)

Stoll also argues that school improvement strategies need to draw on three types of research based evidence:

'...being systematic about collecting, analysing and using data and impact evidence; promoting research and evaluation; and using externally generated research findings' (Stoll, 2012:1)

David Hopkins (2014) *A teacher's guide to classroom research*. 5th edition. Maidenhead: Open University Press.

Ofsted (2015) *School inspection handbook from September 2015*. London: Ofsted. Available at: <https://www.gov.uk/government/publications/school-inspection-handbook-from-september-2015> Accessed 14 September 2015.

Louise Stoll (2012) *Research matters: evidence use and school improvement*. Nottingham: National College for School Leadership. Available: <http://www.learnersfirst.net/private/wp-content/uploads/Opinion-Piece-Louise-Stoll.pdf> Accessed 14 September 2015.

Louise Stoll (2015) *Three greats for a self-improving school system – pedagogy, professional development and leadership*. Nottingham: National College for Teaching & Leadership. Available: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/406278/Three_greats_for_a_self_improving_system_pedagogy_professional_development_and_leadership_full_report.pdf Accessed 14 September 2015.

Action research

The research approach we suggest that teachers use for evaluating their practice is action research (AR), because the AR cycles complement the 'every-day' reviewing and planning of teaching. With AR, the teacher, rather than an external researcher, is in control of the research and there is an intention to act upon findings and disseminate to colleagues. The evaluation methods are described here with AR in mind. We discuss building research into your everyday practice later in this digest and there is a more detailed reading list on AR available on the eedNET website.

Building on the research of others

Before you start your own research it is useful to know what practice has been tried by other teachers and either found to work, require modification, or been dismissed outright. Referred to as 'reviewing the literature', ideas to help you think through your own interventions can be found in books, reports, journals, professional magazines and on websites, blogs or other social network sites. Although many academic libraries only offer access to those who are their students and staff, and journals require a subscription, there is a growing 'open access' movement' that requires those whose research is funded through public money to make their results accessible to the public. A search engine like Google Scholar is a good starting point for finding research articles, many of which are accessible for free. Many universities now have research portals or repositories, where journal articles and reports published by their academic staff are freely available, thus avoiding the need to pay for downloading a single copy from the journal's website. Government departments and their agencies commission a vast amount of research and also provide summaries in every-day language aimed at audiences such as parents or students, as well as teachers. Charitable foundations are often an important source of influential research reports and teaching associations and professional organisations discuss the practical implications of research findings for teachers. School research leads should find the ResearchEd community a useful source of inspiration and resources for fostering a research ethos within their school. Data sets, such as the Educational Outcomes database maintained by SSAT can be used to benchmark your school's performance against others. Finally, many well-known education researchers have their own websites and blogs that you can follow and comment on. A few of our favourite sites are listed in Table 1.

Example of source	URL
Search engines	
Google Scholar search tips	https://scholar.google.co.uk/intl/en/scholar/help.html
University and Research Council portals	
UCL Institute of Education, London	http://research.ioe.ac.uk/portal/en/publications/search.html
Stanford University, California, USA (YouCubed at Stanford, a research centre for the teaching of mathematics, provides resources for teachers and parents)	https://www.youcubed.org/research-articles/
Economic and Social Research Council (ESRC)	http://www.esrc.ac.uk/news-and-events/publications/
Government departments and agencies	
Department for Education (England)	https://www.gov.uk/government/publications/assessment-curriculum-and-qualifications-research-priorities-and-questions
Ofsted	https://www.gov.uk/government/organisations/ofsted
Education Scotland	http://www.educationscotland.gov.uk/learningandteaching/
Foundations	
Education Endowment Fund (EEF) Toolkit	https://educationendowmentfoundation.org.uk/toolkit/toolkit-a-z/
Centre for the Use of Research and Evidence in Education (CUREE)	http://www.curee.co.uk/browse-resources
Creativity Culture and Education (CCE)	http://www.creativitycultureeducation.org/research-reports
City & Guilds Centre for Skills Development (CSD)	http://www.skillsdevelopment.org/about_us.aspx
Education & Training Foundation	http://www.excellencegateway.org.uk/
Professional associations	

SSAT: the schools, students and teachers network	http://www.ssatuk.co.uk/cpd/accountability-and-data/edu-outcomes/
ResearchEd	http://www.workingoutwhatworks.com/
Association for Science Education (ASE)	http://www.ase.org.uk/resources/
College of Teachers	http://www.collegeofteachers.ac.uk/publications
Researcher websites	
Dylan Wiliam	http://www.dylanwiliam.org/Dylan_Wiliam_website/Welcome.html
Angela Duckworth	https://sites.sas.upenn.edu/duckworth/pages/research
John Hattie (Visible Learning is a website summarising Hattie's works)	http://www.education.auckland.ac.nz/en/about/staff/j.hattie.html and http://visible-learning.org/about-visible-learning/

Table 1 Examples of sources of existing research (Accessed 14 September 2015)

Data collection methods

'Hard' (quantitative) or 'soft' (qualitative)?

Your choice of data gathering methods will depend on your research question and on your context, ie: your students, your subject, your confidence with evaluation methods, your school's protocols, and so on. You have a number of options to choose from, including methods that give you numerical data to work with, such as surveys and the analysis of school records, methods that give you access to people's perceptions and viewpoints, such as interviews and focus groups and methods that enable you to observe behaviour or reflect on your own performance. The methods are summarised in Figure 1, illustrating a continuum, ranging from those that provide quantitative data, sometimes called 'hard' data, and usually involve collecting numerical data, to those that gather opinions and perceptions, or qualitative data, often described as 'soft' data. Of course, many methods, for example, surveys, can provide both types of data, so the distinction between the two is not always helpful for us. They are equally important, just different in what they tell us, as David Hopkins (2014) suggests:- quantitative methods tend to give you answers to '**what** happened' and qualitative methods offer answers about '**why** it might have happened'.

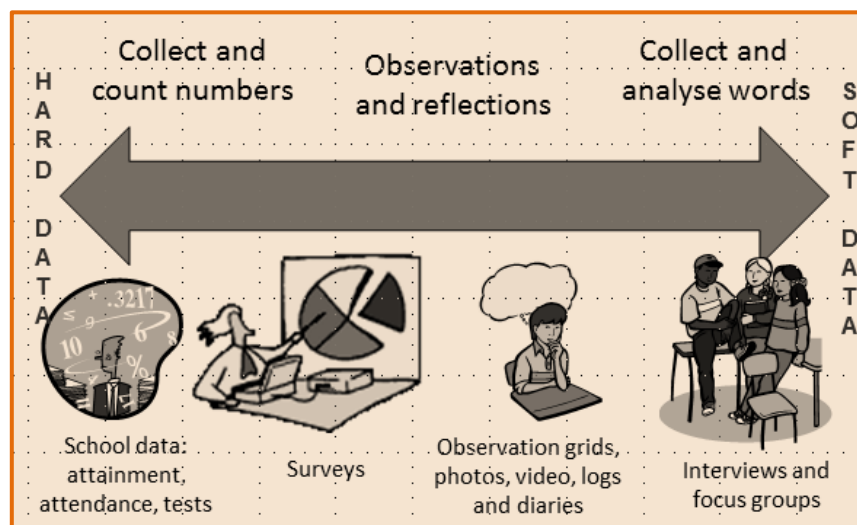


Figure 1 Continuum of data collection methods

David Hopkins (2014) *A teacher's guide to classroom research*. 5th edition. Maidenhead: Open University Press.

Triangulation

When teachers undertake action research for expansive education inquiries, we recommend that you use **three** different methods of collecting information about the teaching issue you have decided to evaluate. Having three different sources of information enables you to 'triangulate' your data, or your evaluation information. In research terms, triangulation just means collecting data on your topic of inquiry from three or more sources, for example, from the students themselves, from your own or a colleague's observations, and from school data. Vivienne Baumfield and colleagues (2008) suggest that drawing out similarities and differences between the data from different sources and understanding the perspectives of the different groups of respondents, enables you to draw more valid conclusions about the topic of your research and strengthens your 'case' for change. Not only does listening to your students' perspective help you fully understand the impact of your interventions, but also Louise Stoll (2015:10) suggests that there are strong pedagogic reasons for engaging your students in your research, since talking with students about their learning, listening to them and taking account of their views, appears to increase their engagement and enjoyment in learning, as well as helping the teacher to develop positive relationships with them.

Teachers often assume that their research will not be 'real research' unless they have a control group, or a matched group that did not have the intervention, against which they can compare their test results. However, as Baumfield and colleagues note, even if there was a perfectly matched group available for comparison, for example, another class in the same year group, which is highly unlikely, you would need to look very closely at the scores to make sure you do not over-state the effect. So in most cases of teacher evaluation a control group is not necessary.

We normally suggest that you use a mix of different methods rather than relying only on one type, which can be visualised as a three-way Venn diagram (Figure 2). In the following sections of the digest we explain what these methods are and how you might use them.

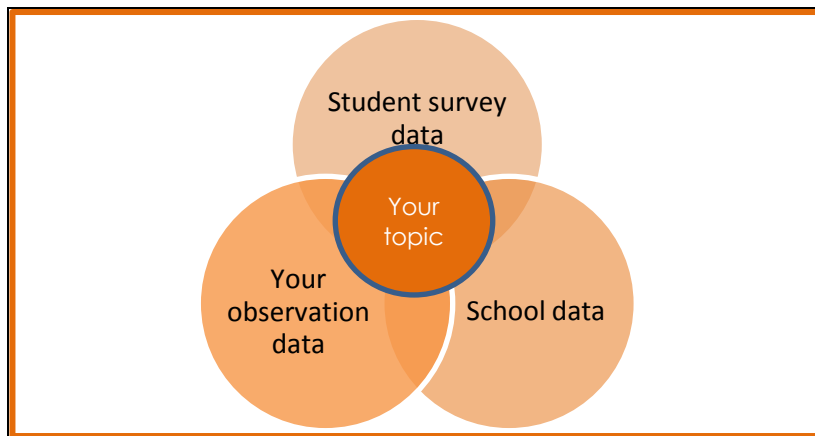


Figure 2 Triangulating your data

Vivienne Baumfield, Elaine Hall and Kate Wall (2008) *Action research in the classroom*. London: Sage.

Louise Stoll (2015) *Three greats for a self-improving school system – pedagogy, professional development and leadership*. National College for Teaching & Leadership. Available: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/406278/Three_greats_for_a_self_improving_system_pedagogy_professional_development_and_leadership_full_report.pdf. Accessed 14 September 2015.

Surveys

A survey is simply a questionnaire that presents a set of questions to your target audience and either seeks their opinion on a topic or invites them to rate their behaviour under certain circumstances. So, in the case of our example of evaluating group work, you could begin your evaluation of group work activity by asking your students for their opinion on the ways in which you assign them to groups and how they feel about undertaking group learning tasks. Alternatively, you could ask them to rate themselves on how effectively they feel they collaborate currently with other students and work in groups on common tasks.

Why should I use this method?

You might use a survey if you want to quickly gather information from a large group, such as the whole class, or if you want to encourage students to reflect on their use of a specific habit of mind, such as collaboration, or empathy. This latter use is often referred to as a self-report survey. There is more on this type of survey later in this section.

How do I use it?

Whatever the purpose of the survey, the most important factors in designing one for classroom research are to keep it short and to ensure that the structure of the questions is both simple and appropriate for the age group. There are many options for the style of questions. You can use very structured questions that can be answered by students selecting from one of several given answers, often call 'closed questions'. Sometimes the response is calibrated to a 'Likert scale' using numbers to represent strength of view, ie: where 5 = 'very much' and 1 = 'not at all'. Or you can use unstructured or open-ended questions that allow students to write in their own answers. Which you select may depend on the age of your students; with young children you can use pictures to represent possible responses. It is worth piloting your questions with a small group of your target audience before you actually distribute the questionnaire, so you can check if they understood the questions and make amendments if necessary. Examples of types of questions that you might use to find out more about students' attitudes to working in groups are shown in Figure 3.

Examples of closed questions –State how you expect students to respond, eg Circle one number; Select one answer, etc.

On a scale of 1 to 5, where 1 is Not very much and 5 is Very much,




1. Do you prefer to work in a group with:

Your friends	1	2	3	4	5
Children you don't know well	1	2	3	4	5

2. Do you prefer to work in a group with children who:

Know more about the topic than you	<input type="checkbox"/>
Know about the same as you	<input type="checkbox"/>
Know less than you	<input type="checkbox"/>

3. Do you like working in groups in class with other children?

All the time	Sometimes	Never
		

4. How do you normally feel when the teacher asks you to work in a group on a task in class? Please circle the one most relevant word:

Excited	Pleased	Nervous	Bored
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- Example of open and free-text questions** – Give an idea of how much writing you expect by using dotted lines
5. The thing I like **most** about group work is.....
 6. The thing I like **least** about group work is.....

Figure 3 Examples of closed and open questions

There are many more different types of questions and some examples of how to compose good questions are on the Science Buddies website here:

http://www.sciencebuddies.org/science-fair-projects/project_ideas/Soc_survey.shtml

Accessed 14 September 2015.

Self-report surveys

In order to introduce students to the specific habits of mind you want to develop, for example, collaboration, you may initially want to find out more about their perceptions of their ability to collaborate with each other when working in groups, so you can ask them to complete a self-report questionnaire that asks them to rate their perception of their skill level. This might include questions such as those in Figure 4 which are a sample of questions from a longer questionnaire used by Denise Huang and her colleagues at the University of California (UCLA) in a study that aimed to evaluate the extent to which after-school activities had an impact on children's 21st Century skills, including collaboration skills, self-efficacy and communication skills.

Preparing students for the 21st Century

1. I listen to everyone in my group before I make a decision.
a) True b) Mostly True c) Mostly False d) False
2. I am more organized when I work in a group.
a) True b) Mostly True c) Mostly False d) False
3. I get upset when the kids in my group say bad things about my work.
a) True b) Mostly True c) Mostly False d) False.
4. I listen to what other people recommend and ask them questions.
a) True b) Mostly True c) Mostly False d) False
5. I tell the other members of my group when I think they are doing a good.
a) True b) Mostly True c) Mostly False d) False

Figure 4 Sample questions for collaboration skills (Huang et al. 2010)

Example: Using a self-report survey

Julian Candaner at Al Yasmina, a British curriculum school in Abu Dhabi in the United Arab Emirates, wanted to reduce the amount of time he spent on 'teacher talk' in his French lessons with his Year 8 students, but to do that he needed to ensure that his students were more willing to learn collaboratively with each other in mixed ability groups. Before starting his intervention he wanted to find out more about his students' attitudes to group work, so first he collected their opinions using 'Wallwisher' see <http://learnitin5.com/wallwisher>, and then he used a survey to collect more detailed data about their opinions. He posed questions such as:

Do you think you are valued in your team?
Do you think collaborative learning helps you to become a better listener?

After analysing the results it was clear that his students were reluctant to work in teams because they did not see the value of learning this way and were concerned about 'passengers' in the group who did not contribute. He changed the way he organised groups by getting the students to work in pairs first and then when they were comfortable with that, he increased the number to three and then four. The students undertook a self-evaluation after each lesson. Later in the year Julian gave the first survey to the students again, and was pleased to report that students' views on the power of group work had increased significantly.

You can read more about this action research project on the eedNET website here:
<http://wp.me/p4641M-5T>

Using existing surveys

You may find it helpful to use an existing survey where the questions have already been thought out and tested with large numbers of the audience for whom it is aimed. This not only saves you time but supports the validity of your data, because you know that the questions asked are totally applicable to the evaluation of the habit of mind. However, some questions may not be suitable for your age range and may need to be adapted. In addition, some surveys have been designed for use by educational psychologists, and so require expertise to administer and interpret the results. Nevertheless, some of the more frequently used surveys are listed in Table 2.

Test name	Web location
Carole Dweck's Growth Mindset Assessments	http://www.mindsetworks.com/assess/
Angela Duckworth's Grit Scale	https://sites.sas.upenn.edu/duckworth/pages/research
Rosenberg Self-Esteem Test	http://www.selfesteem2go.com/rosenberg-self-esteem-test.html
Leadership surveys	http://yourleadershipunleashed.com/personality-types/
Social and Emotional Learning (SEAL) Strengths and Difficulties Questionnaire (SDQ)	http://www.sdqinfo.org/a0.html

Table 2 Sources for habits of mind self-report surveys (Accessed 14 September 2015)

Distributing your survey

Most teachers distribute their surveys printed on paper for students to complete in class because they can be certain of getting responses, but if you want to make your survey available for students to complete online there may be a survey tool included within your school's virtual learning environment. Alternatively, you could use one of the survey tools freely available on the web, such as SurveyMonkey (see <https://fr.surveymonkey.com/>) or through Google Docs, see the Youtube video *How to make a Google Docs questionnaire*. HowTech.Office. Published on 18 February 2013. Available: https://www.youtube.com/watch?v=v_8XXLIBNuo Accessed 14 September 2015.

It is also important to make sure that students are not exposed to 'death by survey' and that their use is managed at school level.

Interviews

If you want to gather more detailed opinions from students or other groups such as parents, in order to explore their thinking on a topic in greater depth, you can use face to face data collection methods such as individual interviews, or focus group interviews, where you gather together a small group of participants and ask them questions.

Why should I use this method?

If we continue with our example of researching group work, you may find that your questionnaire survey of the whole class provided you with some useful information about students' attitude to working in groups initially, but after you have tried out a different approach to allocating group roles for a couple of weeks, you may want to find out what your students' reactions are to the change, or you may want to explore why some students appear to be working well together as a group and why some still appear to be off-task or not able to manage their behaviour to enable them to work well with others on the task. In the first instance you could gather a small group of students together, three to four is usually enough for a focus group, but in the second instance, it might be more appropriate to talk with two or three students individually about their thought process when they are tackling a group task.

Your final selection of this method depends on the time you have available, how sensitive the questions might seem to your students, and also on the age of the students. Conducting individual interviews with students is time-consuming, but can give you valuable, detailed information, whereas a discussion with a small group of students can be quicker to organise and can lead to lively discussions as individuals build on each other's ideas, but may be dominated by one or two more vocal individuals.

How do I use it?

There are a number of issues to consider when conducting interviews with students. Because you are close to them you can ask questions and probe responses based on your own observations as well as the results of the survey. You are in a position to gain very valid data. Nevertheless, however good your relationship with your students is, Vivienne Baumfield and colleagues urge you not to underestimate the impact of your power over them and how this might affect their responses:

'Teaching is probably the one profession where we routinely ask questions we know the answer to and therefore children become highly accomplished at guessing what the teacher is thinking.' (Baumfield et al., 2008:55)

Whether you are conducting an individual or group interview, some form of predetermined structure for your questions is helpful. You could try structuring the interview around an object or a process, such as a sorting task, or a discussion about a worksheet. This can be very helpful with young children to get them talking about their thinking processes.

Baumfield et al. (2008: 59) describe a research situation where the teachers developed 'Pupil views templates' to prompt children to express the kind of talk they had been using in their groups that morning. The children were given pictures of children interacting and asked to write into the speech bubbles what they thought the children were saying. This enabled the teacher to gauge how well the children were able to talk explicitly about aspects of groupwork, such as how they decided how to break down the task and decide who was doing what, and how they learn from their peers.

It is also useful to make an audio recording of the interview to ensure you have a complete record of it and that you have the exact words of the students, rather than your summary of what you thought they said. This can provide you with quotes to use to illustrate your report of your findings. There are a number of points to be aware of when recording interviews that are covered in the section below on using visual data collection methods, where we discuss digital recordings.

Whether you choose individual interviews or focus groups, there are a number of factors to take into account that can help to make the interview yield useful results, as suggested by Rob Adelman and Clem Walker (1990) (Table 3).

Tips for successful interviews

Write out an interview script for yourself to remind yourself of your questions and to help you keep to schedule.

Show that you value students' comments by being an attentive and active listener.

Be neutral with the subject matter; try not to express your own opinions, or show surprise or disapproval at the students' opinions.

Try to be at ease and allocate plenty of time to build up rapport with your respondents, students will sense your apprehension, hesitation or hurriedness and may react accordingly.

Reassure students that there is no right or wrong answer, and that all their opinions are important to you.

Keep your interview schedule with you and refer to it to make sure you cover all your questions.

Ask about one thing at a time, and rephrase a question if it does not appear to be understood, or if the answers are too vague.

Table 3 Tips for successful interviews

Graham R Gibbs, a lecturer at the University of Huddersfield, has produced some helpful videos to illustrate examples of right and wrong ways to conduct individual interviews, which you can watch on YouTube (Gibbs, 2013).

Students themselves can also be encouraged to undertake interviews, either of their peers or other members of the school or local community. The YouTube video by Falstaff Productions

(2014) provides an excellent example of how to encourage children to think about asking good questions when interviewing and the video overall serves as a helpful reminder of tips for good interviewing skills.

Vivienne Baumfield, Elaine Hall and Kate Wall (2008) *Action research in the classroom*. London: Sage.

Julian Candaner (2015) *Strategies for successful collaborative learning in a mixed ability class*. Winchester: University of Winchester [online] <http://wp.me/p4641M-5T> Accessed 14 September 2015.

Falstaff Productions (2014) *Tell me your story – interviewing tips for kids*. Published 13 May 2014. Available: <https://www.youtube.com/watch?v=SWRYIAfojqk> Accessed 14 September 2015.

Graham R Gibbs (2013) *How to do a research interview*. Published on 18 January 2013. Available: <https://www.youtube.com/watch?v=9t-hYjAKww> Accessed 14 September 2015.

Denise Huang and colleagues (2010). *Exploring the effect of afterschool participation on students' collaboration skills, oral communication skills, and self-efficacy*. (CRESST Report 777). Los Angeles, CA: University of California,

National Center for Research on Evaluation, Standards, and Student Testing (CRESST). Available: <http://files.eric.ed.gov/fulltext/ED520429.pdf> Accessed 14 September 2015.

Rob Walker and Clem Adelman (1990) *A guide to classroom observation*. London: Routledge.

Observation

Classroom observation is undertaken for many reasons, for example, for management purposes and for professional development, but in this case we are interested in examples of where the subject of the observation is the student rather than the teacher.

Why should I use this method?

When you make changes to your teaching, you can ask students for their opinions, but any actual difference in their behaviour may not be immediately obvious, unless you specifically set out to observe what is happening in the classroom. In our group work example, you might want to observe how your students are reacting to your new approach to organising group work, or whether or not making them aware of the skills of collaboration is having any effect on their own behaviour when working with others. For example, are they asking other students for their opinions more often, are they volunteering to find resources, are they being patient and listening to what other say? In the general noise of a busy class you might miss these changes of behaviour unless you specifically set out to notice them.

How do I use it?

There are several ways of organising checklists or observation schedules to record students' behaviour. In order to judge whether any change in their behaviour has taken place you will need to have a record of their current behaviour to compare it with, so before you make your changes you could develop a checklist of desirable behaviours, for example, making propositions, dealing with disagreements, or reaching a compromise, that you would like to see, and keep a regular record of behaviours you notice during the period of your intervention. However, you also have to teach the lessons, so you may find it helpful to ask a colleague to sit in your classroom and observe specific groups of students to evaluate the quality and effectiveness of the group work. You may decide to focus on three or four specific individuals rather than try to observe all groups. You will then want to decide what behaviours to observe and how often they occur during the lesson (Figure 5).

Cooperative group work skills checklist

Scale: 1= hardly ever 2= some of the time 3= most of the time 4= all the time

Date.....Start time.....Stop
time.....

Names	Encourages others	Listens attentively	Disagrees in a respectful way	Summarises for understanding	Comments

Figure 5 Example of an observation checklist

Example: Using an observation checklist

Alison Dow and Diane Toet at Danestone Primary School in Aberdeen wanted to develop their children's independence and resourcefulness by reducing the number of times they sought guidance from a teacher when uncertain about how to proceed. Alison and Diane introduced a peer support system where they trained Primary 2 children as 'teacher's helpers' to help Primary 1 children, and the younger children were encouraged to think of ways in which the older children could help them when the teacher was engaged in working with another group. The teachers used a simple but very effective tally sheet to record how many times the younger children approached a teacher to ask for help. The project began and the teachers took a tally of children's approaches at the beginning of the week and then for a second time a week later. They were then able to compare the records and note the changes in each child's behaviour. They also carried out more detailed observations of a few specific children and used discussion time in class to ask the children how they felt about the peer support process. You can read more about this action research project on the eedNET website here: <http://wp.me/p4641M-74>

Researchers use visual images in a number of ways. Anna Bagnoli suggests that social science research has had a tendency to favour the use of words over visuals, but with participants such as children and young people who may have difficulty expressing themselves verbally, visual images such as pictures, photographs or film, can provide powerful stimuli as prompts within interviews and in encouraging students to communicate through self-expression (Bagnoli, 2009). Furthermore, capturing still or moving visual images of classroom interactions using smart phones or hand-held digital cameras has never been easier and there are a number of ways in which these images can enhance the evaluation of your teaching interventions, as we show in the next section.

Why should I use this method?

You could plan to use visual images at the start of your research activity and gather baseline data for comparison with data collected at the end of your intervention. Alternatively, visual images and digital recording methods can provide data to support the evaluation of your teacher intervention either during the activity or after it has taken place. If you have used a self-report survey to gather data from students, using a video recording of subsequent behaviour in the classroom can be useful for triangulating your data and minimising some of the potential bias inherent in self-report surveys.

How do I use it?

As we described in the section above on interviews, pictures can be presented to young children to prompt them to recall their thinking. In another example of the use of pictures, Anna Bagnoli describes how, in her research, she provided visual images to elicit responses from young people and then also introduced activities that required her respondents to create an image themselves, for example, designing a collage to illustrate 'who you are', or a self-portrait, as a means of encouraging self-reflection in research that was designed to explore subjects such as identity and career choice (Bagnoli, 2009).

Video or digital recordings can be used to collect data about the total teaching situation, either as an aid to diagnosis and gathering baseline data about your students' interactions with each other, or to record your own patterns of teaching for use in later reflection, either individually or with another colleague. You can choose to focus more closely on the behaviours of a few students, or of one group in particular. Baumfield et al., (2008: 41) provide some useful tips for using video in the classroom (Table 4)

Tips for using digital recordings to evaluate teaching

1. Make sure there is sufficient recording space on the equipment
2. Make sure there is sufficient power left if you are using battery powered equipment
3. Do not use 'zoom' and 'swoop' features too quickly as they make it difficult to see images, and zooming in on children can be distracting
4. Do a trial run to make sure you are recording and the equipment works
5. Make sure the sound system is adequate for capturing classroom speak and coping with noise levels
6. Think about who will be operating the camera; will you have time or can you ask a teaching assistant or colleague to help?
7. Consider using a time-sampling method where you record blocks of activity for up to ten minutes at a time rather than record the whole lesson
8. Make sure you have parental and pupil permissions prior to recording. We discuss this in greater detail in the digest in the section on ethics.

Table 4 Tips for using digital recording to evaluate teaching

Example: Using video recordings

Natasha Stone is a lecturer in Vocational Studies at Highlands College in Jersey. Her level 1 students include many who have English as a second language, or a declared disability or who have not succeeded while at school, so she wanted to offer an experience in the first few weeks of the students joining Highlands that would take them out of their previously learned passive attitude to learning and prompt them to learn new, more independent habits of mind. She planned to develop supportive communities of practice among the students by getting them to work together in small groups. She recorded how the students worked in groups on video and through photographs during the term and also used video to record her interviews with some of the students at the end of the eight week project. She noted how the students interacted with each other and moved students between groups until she could see them gaining greater confidence in working together. Natasha used a questionnaire to gather students' perceptions about working in groups, and her video recordings not only gave her plenty of material to reflect on but also, with the students' permission, have been uploaded on Youtube and provides an insight into the students' views. You can read more about this action research project on the Highlands College website here: <http://www.highlands.ac.uk/university-college/how-to-teach-vocational-education/>

Visual images of learner engagement

It is extremely rewarding to capture images of learners' achievements at the end of your intervention. You can hand over this activity to the students themselves and give them the responsibility of being in control of reporting on their own learning. This can form part of your evaluation and still photographs or videos can also be used on the school or college website (with appropriate permissions gained).

Anna Bagnoli (2009) Beyond the standard interview: The use of graphic elicitation and arts-based methods. *Qualitative Research*, 9(5), 547-570. Available: http://www.sagepub.in/upm-data/39737_38933_Article_4_Bagnoli.pdf Accessed 14 September 2015.

Vivienne Baumfield, Elaine Hall and Kate Wall (2008) *Action research in the classroom*. London: Sage.

Alison Dow and Diane Toet (2015) *Peer Support in action*. Winchester: University of Winchester [online] <http://wp.me/p4641M-74> Accessed 14 September 2015.

Natasha Stone (2014) 'Supportive work groups'. In *How to teach vocational education*. Jersey: Highlands College, pp137-143. Available: <http://www.highlands.ac.uk/wpcontent/uploads/2014/10/HowtoTeachVocationalEducationReport.pdf> Accessed 14 September 2015.

Logs and Diaries

Gathering information about actions, thoughts and reflections by using a log or a diary is a method of collecting data about your research at regular intervals while it happens. The log or diary can be kept by yourself, or you can ask your students to keep one for a specified time during your intervention.

Why should I use this method?

A log is the simplest form of record, recording a list of activities or events; it is similar to the observation checklist that we discussed in the section above, whereas a diary also includes a commentary on personal thoughts and feelings about the events. A log can also be used to record a critical incident, or an event that has particular significance for the research topic under investigation. An incident does not have to be particularly dramatic or unusual to be critical, it could be for example, the point in the lesson when you organise students into groups. Each time this happens, you could record how long the process took, and who did what, or went where. Tom Farrelly (n.d.:7) describes how diaries can be used in educational research for recording how students make sense of a particular learning environment. The number of students asked to record diaries can be very small, but the authenticity of the data collected makes up for the small sample.

Logs and diaries are good ways of finding out how time is used. They can be used by your students as method of recording their

own action and thoughts about the learning process and David Hopkins (2014:131) notes that reading pupil diaries can provide an interesting contrast to your own diary records. It can also encourage students to exercise judgement and feel empowered when they have the right to decide which parts of their diary they give you access to.

How do I use it?

Judith Bell (2014:166) provides a helpful checklist for using logs, diaries and critical incidents that also includes guidance on creating them as blogs, which are logs posted on the web (Table 5).

Using logs, diaries, critical incidents and blogs

Be clear about the purpose and consider which format will give you the information you require

If you intend to ask students to complete it, pilot the format before you use it, to make sure the intended audience understands what is required and that the instructions for recording entries are clear

Make sure participants know why they are being asked to complete the log or diary

Keep checking regularly to see how your participants are getting on, do not wait until the end of the data collection period.

Table 5 Checklist for using logs and diaries

Example: Using a diary and reflecting on classroom observations

Ros Mark, a mathematics teacher at Orton Wistow Primary school in Peterborough, wanted to use co-operative learning to encourage her students to work together more effectively so she modelled a range of strategies to develop the children's skills in working together. She had reflected in depth before beginning the project, using the observations of the recent Ofsted inspection of the school as a starting point. She kept a diary of what she did in class and reflected on what was happening with her teaching assistant. She also used an attitude survey with all students towards the end of the project and followed this up by interviewing a small group of students. You can read more about this action research project on the eedNET website here: <http://www.expansiveeducation.net/pages/member-area/eednet-action-research-library/reports>

Judith Bell (2014) *Doing your research project*. 6th edition. Maidenhead: Open University Press.

Tom Farrelly (n.d.) *Using Participant Diaries as a Research Tool*. Available: http://www.academia.edu/4127274/Diaries_in_Social_Research (*When accessing this report, close the window that asks you to register on Academia before you can download, and the report can be read on the web*). Accessed 14 September 2015.

David Hopkins (2014) *A teacher's guide to classroom research*. 5th edition. Maidenhead: Open University Press.

Ros Mark (2012) *Creating More Cooperative Learners*. Winchester. University of Winchester [online] <http://www.expansiveeducation.net/pages/member-area/eednet-action-research-library/reports> Accessed 14 September 2015.

Positioning your evaluation methods together in your overall research design

As we have suggested in each section above, most methods of gathering data can be used at various points through your research, so when you formulate your action plan, you should think about the overall purpose of your enquiry and your research question, and put the methods together in a coherent research design. In our example of researching collaboration, you may start your research by wanting to find out more about the current situation so you would use a method of data collection that will help you decide what sort of changes to make to your practice. For example, If you think that the method you use to allocate students to groups may be not be the most appropriate one, ask for students' views on this. You could also gather baseline assessment data about students' attainment at this point. If you specifically want to develop students' collaborative skills, ask them to complete a self-report survey and then discuss the results with them so they are tuned into the importance of this habit of mind and will be able to recognise instances of good collaboration.

As you progress through the project, you may want to gather some data in order to gauge progress, so you could undertake some observations.

Finally, as you come to the end of the project, you can re-issue your survey to students, undertake some interviews, or ask another audience, for example parents or other teachers, if they have noticed a difference in your students' behaviour. You can also gather up any additional attainment data, although the timescale over which you are conducting your research may not make this data very reliable

Example

The SPRinG (Social Pedagogic Research into Group-work) project in primary schools offers a good illustration of how a range of different methods can be used to gather different type of data about one topic. This was large scale project that took place over five years so not one that you are likely to replicate in your own classroom, but it gives a good overview of the different uses of the methods we have described in this research digest, and how each can gather different bits of data that, when joined together in the analysis, enables some powerful insights to be gained into the topic.

SPRinG website: <http://www.spring-proiect.org.uk/>

A final word: further reading on methods

If you would like to read more about research methods, the Research in Education (RESINED) site at Plymouth University offers a good introduction to using questionnaires, interviews, focus groups and observation. The site is aimed mainly at Masters students but the authors suggest that the resources may also be useful for teachers undertaking professional development, see <http://www.edu.plymouth.ac.uk/resined/resedhme.htm>

Analysing data and reporting your findings

Once you have gathered your data, the next step is to undertake analysis, so you can determine the meaning of what you have noticed and report your findings. You should be very cautious about claiming any causal connections arising from your data, ie: rather than reporting that *'mixing high and low achievers together in the same group leads to an increase in learning outcomes'*, it would be more appropriate to say that *'when I mixed high and low achievers in the same group, the students appeared to work together more effectively and they reported that they enjoyed learning from each other's different viewpoints'*. I also noted that the achievements of the group members increased by at least one level'. Your aim is to get better at noticing what is going on rather than proving or disproving a hypothesis. Don't be concerned about reporting negative as well as positive outcomes.

The following section offers some ideas for analysing your data; we will consider surveys first, followed by interviews and observation.

There are many issues to think about when analysing the results of your survey relating to the extent to which you can 'trust' the data you collect. You need to consider that your students may respond to the questions in a 'socially desirable manner', ie: give answers that they think are socially acceptable, rather than how they really feel. There is also a phenomenon associated with completion

of skills self-report surveys, in that the results on the second occasion can appear to be worse than on the first occasion the students complete the survey. It can be somewhat disappointing to see this result after you have put in all your hard work to raise skills levels. However, this is a factor known as 'reference bias' in research, noted by Justin Kruger and David Dunning (1999) and it is thought to happen because the more competent an individual is, the more harshly they tend to rate themselves, so students who have been introduced to the skill or habit of mind are more critical of their skill level when they know more about it. You can overcome this to some extent by adding a sentence to the instructions in the second version such as: *'In comparison to your self-rating earlier this term, how do you rate your skill now...'* This phenomenon, together with the small numbers of students you are normally surveying, would mean that any statistical interpretation of your results of surveys can only be very indicative. This is one reason for not using a control group in your teaching evaluations, to make comparisons between one group of students which has had the intervention and another which has experienced your usual teaching method. We suggest that another reason for not using a control group in teacher evaluation is that we assume that your intentions for your students are that your intervention is beneficial, so why should some students be deprived of this opportunity to improve?

Using spreadsheets to analyse numerical data

Acknowledging the points above, there are a number of ways in which you can present your results to help to explain your findings. If you have the results of a short questionnaire to analyse, you may only have time to calculate some quick summary statistics and note in your report for example, that *20 out of 35 students, or 57% of students, reported that they preferred working in a group with students they know well*. Remember to note the total number taking the survey so you can report the extent to which there was agreement or disagreement with your survey questions. You can simply count the numbers responding to each question and state the results as a figure, eg: *'5 out of 35 children (14%) said that they enjoyed group work and*

10 (28.5%) said that ... and 20 (57%) said that ...'

However, if you have a bit more time, you could consider displaying your results as a graph or a chart. This adds visual interest and colour to your report, and can make it more straightforward to understand your outcomes. Creating graphs and charts can be achieved by inputting your questionnaire data into a spreadsheet tool such as Excel, and Deirdre Macnamara at Letterkenny Institute of Technology has prepared a YouTube video demonstrating how to do this step by step (Macnamara, 2013).

Analysing qualitative comments

If you also collected students' free-text comments on your survey or have interview transcripts and visual images to analyse, you can look for themes in the words where you notice similarities and differences between what students are saying or how you see them behaving. If you have done some reading around the topic in advance of your research you may be able to identify themes occurring in your data that were previously noticed by other researchers. Kent Löfgren (2013) has prepared a YouTube video that tells you more about analysing your interviews using codes, or themes, and how to write up your findings.

Justin Kruger and David Dunning (1999) Unskilled and unaware of it: How difficulties in recognizing one's own incompetence lead to inflated self-assessments. *Journal of Personality and Social Psychology*, 77(6), 1121–1134.

Kent Löfgren (2013) *Qualitative analysis of interview data: A step-by-step guide*. Published 19 May 2013. Available: <https://www.youtube.com/watch?v=DRL4PF2u9XA> Accessed 14 September 2015.

Deirdre Macnamara (2013) *Excel and Questionnaires: How to enter the data and create the charts*. Published on 14 February 2013. Available: https://www.youtube.com/watch?v=uVGD_5Tk6ao Accessed 14 September 2015.

How to making evaluation part of your every-day practice

Rather than seeing evaluation as being an extra burden, Philippa Cordingley (2015) argues that school leadership teams should ensure that teachers make research part of

the day-job. She cites the extensive evidence that demonstrates that teacher engagement in research brings benefits to themselves and their students, and suggests that engaging in research, whether formally through a qualification such as a Masters degree, or informally in their own classrooms, should become a habit:

'Doing formal research might be for xmas - engaging it with is probably for life...' (Cordingly, 2015)

However, with most teachers reporting that lack of time is one of the biggest barriers to engaging with research, you need to be pragmatic about the range of sources you use to evaluate your teaching. There are specific types of what researchers call 'naturally occurring data' that you would normally have access to through normal school structures and processes. Vivienne Baumfield and colleagues (2008:30) provide some examples that include using:

- School peer or SMT observation systems to ask a colleague to observe how well students are working in groups, paying attention to specific children etc.
- Student Council meetings to collect student opinions
- Existing questionnaires already created by others, or found on the web, rather than inventing your own
- School documents, policies and websites
- School data, such as VLE analytics of student or parental use of resources, attendance records etc.
- SATs and teacher-assessed tests
- Comments on student work.

Nick Rose, research lead at Turnford School in Hertfordshire explains how a school might revisit its processes and tools that were initially designed for summative evaluation of teachers and re-design them as tools that provide teachers with formative evaluation to inform improvement and identify how they could improve their teaching. He explains how a teacher feedback system might be turned into peer coaching, with coaching questions used to prompt thinking on interventions and methods of evaluation. He also shows how student assessment data

can be used to ask in-depth questions about how teaching might be changed to enhance learning.

Vivienne Baumfield, Elaine Hall and Kate Wall (2008) *Action research in the classroom*. London: Sage.

Philippa Cordingley (2015) Part of everybody's day job: Effective and efficient ways of leading research in school. 14 March, 2015, *ResearchED*, Cambridge. Available at: <http://www.curee-paccts.com/publication/part-everybodys-day-job> Accessed 14 September 2015.

Nick Rose (2015) *Developing research tools for teacher inquiry*. Research Leads Network Event, Brighton, 18 April 2015. Available: <https://evidenceintopractice.wordpress.com/2015/04/18/research-tools-for-teacher-inquiry/> Accessed 14 September 2015.

Ethical considerations

In this section of the digest on ethical considerations we make the assumption that you are undertaking classroom research for the purpose of self-evaluation and not as part of a formally recognised qualification such as a Masters degree. With the latter you will be expected to adhere to the ethical protocols of the organisation awarding the qualification, but in this digest we cover some essential ethical guidelines for classroom evaluation. While Martin Hammersley and Anna Traianou (2012) provide a full account of these issues on behalf of BERA (British Educational Research Association), the blog written by Haileybury Turnford Academy (2015) provides a useful summary. Teachers involved in classroom inquiries into their own teaching already have a duty of care towards their students and should simply exercise professional judgement when planning innovations in their teaching, so we believe that the majority of teacher inquiry projects will not require any additional ethical permission. Nevertheless, there are three main areas where you may need to give extra attention, minimising harm, informed consent and confidentiality.

Minimising harm: No teacher intentionally sets out to undertake a classroom project with the aim of causing harm, but there is the possibility that some therapeutic based interventions that are becoming popular such as mindfulness, may trigger unforeseen

consequences in some students if introduced by non-professionals.

Informed consent: Since most classroom based inquiries are likely to fall within the normal domain of curriculum development, it is likely that informing the head teacher of your intentions will be sufficient. With children under the age of 16 there may be occasions when gaining consent from parents or guardians should be sought, but your school may have a blanket protocol that makes this step unnecessary. Nevertheless you may wish to respect the autonomy of your students by making them aware of your research and involving them in decisions about their involvement in, for example interviews, diaries and digital recording.

Confidentiality: Schools already have to have protocols relating to Data Protection and Freedom of Information in place, so you should abide by those requirements, but there are some specific instances where you should take care to preserve students' anonymity, for example by not asking for students' names on surveys. You may also want to step out of the room while students are completing the questionnaire. You should also ensure that individual students cannot be recognised by name in your reports.

Haileybury Turnford Academy (05/04/2015) Ethical issues in teacher-led research. *Evidence into Practice*. Available: <https://evidenceintopractice.wordpress.com/2015/04/05/ethical-issues-in-teacher-led-research/> Accessed 14 September 2015.

Martin Hammersley and Anna Traianou (2012) *Ethics and Educational Research*. British Educational Research Association on-line resource. Available: <https://www.bera.ac.uk/wp-content/uploads/2014/03/Ethics-and-Educational-Research.pdf?noredirect=1> Accessed 14 September 2015.

A final note of advice

As Tom Bennett (2015) notes, Dylan William urges the teaching profession to be cautious about pinning all our hopes on research to provide definitive solutions to the problems of education. Even the largest randomized control trials undertaken by bodies like the Education Endowment Fund offer only a starting point for teachers and school leaders to consider how the results might be applied within their school or TSA. The context and the conditions under which the research was undertaken should be considered carefully before the finding are applied. In effect, this advice is the reverse of what we noted in the section on data analysis; just as the teacher can only make valid claims about what happened in their own classroom or school, so national research project findings can only offer a starting point for beginning to understand what it happening in the individual school or classroom.

Tom Bennett (2015). Evidence-based education is dead — long live evidence-informed education: Thoughts on Dylan William, TES Blog, 11 April 2015. Online: https://community.tes.co.uk/tom_bennett/b/weblog/archive/2015/04/11/evidence-based-education-is-dead-long-live-evidence-informed-education-thoughts-on-dylan-william.aspx
Accessed 14 September 2015.

Endnote:

This research digest can be read in conjunction with the eedNET AR2 workshop handout *R5 Action Research Evaluation Methods*, which provides a preliminary overview of the advantages and disadvantages of the data collection methods addressed in this digest.

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