

Techniques of enquiry [supplementary chapter]

Introduction

For many teachers, it is difficult to collect the information we need to make necessary day-to-day decisions and judgements, much less the information needed for anything more systematic. Our usual impressionistic data are collected sporadically and are often incomplete. They are selective and are probably based on what we have found in the past to be useful (one of the reasons it is so difficult to break out of old habits). They also tend to be subjective, because we have so few chances of discussion to help us to see things from any other viewpoints. However, if we could manage it, the most helpful information would be:

- descriptive (so that it is evidence-based)
- dispassionate (so that it is free from supposition or prejudice)
- discerning (so that it is valid and insightful)
- diagnostic (so that it leads us towards improvements).

That data should be as valid and reliable as possible must be accepted, but technicalities should not blind us to some relatively simple underlying processes in research. Essentially, these boil down to *studying, looking, listening* and *asking*.

In the table below, this simple classification is used to produce an overview of techniques for gathering evidence. These are introduced in this chapter and then illustrated in use at various places in the book. Throughout such discussions, a distinction is drawn between those enquiry methods that occur routinely in professional and classroom life and those which must be undertaken specially. Whilst, for the most part, the former are more convenient to use, the latter often produce more structured data which may be easier to analyse. Readers should note that these are introductory descriptions only. For further guidance on research techniques many books such as Denscombe (2002), Cohen, Manion and Morrison (2007) and Hitchcock and Hughes (1989) are available.

A typology of enquiry methods

	STUDYING	LOOKING	LISTENING	ASKING
ROUTINELY OCCURRING	Reading professional publications (3.1) Reviewing evidence of performance (3.2)	Observation as a participant (3.6) Document analysis (3.7) Marking pupils' work (3.8) Formative assessment (3.9) Keeping records (3.10)	Active listening (3.15) Questioning (3.16) Discussing (3.17) Conferencing (3.18)	Setting tasks (3.20) Testing (3.21) Discussing (3.17) Conferencing (3.18)
SPECIALLY UNDERTAKEN	Consulting research reviews and databases (3.3)	Analysing pupil diaries or logs (3.11)	Audio recording (3.19)	Interviewing (3.22)

	Reading research findings (3.4) Keeping a diary (3.13)	Systematic observation (3.12) Photography (3.5) Video and camcorder recording (3.14)	Video and camcorder recording (3.14)	Concept mapping (3.23) Questionnaires (3.24) Sociometry (3.25) Personal constructs (3.26) Checklists (3.27)
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1.1 Reading professional publications

Many teachers regularly read articles from the education press, whether it is an item in the local paper, internet, staff-room copy of the *Times Educational Supplement*, professional magazine, programme from an audio-video agencies or material from a professional association. We also receive a great deal of educational information and are exposed to educational debate through radio and television more generally.

But what use do we make of all this information? It tends, of course, to come in thick and fast. On appropriately chosen topics, a reflective teacher may well want to organize this flow, so that rather than being overwhelming, it is put to work. For instance, if the issue of home–school liaison was a school priority reflected in the school improvement plan, staff meeting time would be given to this issue. A focused discussion could be stimulated by relevant articles being collected, and notes made about items on other media. This could be shared among colleagues and would provide a rich resource for collaborative discussion.

1.2 Reviewing evidence of performance

Each teacher's personal records of pupil progress are vital resources in recording achievements and diagnosing learning difficulties. They are the most meaningful and immediate form of evidence and can be rapidly analysed to suggest new provision. They are a key element in the feedback loop which every teacher needs.

However, to complement such teacher records, national computer systems are now capable of analysing large amounts of data on pupil and school performance. They thus provide an external source for comparative evidence. Indeed, baseline and value-added comparisons are possible so that pupil gains can be considered in relation to school characteristics.

In this way, assessment has a major role to play not only in the support of individual pupils' learning and progress, but also in improvement efforts at every level from a small group, class or whole school, to an authority or country.

For example, a prominent use of assessment evidence in recent years has been in relation to 'targets', particularly in England. National targets have been set and then cascaded down through local authorities to schools. England's Department for Education put it as follows:

Schools are required to set statutory targets annually, working with Governors, their School Improvement Partners and using relevant data, which are then reported to the local authority and DfE who may publish this information. Schools often set additional targets as part of effective pupil tracking to keep pupils on trajectory and maintain progress. Key questions are: What does the data and information on pupil targets, attainment, gap-narrowing and progress show?

- How well are different groups doing? Are targets sufficiently ambitious for under-performing groups?
- Are proposed targets stretching and realistic? Do they build on improvements and prior attainment?
- What strategies and interventions are in place to help achieve the targets?

(Guidance to Local Authorities and Schools, DfE, 2012)

In such ways, performance target and outcome data are hugely influential on school policies and practices as well as being central to accountability mechanisms. This is a worldwide trend, though 'England arguably has more data and more sophisticated data than any other jurisdiction in the world' (Earl and Fullan, 2003, p. 385). National examinations, tests and related assessments of every pupil on many occasions during their school career have generated huge amounts of data,

at the same time as developments in information technology have enabled large scale data storage, sophisticated analysis, and detailed reporting. Alongside this, the high profile now given to accountability in education has spawned huge industries using assessment data for school improvement and accountability.

Teachers and headteachers use assessment data for school improvement, sometimes have opportunities to mediate and explain information to pupils, parents and carers, often discuss data with colleagues, and are themselves held accountable by them. Data can be extremely helpful in making informed decisions (Ofsted, 2008), but can also be misleading and misinterpreted. A basic understanding of data, their strengths, weaknesses and related issues, is therefore essential for all teachers.

Data derived from assessment is sometimes referred to as 'performance data', a term that encompasses:

- Raw and aggregated attainment data
- Value-added data
- Contextual value-added data.

Attainment data can be generated by teacher assessment, tasks, tests and examinations, and typically attention is given to certain key indicators; for example, the attaining of a particular level, or higher grades in a combination of subjects, or the 'point score' from a number of subjects. When raw data from individual pupils are aggregated other indicators are possible; for example, the percentage of pupils attaining five or more good grades at age 16. Value added data take account of the fact that pupils have differing starting points, and so two students with the same raw score at the end of a school stage could have made very different progress – or even none at all. Value-added data is applicable for both individuals and large groups of pupils and is particularly relevant when comparing schools whose pupils on intake were already attaining very differently. Contextual value- added takes the notion further, by not only considering pupils' prior attainment but also taking account of other factors such as gender, ethnicity, special educational needs, and a proxy for social deprivation such as eligibility for free school meals. Many people regard contextual value-added as being a much better measure of school performance than raw scores (Schagen and Hutchinson, 2003), although they do require understanding and care to interpret them appropriately. For this reason the Coalition Government removed the contextual measures from school performance data tables in England saying they were too difficult to understand.

With the amount, complexity and importance of data it is essential for schools to use software packages to handle it all. There are many available and the most commonly used in England are:

- RAISEonline (Reporting and Analysis for Improvement through school Self-Evaluation), <https://raiseonline.org>
- Fischer Family Trust, <http://fischerfamilytrust.org>
- The Data Enabler toolkit, <http://ssatuk.co.uk/ssat/programmes-support/data/data-enabler-toolkit/>
- A whole suite of packages (including Yellis and ALIS) for different ages and countries from the Centre for Evaluation and Monitoring at the University of Durham, <http://cemcentre.org/>

Whatever the data and the software package, analysis alone will not improve the quality of education or children's learning: it is part of a process that must include action within a cycle of classroom and school improvement.

The Standards Site of 2007 explained the rationale:

Comparison with national expectations is essential for *all* learners - in order to keep in view the minimum levels of skills, knowledge and understanding that are needed to allow independent functioning as adults within an increasingly complex society. The national expectations at each key stage set out markers towards the achievement of these minimum levels of individual competency – expected to be achieved by the end of compulsory schooling.

However, it also very appropriately recognized that:

Not all individuals grow and develop at the same rate; make progress in key areas at the same point in their lives; or have realistic chances of independent living within an unadapted environment or society. We therefore need

to temper our expectations of individual progress in relation to these expectations with recognition that some individuals may need considerable scaffolding of their learning in order to make these milestones – and that for some pupils, there may be other priorities.

1.3 Consulting research reviews and databases

With the increased emphasis on evidence-informed practice, new databases, reviewing resources and support web-sites are becoming available.

The Governments and General Teaching Councils of Northern Ireland, Wales and Scotland have relatively clear provision to develop and implement education policy and to support teacher development and school improvement – including the use of research evidence. In particular, they offer parallel websites which are complemented by independent provision from teacher associations, public bodies, pressure groups, higher education and other stakeholders. For each country below, we list the main Government site, the Education Department, its website for teachers and the national General Teaching Council.

- scotland.gov.uk
- scotland.gov.uk/topics/education
- educationscotland.gov.uk
- gtcs.org.uk
- wales.gov.uk
- wales.gov.uk/topics/educationandskills
- learning.wales.gov.uk
- gtcw.org.uk
- northernireland.gov.uk
- deni.gov.uk
- rewardinglearning.org.uk
- gtcni.org.uk

In England, the situation is more complex. We start clearly enough, with the website of the Department of Education at: education.gov.uk

A large number of web-based resources to support evidence-informed professional judgement were developed in England before May 2010, but were closed by the Coalition Government. At the time of writing, there is no comprehensive, consolidated source of advice and evidence tailored for English circumstances, though teachfind.com is a good place to search for teaching resources.

Fortunately, many of the previous resources have been harvested in archives of various sorts. They remain available at no cost because of publishing conditions, and some sites do add to the range of resources.

The most comprehensive specialist education archive is the **Digital Education Resource Archive**, managed by the Newsam Library at the Institute of Education, University of London, at: dera.ac.uk. This archive is home to material from **BECTA** (on information technology), the Qualifications and Curriculum Development Agency, Teacher Development Agency, and many other UK organisations. TLRP's archive is also in the Newsam Library.

For grey literature from a wide range of organisations, see the Educational Evidence Portal at: eep.ac.uk

For academic papers see the British Education Index at: leeds.ac.uk/bei. This site includes a special TLRP collection but the main site of the Teaching and Learning Research Programme remains freely available at: <http://www.researchcatalogue.esrc.ac.uk/grants/RES-139-34-1003/read/outputs>. Its Research Briefings, Commentaries and Reflective Activities can be downloaded from there or, in most cases, from reflectiveteaching.co.uk.

The website of the GTC England, including its very useful work on pedagogy, is available from: webarchive.org.uk/ukwa. Its valuable research summary resources have been preserved through the Teaching and Learning Academy at: tla.ac.uk.

Other teacher support resources of the former English Government, such as TeacherNet, the Standards Site, and National Strategies are available through: webarchive.nationalarchives.gov.uk.

The Teacher Training Resource Bank, which provided an enormous range of material for student teachers, is being prepared for relaunch by a project at the University of Canterbury.

Other material has been harvested by private companies providing websites such as: teachingexpertise.com.

The video archives of the former Teachers TV are available from various sites, including: tes.co.uk/video, teachersmedia.co.uk, schoolsworld.tv and proteachersvideo.com.

The Centre for the Utilisation of Research and Evidence in Education (CUREE) has made exceptional contributions to producing materials for teachers and there are useful links from their site at: curee.org.uk. These include Research Tasters, Research Nuggets and Research Bites.

The website of England's National Teacher Research Panel survives at: ntrp.org.uk.

The Coalition Government has preserved TRIPS research digests at:

education.gov.uk/schools/toolsandinitiatives/tripsresearchdigests

and it remains possible to subscribe to an email newsletter of summaries through: research.summaries@education.gsi.gov.uk. The Department for Education maintains a page on the website of the Times Educational Supplement with contemporary comment.

Government agencies are reorganized from time to time and, from 2010, were more closely integrated into the Department of Education. Among the most important are: the National College for School Leadership (education.gov.uk/nationalcollege) and the Training Agency (education.gov.uk/get-into-teaching). Ofsted remains outside the DfE to symbolize its independence, though its leadership is directly appointed by the Secretary of State: Ofsted.gov.uk.

SSAT (The Schools Network) Ltd (ssatuk.co.uk) replaced the Specialist Schools and Academies Trust and is committed to school improvement through 'inquiry, innovation, inspiration and impact'. They support, for example, the analysis of performance and inspection data from schools. See: ssatuk.co.uk/ssat/programmes-support/data/

The Education Endowment Foundation (educationendowmentfoundation.org.uk) is a new charity with a £125m grant from the Department for Education to promote the use of evidence to raise attainment of disadvantaged pupils.

An innovative and independent consortium is that of the Expansive Education Network which seeks to support 'real world learning' and a wide range of learning capabilities (see expansiveeducation.net).

In terms of sources of academic research and evidence on teaching, learning and education, almost all of the UK's universities make a contribution and this will be evident from departmental and faculty websites. Some are configured to maximise the impact of their research, and may encourage participation in events and even collaboration in projects.

The most important UK resource for taking stock of what is known in the social sciences is the EPPI-Centre (Evidence for Policy and Practice Information and Co-ordinating Centre) at the Institute of Education, University of London. Since 1993, EPPI has pioneered methods for selecting and synthesising knowledge of various types in relation to key issues – many of which are educational. See the 'evidence library' at: eppi.ioe.ac.uk/cms.

For 'Evidence Informed Policy and Practice in Education in Europe', see eippee.eu. This project is based at the Institute of Education in London and provides exceptional access to international research synthesis and reviews.

1.4 Reading research findings

Academic books, journals and other output provide a rich source of description, analysis, critique and innovation about education. Indeed, many excellent examples have been drawn together in *Readings for Reflective Teaching in Schools*. Annotated and regularly updated lists of Further Readings are also offered elsewhere on this website, and are one of its most popular features. Having said that, it is true that academics often write for each other, and may use specialist vocabulary. This is their conceptual 'tool-kit', enabling them to talk and work more effectively together. Such use of language occurs in many walks of life, for instance in the in-house jargon of journalists, politicians, and Chief Inspectors. Increasingly, however, educational researchers are also working to develop more accessible texts for professional and public audiences. The Teaching and Learning Research Programme (TLRP), for example, published both 'Research Briefings', 'Practitioner Applications' and accessible overviews of its projects in the 'Improving Learning' series. See:

<http://www.researchcatalogue.esrc.ac.uk/grants/RES-139-34-1003/read/outputs> (publications)

[the TLRP section of this website](#) (practitioner applications)

Readers of academic work should, above all, read actively and must not be over-awed by the text. Key questions must be posed. What is the core argument? What is the evidence base? How convincing is this? What is its relevance for practice? Readers must, in other words, interrogate the material and put it to work for them. Searching for introductions, summaries and conclusions is a good strategy too. If this is done, then studying academic texts becomes a really fascinating way of enhancing the quality of professional knowledge and understanding.

Another important source of more accessible academic accounts often comes from specialist research centres, many of which take considerable care to publish for public audiences. Among many specialist centres are:

Institute for Policy Studies in Education: <http://www.londonmet.ac.uk/research-units/ipse> (strong projects on teachers and teaching)

Centre for Longitudinal Studies: <http://www.cls.ioe.ac.uk> (large scale data sets linked to enduring educational issues)

Centre for Child and Family Research: www.lboro.ac.uk/research/ccfr (policy and practice for children, young people, families and community)

National Centre for Language and Literacy: www.ncll.org.uk (language and literacy)

National Centre for Excellence in the Teaching of Mathematics: www.ncetm.org.uk (teaching of mathematics)

National Science Learning Centre: www.sciencelearningcentres.org.uk (teaching of science)

In Section 4 of this chapter we offer a brief introduction to the major paradigms in social scientific research, within which most educational research can be located. It is worth considering this as it will enable research studies to be 'placed' and understood more effectively.

1.5 Keeping a diary

Keeping a written diary remains an excellent way of recording classroom or school experiences and one's feelings and perspectives on them. On the one hand, some would argue that the whole point of keeping a diary is that it should be personal and private. On the other hand, 'reflective diaries' are sometimes suggested as part of coursework, and might therefore be accessed by mentors or tutors and treated as documentary indications of a trainee's thinking. In any event, it is worth remembering that any document produced in relation to professional work should reflect ethical concerns and the rights of others.

A very personal diary can provide vivid and flexible accounts of ideas and feelings. It can offer a safe space to express the emotional side of teaching, as well as more systematic attempts to analyse and reflect. When a diary is 'unofficial' it may be a place to speculate, propose, theorize and generally enter into a conversation with oneself. This is extremely valuable, for the act of writing serves to 'scaffold' understanding (Tharp and Gallimore, 1988). A diary is also a record, and can be re-visited in later days, weeks or years to consider specific issues or the process of continuing professional development.

Technical decisions are few, but will relate to your aims. Perhaps you may wish to record your experiences in a particular period of school experience, in which case, a regular daily record would be wise. This will record the days when not much happened of note, as well as those which seemed to 'explode' with activity. On the other hand, you may want to focus your diary on a particular topic – class management, a group of children, a subject. Further into a career, you may want to keep a diary note each half term – it would certainly be of great interest in years to come.

Whilst a diary can simply be a cathartic record, it has the potential to be more than this. Once you have it, then you do have a document which can be analysed. Some really excellent studies of primary-school classrooms have been made in this way (Armstrong, 1980; Dadds, 1995).

1.6 Observation as a participant

Of course, observation is an entirely natural, continuous process. However, as a method for gathering classroom evidence, it refers to the process of actively, carefully and self-consciously describing and recording what people do whilst one may be, oneself, part of the action (Wragg, 1999). Personal involvement is not necessarily seen as a weakness if the benefits of direct experience are complemented by care in avoiding judgements. The emphasis, in the first place, should be on rich description. Recording is usually done in the form of careful notes containing detailed descriptions of people, events, incidents or issues. Such notes may record individual or group activity. They may record conversations together with features of the situations in which conversations or events took place. It is often helpful to discuss the situation observed to elicit the participants' interpretations of events. Thus the observer's, teacher's and the children's views may be sought.

Child observation is a particularly important skill for early-years' educators, for the behaviour of young children often reveals more than they may be able to express easily at any particular stage of development. A notebook is particularly helpful for this (see 3.10 on keeping records).

Such records can contain a wealth of information and can be applied very flexibly. Over a period of recording, it is normally possible to discern recurring themes that may lead to a greater understanding of the complex whole of a classroom environment. This technique, because it is relatively open-ended, can be particularly comprehensive and responsive to the unique features of the situation.

1.7 Document analysis

It can be revealing to examine official documents. For instance, this is a very important aspect of policy analysis and of historical and comparative work. In such approaches, official documents will be 'interrogated' to generate an analysis. Do there appear to be any hidden aims, as well as those which are explicit? What are the underlying assumptions embedded in the document? Which groups are likely to gain from the document? Which groups are likely to lose? Does the document reflect the influence of any particular interest group, or a combination of concerns? How has it been created? Who was consulted? Who was not? How is this reflected in its final form?

Governments continue to provide a steady flow of education documents on which this form of analysis can be used, and those associated with other political parties may be just as interesting. At a school level, examination of documents such as the brochure for parents might reveal underlying assumptions about how children learn, what they should learn and how they should be taught, or maybe reveal tacit, taken-for-granted thinking about social diversity and inclusion issues. Similarly, school policy documents are likely to provide insights into collective staff thinking – their aims, values and commitments. Similarly useful and indicative documents are annual school development plans, and minutes of governors' and parents' meetings. However, it is worth remembering that even school documents tend to be relatively 'official' products and may thus gloss over internal debates that took place in the process of their creation. It is important,

therefore, to read 'between the lines' and to be aware of what is not recorded as well as the issues that are brought to our attention.

1.8 Marking pupils' work

Pupils' work is, of course, a really important source of evidence of their learning, and marking that work is a crucial form of teacher enquiry into the progress, or otherwise, of each child. This can be anything from a verbal comment (e.g. What an exciting story!), to setting spelling corrections at the end of an exercise, or a grade or mark. In Foundation and early Key Stage 1 classes, children's output is particularly interesting as an indicator of their thinking. For all children, their capability in the actual process of writing or recording must be considered in analysing the materials.

Marking can also be extended to offer more wide-ranging analyses. For instance, to study a pupil's development over time one can consider each piece of work as part of a sequence. It is only by comparing each example with previous work that it is possible to assess whether any learning has taken place and what significance to attach to any mistakes. If such mistakes, or 'miscues', are analysed carefully they can provide valuable clues to possible learning difficulties. It is revealing to note whether errors are consistent or one-offs. If a pattern emerges then a future teaching–learning point has been identified. Such diagnostic marking can provide useful information upon which to base subsequent discussion, or be used when making judgements about matching future tasks.

1.9 Formative assessment

This is a routine element of an effective teacher's work, and is discussed at length in Chapter 13 of *Reflective Teaching in Schools*. That account includes a section on target setting and pupil responses, which could be a good focus for classroom enquiry.

1.10 Keeping records

Keeping records is discussed in Chapter 14 of *Reflective Teaching in Schools*. That section describes many ways of collecting and organizing information about student's work and learning. There is a very strong tendency for such information to be collected, but not fully analysed. What sorts of enquiry could you develop from the records that you keep, or could keep?

1.11 Analysing pupil diaries or logs

Obviously, this is only possible when diaries or logs are kept. Children of appropriate writing capability write down their reflections of their learning experiences. This is particularly useful, for example, when children are doing self-directed work. They can use their diary or log book to comment on their ongoing progress, to keep the teacher 'in touch' without posing undue management problems.

A diary or log can take many forms. It might include the child's original plan of intended work, and the reason for doing it. It might also include a description of what was done, whether any changes were made and why. It could include an analysis of what knowledge or skills had been employed, which were reinforced, which were acquired and which extended. The child could then go on to comment on what had been enjoyed – or not enjoyed, and what had been worthwhile – or not. Such contrasts often help in teasing out underlying issues. Finally, a log could include the children's view of what they would like to move on to next. Such self-analysis requires considerable sophisticated self-reflection from a child – the meta-cognitive skills discussed in Chapter 2 of *Reflective Teaching in Schools*. A useful extension of the use of pupil diaries or logs is the opportunity they also provide for parents and teachers to add comments and respond to issues which are raised.

1.12 Systematic observation

This is a way of observing behaviour in classrooms by using a schedule, or list of categories, of probable behaviour (see Croll, 1986). Categories are chosen by the observer, who therefore has to decide in advance what is important. Each category is then 'checked off' as the behaviour is observed. The technique assumes that the teacher has already carried out sufficient preliminary, exploratory investigations to be able to decide which behaviours are relevant. However, having devised the schedule, systematic observation can be a very quick and easy-to-administer technique for collecting information. It is used in two main ways. There is a 'sign system' procedure in which a record is made each time there is any sign of the listed behaviours, whereas in a 'timed system' behaviour is recorded only at predetermined time intervals.

Systematic observation might be useful, for example, in finding out how much use is made of the book corner and who seems to use it most. It could be used to produce a measure of how long individual children concentrate on particular set tasks. It could be used to note how teachers distribute their time among different children; which children seek attention; which ones avoid it; or which ones 'get forgotten'. Another common use is to measure the possible differences in the ways teachers interact with boys and with girls. Information collected in this way can easily be quantified, and the frequencies and distribution patterns of the listed behaviours can be calculated. However, such information cannot provide an explanation. The technique is also heavily reliant on the appropriateness of the predetermined categories on the schedule.

1.13 Photography

Recording what happens inside a classroom, by any of the next three techniques, provides a very valuable source of information, for they 'fix' events that are so fleeting. This is particularly valuable because no one can have ears and eyes everywhere and even the most alert of teachers misses a great deal of what goes on. The ethical principle of 'informed consent' applies here though, and even a quick snap from a mobile phone camera should be discussed with children and others in the classroom beforehand. Permission should be sought from the parents of young children before taking photographs. Photography is a relatively unobtrusive form of visual recording, especially if flash is not needed. Digital technologies are opening up many new possibilities for using photography for rapid recording of classroom events. Photography, of course, only captures frames of action rather than the sequence of action itself, though multiple snapping can overcome this to some extent. A particular advantage is the ease of use of photographs once they are downloaded into a computer. They can thus provide an excellent basis for reflective discussion with others – including the children who have been photographed.

1.14 Video recording

Video recording is particularly helpful in providing contextual information in classrooms and in capturing non-verbal behaviour as well as some speech. Although such photography may seem to be capable of capturing a lot of classroom action, sampling selections must be made – as any film-maker would confirm. Before shooting, even if a formal 'screenplay' is inappropriate, it is important to think through exactly what is required. What is the primary purpose of making the recording? This is likely to have implications for camera positioning and there may also be power source, sound, lighting, safety and other operational considerations. However, new mobile phone technology, with automatic focusing and low-light adjustment facilities, make this a relatively easy task. The quality of the soundtrack is usually the weakest point and this should not be relied upon without testing or special provision.

This is a convenient and very powerful form of data, and the television broadcasting of 'video diaries' now offers a well-understood model on which work with children could be based. Whilst the presence of cameras is likely to affect some children and may distort the normality of the classroom, if done periodically the novelty usually soon wears off.

1.15 Active listening

Really attentive listening is particularly hard for busy people, such as teachers, who have to think about so many things at once. However, it is an excellent source of classroom evidence to stimulate ideas and enquiry. It is addressed in Chapter 12 of *Reflective Teaching in Schools*.

1.16 Questioning

Questioning is, again, a very basic and highly valuable method of enquiry, as well as being key to teaching itself. It is discussed extensively in Chapter 12.

1.17 Discussing

Discussion has innumerable roles in classrooms, both for teaching and learning and as a source of evidence for classroom enquiry. It is considered at length in Chapter 12.

1.18 Conferencing

This is a term used to describe a particularly focused and extended discussion between teacher and child on a mutually agreed topic. Such a session offers an opportunity for a teacher and child to come to a mutual understanding of the nature of work in progress and to discuss what has been found to be enjoyable/not enjoyable or easy/challenging/hard. It also provides a chance to discuss any difficulties being experienced and to plan future activities. The length of the discussions will, of course, vary with the needs of the child. However, the teacher will need to plan to set aside a certain amount of time, perhaps at a set period each day, when the class know that the teacher must not be disturbed, if at all possible. In many situations discussions with a group or pair would be appropriate, though it is important that the group context does not inhibit some individuals within the group. It is often an advantage if there are some activities in which the whole class is taking part, as then some issues can be discussed collectively.

1.19 Audio recording

Audio recording of a class discussion is a common and simple procedure with modern digital equipment. However, some recorders or mobile phones may only pick up a few of the children, or perhaps only the teacher's voice. Nevertheless, the procedure can provide excellent information about the amount, type and distribution of teacher talk – a very worthwhile, though often salutary experience.

Recording small groups or pairs of children can similarly provide valuable insights into the language strategies used and into social dynamics, and it is technically easier if background noise can be controlled. Children usually forget about the recorder, though its presence may affect some – either to put on a performance or to clam up. Time could be allowed for familiarization. A radio microphone, portable recorder or mobile phone could also be worn by an individual child for a period of time. The main advantage of this is that the quality of the recording is likely to be much improved. It must be remembered that it takes a significant amount of time to play back and study. Still more time will be needed for transcription.

1.20 Setting tasks

Perhaps the most routinely available source of evidence of pupil learning is that which arises, lesson by lesson, as children engage in the activities and tasks which the teacher has prepared for them. Something will inevitably happen. The important questions are 'what happens?' and 'is anyone paying attention?'

Teachers who are aware of the need for formative assessment and of the potential for gathering evidence from routine classroom activities should be able to focus tasks so that the pupil actions and performance reveal what they know, can do and understand. The skill, then, lies in providing tasks that are appropriate and accessible for all the children but which also enable you to discriminate constructively in terms of what particular children know and learn. This is a form of 'differentiation by outcome' – the development of understanding about the needs and capacities of the child by evaluating 'how they got on'. The strengths of using tasks for enquiry purposes derive both from the frequency and routine nature of the opportunities which are available and from the high validity which this form of assessment is likely to have. After all, it is embedded in everyday classroom processes. It should provide a rich source of insights about pupil learning strategies and attainments.

1.21 Testing

Tests take many forms and are used for a wide range of different purposes.

Teacher tests/published tests/national tests

Those which teachers devise themselves and are directly related to what has been taught. Compare these with published tests which are intended to be generally applicable to a wide range of situations. National tests, such as end of key stage and optional tests, are designed very specifically to test the objectives of the National Curriculum.

Criterion-referenced/norm-referenced tests

Those tests which use specific items to identify aspects of individual children's work; compare with tests which are used to compare individuals in terms of 'normal' expectations of achievement.

Diagnostic/prognostic tests

Those which aim to identify what the child can/can't do now; compare with tests designed to highlight future potential (e.g. IQ/eleven-plus tests).

Open/closed tests

Those which have questions to which there is room for imagination and creativity; compare these with tests to which there is one right answer.

Teachers often devise their own tests for particular diagnostic purposes in order to help them achieve the best possible cognitive match. Such tests could be used to discriminate between children's achievements, or used to assess a teacher's effectiveness in implementing specified learning objectives. Criterion-referenced, mastery tests, in carefully graded series, are popular in many sports award schemes, such as those for swimming, athletics and gymnastics. They also, of course, underpin the National Curriculum structure of levels, attainment targets and statements of attainment.

There is no doubt that appropriate comparative scores for children can be helpful in any review of the attainments of children, teachers or schools. Test scores are thus an important form of evidence of learning. However, whatever type of test is used, it is most important for a reflective teacher to try to identify its strengths, weaknesses and its underlying assumptions. For example, what does a reading test actually measure and indicator of 'reading' and is it successful in what it aims to do? Is the test based on valid data so that it really measures what it is supposed to measure? Can the test be reliably used so that data collected are consistent?

1.22 Interviewing

Interviews are structured or semi-structured discussions which can be used to find out what people think or do, and why. The interviewer can explore and negotiate understandings because of the possibility of immediate feedback and follow-up. However, because of the person-to-person situation, some people may feel threatened – by the interviewer or, if it is a group interview, by other participants. Working with children raises particular issues, as Wilson and Powell (2001) discuss. The success of this technique of data collection rests heavily on the relationship established and on the way in which the event is conducted. Interviews can be used with varying degrees of formality and structure. The term 'interview' is usually reserved for the more formal, more structured one-to-one situations. As the event becomes more informal and less structured, it may be more appropriately seen in terms of a 'conference' (see Section 3.18) or discussion.

1.23 Concept mapping

This term denotes a procedure which requires children to 'map' out what they have learned and how, to them, it appears to 'fit' together. Children might be helped to draw a web or flow chart to show what they have been learning about. Such a chart would, eventually, represent the ideas, concepts and knowledge that the children have been working with during a particular unit of work, as perceived by the child. The procedure might begin by listing aspects of the subject or topic that was covered. The children can then map the relationships between the different items – explaining how they see any links.

This provides a way of seeing what they have understood. It can then provide a basis for teacher and child to talk over understandings and misunderstandings.

There are lots of ways of doing this. Each child can be asked to review things they have learned in a teaching session, and to write each item on small pieces of paper. These can be arranged on a larger sheet and moved around experimentally to eventually reflect, by their proximity to each other, the relationships between the various aspects of the topic as seen by the child. The small pieces of paper can then be glued on and lines drawn between them to represent the relationships. Finally, a few words expressing these relationships are written on each line. It should be possible to relate such concept maps both to teaching plans and relevant attainment targets. It is likely to underline the fact that, whatever we teach, children make sense of it in their own ways.

1.24 Questionnaires

This form of data collection uses questions and statements to stimulate responses to set items. Questionnaires are usually given to the respondents to fill in, which therefore demands a certain level of writing skill. The technique can be used for collecting factual information as well as opinions. Hence, it may provide data both about what people do or think, and why.

The format of a questionnaire may be closed (asking for specific data or yes/no responses) or open (asking for general and discursive responses). Open forms of response encourage relatively free answers, which has the advantage of enabling the respondent to express their thoughts and priorities in their own way. However, it also makes greater demands on the respondents' writing abilities and poses the problem of how to categorize the wide range of replies which such an item may well evoke.

Questionnaires can be useful in a variety of ways, such as providing information to include on school records; to discover how children feel about aspects of classroom life; or for evaluative purposes at the end of a unit of work. The answers may be required as written sentences, by ticking boxes, or by ringing a word/number on a rating scale (e.g. hard – quite hard – just right – easy, or 'exciting' 5–4–3–2–1 'boring').

1.25 Sociometry

Sociometric techniques have been developed to help children and teachers gain insights into friendship patterns. The basic procedure is to ask children, in confidence, to name a small number of children (normally three) from their class with whom they would like to work or play. This can also, with care, be extended to ask children to identify anyone with whom they would not like to work or play. The friendship groupings which emerge from an analysis of these choices as a whole can then be represented in diagrammatic form, known as a sociogram. Such representations provide a visual display of social relationships: mutual pairs and groups (where choices are reciprocated), clusters of friends (though not all with reciprocated choices), isolates and even rejectees.

We should note, however, that this technique does not tell the whole story. In particular, it provides a static picture of friendships and, given the dynamic nature of the social relationships of some children, this needs to be borne in mind. Nevertheless, the data are structured and descriptive and can provide a good starting point for analysing further aspects of relationships between children.

1.26 Personal constructs

This is a structured method of indirectly finding out about the way people think and feel about each other. Personal constructs are evident in our thinking when, for example, we appraise or comment on children. A procedure for this situation might be to produce a small name card for each child, to successively draw three names and to identify which two are most alike, and then to explain why. In this way it is possible to elicit relatively instinctive reactions and the actual 'constructs', or criteria, which are used. Such a procedure is usually more effective than asking, in the abstract, what constructs are used to distinguish between children. Having obtained such a list, it is then possible to classify the constructs – for example, those that are academic, physical or social. The patterns that emerge could indicate underlying assumptions about perceptions of children. However, whilst construct elicitation helps respondents to 'surface' intuitive concepts, in itself it is unlikely to indicate why they feel it or to describe what they actually do.

1.27 Checklists

Checklists provide a simple and practical form of record that has been tried and tested by generations of teachers. Targets, levels, key skills or other competencies can be clearly listed and ticks, crosses or other symbol systems can be used to record children's achievements against these criteria. However, judgements should be checked with evidence before a checklist is completed. Sometimes checklists are completed relatively impressionistically, which is unlikely to be terribly helpful. The whole point of authentic enquiry is to challenge ourselves. On what basis do we know what we think we know?

Key readings

The work of Lawrence Stenhouse provided a foundation for teacher research and evidence-informed practice. For an excellent insight into his work, see:

- Rudduck, J. and Hopkins, D. (eds) (1985) *Research as a Basis for Teaching: Readings from the Work of Lawrence Stenhouse*. London: Heinemann Educational Books

For very helpful examples of the worthwhileness of teacher research, see:

- McNamara, O. (2002) *Becoming an Evidence-based Practitioner: A Framework for Teacher Researchers*. London: Routledge.
- Clipson-Boyles, S. (2000) *Putting Research into Practice in Primary Teaching and Learning*. London: David Fulton.

Introductory guides to carrying out research activity include:

- Blaxter, L., Hughes, C. and Tight, M. (2006) *How to Research*. Buckingham: Open University Press.
- Hitchcock, G. and Hughes, D. (1996) *Research and the Teacher*. London: Routledge.
- Denscombe, M. (2003) *The Good Research Guide for Small Scale Social Research Projects*. Buckingham: Open University Press.

Books that specifically support enquiries using classroom-based action research designs are:

- Hopkins, D. (2007) *A Teacher's Guide to Classroom Research*. Maidenhead: Open University Press.
- Hustler, D., Cassidy, T. and Cuff, T. (eds) (1986) *Action Research in Schools and Classrooms*. London: Allen & Unwin.
- McNiff, J. (2001) *Action Research: Principles and Practice*. London: Routledge.

A clear description of small-scale case-study work, and an analysis of its strengths and weaknesses, is:

- Bassey, M. (1999) *Case Study Research in Educational Settings*. Buckingham: Open University Press.

Gathering data from children requires particular care. For this, see:

- Christensen, P. and James, A. (eds) (2000) *Research with Children: Perspectives and Practices*. London: Falmer Press.

All enquiries, of whatever type, must address a similar set of key quality issues if the term 'research' is to be justified. For an accessible introduction to these challenges see:

- Denscombe, M. (2002) *Ground Rules for Good Research: A 10 Point Guide*. Buckingham: Open University Press.

For more advanced insights into the work of professional educational researchers, see:

- Pring, R. A. (2004) *Philosophy of Educational Research*. London: Continuum
- Scott, D. and Usher, R. (1996) *Understanding Educational Research*. London: Routledge.
- Robson, C. (2002) *Real World Research*. Oxford: Blackwell.

The commitment of professional, reflective, evidence-informed practice can be contrasted with the determination to use more systematic, 'scientific' forms of research to identify 'what works' in any circumstance as a basis for policy prescription. To understand the attraction of this argument, see for instance:

- Davies, H. T. O., Nutley, S. M. and Smith, P. C. (2000) *What Works? Evidence-based Policy and Practice in Public Services*. Bristol: The Policy Press.

The Teaching and Learning Research Programme has created open-access, on-line resources to support the conduct of educational research. These draw on the expertise of leading UK researchers. To view these, access:

- <http://reflectiveteaching.co.uk/deepening-expertise/tlrp-research/>