Document name:	Research methods in education handbook
Document date:	23/09/2013
Copyright information:	Copyright © 2013 The Open University
OpenLearn study unit:	Open Educational Research Assets
OpenLearn url:	http://www.open.edu/openlearnworks/course/view.php?id=1592

PART 2   PRACTICAL GUIDELINES FOR PRACTITIONER RESEARCH

CONTENTS

INTRODUCTION

The first four sections of this Part provide guidance on research design and appropriate ways of collecting evidence. Section 1 introduces you to the various research traditions in education and discusses some factors that need to be taken into account when designing practitioner research. Section 2 is about documentary analysis and the use of written documents as evidence. Section 3 contains advice about interviewing techniques and questionnaire design. Section 4 examines how you can collect evidence by watching and recording what people do and say. It offers advice on observation, recording and analysing classroom talk, and using children's work as a source of evidence. Section 5 offers advice on the interpretation, analysis and presentation of evidence.

As well as providing advice on collecting and analysing evidence, the various sections contain many examples of practitioner research. Some of these have been drawn from the work of the teachers who helped develop the material, while others come from published accounts of practitioner research in books and journals.

1   ABOUT PRACTITIONER RESEARCH

1.1   INTRODUCTION

This section provides a brief introduction to practitioner research and offers general advice on how to design an inquiry which is ethically sound and which will provide reliable and valid information. You will probably find it most useful to skim through the whole section first before going on to reread sub-sections which you find particularly interesting or challenging.

1.2   WHY PRACTITIONER RESEARCH?

Practitioner research is a relatively new recruit to the many traditions of educational research. As its name implies, practitioner research is conducted by teachers in their own classrooms and schools. It is carried out 'on-the-job', unlike more traditional forms of educational and classroom research where outside researchers come into schools, stay for the duration of the research project and then leave. As David Hopkins comments, 'Often the phrase ''classroom research'' brings to mind images of researchers undertaking research in a sample of schools or classrooms and using as subjects the teachers and students who live out their educational lives within them' (Hopkins, 1985, p. 6). Similarly, Rob Walker maintains that much of what passes for educational research, 'is more accurately described as research on education' rather than research 'conducted primarily in the pursuit of educational issues and concerns' (Walker, 1989, pp. 4–5).

When it comes to the kind of 'classroom research' described by Hopkins and Walker, the teacher or school has little or no control over the research process. The subject, scope and scale of the investigation are set by the outside agency to which the researchers belong, and although the research findings themselves may be communicated to participating schools, often they are of little relevance or direct benefit to the people teaching and learning in those schools. By contrast, practitioner research is controlled by the teacher, its focus is on teaching and learning or on policies which affect these, and one of its main purposes is to improve practice. It also has another important purpose: it can help develop teachers' professional judgement and expertise. Hopkins expresses this aspect of practitioner research in the following words:

> Teachers are too often the servants of heads, advisers, researchers, text books, curriculum developers, examination boards, or the Department of Education and Science among others. By adopting a research stance, teachers are liberating themselves from the control position they so often find themselves in ... By taking a research stance, the teacher is engaged not only in a meaningful professional development activity but [is] also engaged in a process of refining, and becoming more autonomous in, professional judgement.

> (Hopkins, 1985, p. 3)

'Practitioner research' has its origins in the teacher researcher movement of the early 1970s, which focused on curriculum research and development, and the critical appraisal of classroom practice through 'action research' (e.g. The Open University, 1976; Stenhouse, 1975). A key feature of action research then and now is that it requires a commitment by teachers to investigate and reflect on their own practice. As Nixon notes, 'action research is an intellectually demanding mode of enquiry, which prompts serious and often uncomfortable questions about classroom practice' (1981, p. 5). To engage in action research you need to become aware of your own values, preconceptions and tacit pedagogic theories. You also need to make a genuine attempt to reflect honestly and critically on your behaviour and actions, and to share these reflections with sympathetic colleagues. Trying to be objective about one's own practice is not at all easy. As Gates (1989) has shown, however, developing habits of critical self-reflection makes an enormous contribution to teachers' confidence and professional expertise.

Like other forms of research, action research involves identification of problems, collection of evidence, analysis and diagnosis, interpretation using theory, and the communication of findings to audiences outside the researcher's immediate working context. It is unlike more conventional research in that most problems usually arise directly from practice rather than from published theory. Its main purpose is to identify appropriate forms of action or intervention which may help solve those problems. Once an appropriate form of action is identified, it must be implemented, and its effectiveness closely monitored. If the intervention is successful, it might necessitate a change in practice. This in turn may raise new problems which must be solved and so on. These recursive processes make up what is know as the 'action-research cycle'. Figure 1 gives an example of an action-research cycle.

1.3   RESEARCH GROUND RULES

In the first of a recent series of articles examining the nature of research in education, Michael Bassey states that:

> In carrying out research the purpose is to try to make some claim to knowledge; to try to show something that was not known before. However small, however modest the hoped for claim to knowledge is, provided it is carried out systematically, critically and self-critically, the search for knowledge is research.

> (Bassey, 1990, p. 35)

While Bassey's definition of research as 'the search for knowledge' is a very loose one, he qualifies this definition by insisting that all research must be systematic and critical, and by claiming that it must conform to the following set of rules:

1   Any research inquiry must be conducted for some clearly defined purpose.
    It should not be a random amassing of data but must entail a planned attempt to arrive at answers to specific questions, problems or hypotheses.

2   When conducting an inquiry data should be collected and recorded systematically, so that, if necessary, it can be checked by others.

3   There should be a clear rationale or theory informing the way the data is analysed.

4   Researchers must critically examine their evidence to make sure that it is accurate, representative and reliable.

5   Researchers must be self-critical and should scrutinize their own assumptions, methods of inquiry and analysis, and ways of presenting their findings.

6   As the purpose of research is 'to tell someone something that they didn't know before', then researchers should aim to communicate their findings to a wider audience so that they can also benefit from the new knowledge.

7   Researchers should attempt to relate any new knowledge or understanding they gain to both their own personal theories and to published theories so that the former can be evaluated in terms of its wider conceptual and theoretical context.
    (adapted from Bassey, 1990, p. 35)

Like Bassey, we believe that this set of ground rules is fundamental to any kind of inquiry.
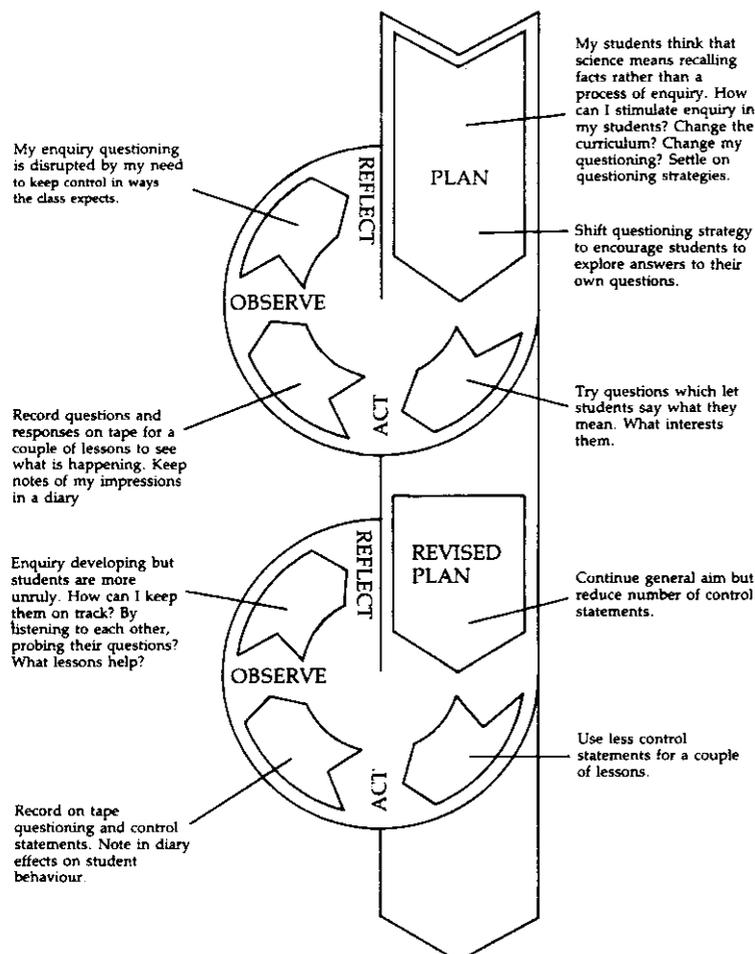

Figure 1   Action research in action (Kemmis and McTaggart, 1981, p. 14, reprinted in Hopkins, 1985, p. 55).

1.4   ETHICS AND PRACTITIONER RESEARCH

Strangely enough, Bassey does not mention taking ethical considerations into account, although these are of paramount importance. As Nias points out:

> ... Enquiry-based courses ... have far-reaching implications for teachers, schools and providing institutions and for the relationships between them. For a student, to subject professional practice (be it one's own or that of others) to systematic enquiry and to share the results of this scrutiny with a wider audience than simply a course tutor is to open oneself and one's colleagues to self-doubt and criticism. ... Schools too may be opened up to more examination than many of their members want and, as a result, internal differences and divisions may be exacerbated.

> (Nias, 1988, p. 10)

Sound ethical practices should be observed whatever kind of research one is engaged in. As Nias points out, many sensitive issues can arise as a result of practitioners carrying out research into their own institutional context. Making sure that ethical procedures are carefully followed may not completely resolve problems, but will certainly show others that you are aware of your responsibilities and the potential consequences of your enquiry. Each of the sections which follow contains advice on ethical procedures which are specific to the methods they describe. The following is a more general list.

> *Ethics for practitioner research*
>
> **Observe protocol**: Take care to ensure that the relevant persons, committees and authorities have been consulted, informed and that the necessary permission and approval have been obtained.
>
> **Involve participants:** Encourage others who have a stake in the improvement you envisage to shape the form of the work.
>
> **Negotiate with those affected:** Not everyone will want to be directly involved; your work should take account of the responsibilities and wishes of others.
>
> **Report progress:** Keep the work visible and remain open to suggestions so that unforeseen and unseen ramifications can be taken account of; colleagues must have the opportunity to lodge a protest with you.
>
> **Obtain explicit authorization before you observe**: For the purposes of recording the activities of professional colleagues or others (the observation of your own students falls outside this imperative provided that your aim is the improvement of teaching and learning).
>
> **Obtain explicit authorization before you examine files, correspondence or other documentation**: Take copies only if specific authority to do this is obtained.
>
> **Negotiate descriptions of people's work:** Always allow those described to challenge your accounts on the grounds of fairness, relevance and accuracy.
>
> **Negotiate accounts of others' points of view (e.g., in accounts of communication):** Always allow those involved in interviews, meetings and written exchanges to require amendments which enhance fairness, relevance and accuracy.
>
> **Obtain explicit authorization before using quotations:** Verbatim transcripts, attributed observations, excerpts of audio- and video-recordings, judgements, conclusions or recommendations in reports (written or to meetings) [for advice on quotations from published materials, see Section 6].

Negotiate reports for various levels of release: Remember that different audiences demand different kinds of reports; what is appropriate for an informal verbal report to a [staff] meeting may not be appropriate for a ... report to council, a journal article, a newspaper, a newsletter to parents; be conservative if you cannot control distribution.

Accept responsibility for maintaining confidentiality.

Retain the right to report your work: Provided that those involved are satisfied with the fairness, accuracy and relevance of accounts which pertain to them; and that the accounts do not unnecessarily expose or embarrass those involved; then accounts should not be subject to veto or be sheltered by prohibitions of confidentiality.

Make your principles of procedure binding and known: All of the people involved in your ... research project must agree to the principles before the work begins; others must be aware of their rights in the process.

(Kemmis and McTaggart, 1981, pp. 43–4, reprinted in Hopkins, 1985, pp. 135–6)

1.5 THEORY AND EVIDENCE IN PRACTITIONER RESEARCH

Now that we have established a set of ground rules and a set of ethical principles it is time to go on to consider the relationship between theory and evidence in practitioner research. Bassey mentions the importance of relating research to theory in his rules 3 and 7, where he makes the distinction between 'personal' and 'published' theories.

THEORIES

There is nothing mysterious about a theory. People devise theories to explain observable relationships between events or sets of events. Traditional scientific theories offer explanations in terms of causal relationships between events and/or behaviours. Once a theory has been formulated it can be used to predict the likely outcome when similar sets of circumstances occur. Testing whether these predictions are correct or not is one way of testing the theory itself. A theory is, then, a coherent set of assumptions which attempts to explain or predict something about the behaviour of things and events in the world. A physicist might have a theory which can predict the behaviour of subatomic particles under certain conditions; an historian might have a theory about the causes of the Industrial Revolution; and an educational psychologist a theory about the causes of underachievement in inner-city schools. In all these cases, the theories held by the physicist, historian and psychologist are likely to have been derived from published accounts of previous research. They might also have personal theories, based on their own experiences, beliefs and observations. Often what attracts people to one published theory rather than another is its close match with their own personal ideas and assumptions.

For example, take the commonly held idea that practical experiences enhance and consolidate children's learning. This idea (or hypothesis) stems from the published theories of the Swiss psychologist Jean Piaget. Piaget's ideas became popular through documents such as the Plowden Report (Central Advisory Council for Education, 1967) and the Cockcroft Report (DES, 1982) and are reflected today in recommendations put forward in various national curriculum documents. For example, attainment target 1 – exploration of science – reads as follows:

> Pupils should develop the intellectual and practical skills that allow them to explore the world of science and to develop a fuller understanding of scientific phenomena and the procedures of scientific exploration and investigation.
>
> (DES, 1989, p. 3)

In a published account of her work, Virgina Winter explains how this idea, coupled with her own belief that science teaching should emphasize 'practical, investigative and problem-solving activities', led her to undertake a systematic appraisal of the science work offered in her school (Winter, 1990, p. 155). She was particularly interested in the ways in which her pupils acquired 'process skills', that is the practical skills necessary for them to carry out controlled scientific experiments. She also wanted to find out about children's perceptions of science, and whether they understood the way scientists worked. In this example, you can see how public and personal theories can come together to act as a stimulus for a piece of research.

EVIDENCE AND DATA

In order to compare two rival theories, one needs to gather evidence. It is worth remembering that showing a theory is incorrect is more important than simply confirming it. In science, falsifying theories and setting up and testing alternative theories is the principal means of advancing knowledge and understanding. This is also the case in educational research. As an example of this, let's take a closer look at Virginia Winter's research.

Winter used a 'multiple strategy' approach (Winter, 1990) to collect evidence about 11- and 12-year-olds' perceptions of science and their developing process skills. She observed the children at work in her science classes and wrote accounts of her lessons in a research diary. She carried out semi-structured, tape-recorded interviews with children, and kept samples of their work on scientific topics. In addition, she asked some children to keep diaries in which they made notes of their comments and impressions about their science lessons. Winter's methods were participant observation, interviewing, and analysis of children's work. Her data were her written diary record of her observations; transcripts of the interviews; samples of children's work; and the diaries they kept. This was the evidence she used to support her arguments and recommendations. You will find all of these methods of gathering evidence discussed in subsequent sections of this Handbook.

Winter found that children's practical work benefited most when they were allowed to work in friendship groups, and when they were encouraged to take responsibility for managing their own group work. On the basis of her evidence Winter demonstrated that, for her children, the original assumption that practical experiences enhance and consolidate children's learning needed to be modified. She found that children make more progress when they are encouraged to take control of their own learning, and when they are allowed to work in friendship groups. Contrary to her original assumption, simply giving them practical experience was not enough. Very often in educational research new theories and hypotheses arise in the course of collecting information to answer a particular research question. Where this happens we talk about theories being 'grounded in the data', to describe the way in which some theories can arise directly from practical experiences and observations. You will find more on 'grounded theory' in sub-section 5.3.

THE QUALITATIVE/QUANTITATIVE DISTINCTION

So far we have only talked about 'theories', 'evidence', and 'data' in very general terms. It is customary, however, to make a distinction between methods of collecting evidence that give rise to qualitative data and those which give rise to quantitative data.

Hugh Coolican explains the difference between qualitative and quantitative approaches as follows:

> 'Quantification' means to measure on some numerical basis ... Whenever we count or categorise we quantify. ... A qualitative approach, by contrast, emphasises meanings, experiences ... descriptions and so on. Raw data will be exactly what people have said (in interview or recorded conversation) or a description of what has been observed.
>
> (Coolican, 1990, pp. 36–7)

Traditional experimental approaches to educational research use quantification and measurement to examine the contributions of different factors to the behaviours studied. So suppose you were interested in comparing the effects on children's reading performance of two different reading schemes, one based on a phonic approach, and one based on a visual word-recognition approach. In an experimental study, it would be essential to choose a reliable and unbiased measure of reading performance, such as scores from a standardized reading test, which could be used with both schemes. The measure should either provide a numerical score for each child, or tell you how many children fall within each of a set of defined categories. Data of this sort can be interpreted with the aid of statistics to allow you to make a quantitative comparison between the two schemes.

The use of quantitative techniques is not restricted to experimental studies. Data from observations, interviews and questionnaires can also be quantified provided that it is structured appropriately. Examples of this type of study are discussed in Section 5.

We do not deal with the statistical analysis of quantitative data in this Part. However, the further reading lists at the end of this section and at the end of Section 5 contain a selection of books about quantitative experimental techniques and statistical analysis.

Quantitative techniques are extremely useful if you want to compare things like people's test scores or measures of performance under different conditions, or how people behave under different conditions. Quantitative experimental techniques have the disadvantage that, to make the resulting data statistically meaningful and generalizable to a wider sample than the one you are testing, you will need to test large numbers of people. Also, if you want to be confident of getting the same pattern of results again when you test a different sample of people, your first sample must be representative of the population to which both samples belong.

Critics of this experimental approach argue that in order to make quantitative measurements, the behaviours you are interested in have to be reduced to their very simplest form, and therefore you do not get a true picture of the way people behave. For example, they would argue that assessing children's reading competence requires a more complex approach than simply comparing reading scores on a standard test.

To carry on the reading theme, let's compare an example of a qualitative approach with the experimental one discussed above. Hilary Minns, a head teacher from Warwickshire, carried out a long-term investigation of the development of five children's reading and literacy skills using qualitative techniques. She wanted to understand the contribution of home background to children's initial competency, and later progress in reading and writing. She also wanted to study the part played by literacy in the lives of her sample of children and their families (Minns, 1990).

Using a biographical, case-study approach, Minns built up detailed pictures of the lives of the five children. She arranged a series of home visits, carried out informal interviews with parents and teachers, and made observations of the

children at home and in their classrooms. She collected tape-recordings of parents reading to their children, and asked them to provide her with lists of books and other written materials they used in their homes. Finally, she collected samples of the children's drawings and early writing.

As a result of this study, Minns gained great insight into what literacy meant in the lives of the children and their families. She also learned more about the processes which the family and school used to support these children's early attempts to read and write. She was able to reappraise her own school's language policy and reading methods and to recommend that 'knowledge of the cultural beliefs and values of families and their effect on children as readers has to be made a professional concern' (Minns, 1990, p. 113).

While this qualitative approach may seem to offer more insight than the experimental approach, it is not without its difficulties. Minns only studied five children, too small a sample to allow her to make generalizations which could apply to all young children. Also, the methods she used meant that she had to spend a lot of time with the children and their families to understand their views on literacy and get a feel for their lives. As Woods points out, studies like this one are like a 'snapshot frozen in time' (Woods, 1988, p. 102). They may give a more complete picture, but it is a picture limited to one set of people and circumstances over a particular period of time. So while qualitative techniques can yield extremely rich data, they are frequently time consuming; they may present problems of sampling; and they do not allow one to make generalizations about large samples of people.

You will find when you look at other people's research reports that qualitative and quantitative techniques are frequently combined. Much qualitative data can be quantified for purposes of analysis (see Section 5), and in practitioner research the two approaches tend to complement each other.

1.6   SAMPLING, RELIABILITY, VALIDITY AND BIAS

We quoted Bassey earlier as saying that research is only worth doing if it tells you something you didn't know before. This is why confirming a theory is not as valuable as proving it to be false or in need of modification. Another of Bassey's ground rules is that researchers have a duty to make sure that their data are accurate and reliable. No matter how interesting new knowledge is, it is only really valuable if you have guarded against various sources of error which can affect the way you collect and analyse your data. Sampling, or the way you go about selecting people to take part in your inquiry, is a frequent source of error.

SAMPLING

The notion of 'sampling' has already been introduced. Researchers are often interested in finding out something about, or seeking information from, particular categories of people, such as parents, school leavers, probationary teachers, or pupils with special learning needs. A 'population' consists of all possible people who fall into a particular category. Populations can be large (for example, all 18-year-olds in sixth-form colleges in England and Wales), or they can be small (for example, all pupils attending Montrose Academy, or even all 16-year-olds attending Montrose Academy). A 'sample' is a smaller number of individuals drawn from the total population which can be taken as representative of that population. Whether the population is large or small it is important to make sure that the sample you select is truly representative in some relevant way of the population of interest, unless the population is so small that you can include all its members in the study.

For example, suppose you wanted to find out parents' views on setting up an after-school club in your school. You decide to send a questionnaire to all parents and 40 per cent respond. Of this 40 per cent it appears that the majority support the idea of an after-school club. Checking the questionnaire returns against school

records, however, you find that most returns were from single-parent families and those families where both parents are out at work. In this case you have a self-selected sample whose views may not represent those of the population of parents as a whole.

A better strategy might have been to subdivide the population of parents into the following categories: single-parent families with parent at home; single-parent families with parent at work; two-parent families with both parents at home; two-parent families with both parents at work; two-parent families with one parent at work. You could then send questionnaires to a sample of parents in each of these categories. This way you would be more likely to sample parental opinion across the board. But remember that you need to balance the desire to make your research as reliable as possible against ethical considerations. In this example the use of school records might be seen as a breach of confidentiality.

Inquiries which draw on fairly small, local populations and samples are more feasible for practitioner research than inquiries which involve gathering large amounts of data from samples drawn from wider populations.

It is also possible to carry out an in-depth study of an individual case or small number of cases (as Hilary Minns did). Even here, however, you are not necessarily free from sampling error. Although she only studied five families, Minns was very careful to select children whom she felt represented the ethnic and socio-economic balance of pupils in her school.

BIAS

What do we mean by bias? Very generally, bias can be taken to mean unfairly favouring one thing at the expense of another. Bias is error which arises when we allow our own values and expectations to colour the way we conduct our research. It can exert its effect at a number of different stages of an inquiry. For example, bias can enter into the initial stages of designing questionnaires or interview and observation schedules. Suppose that, as science INSET co-ordinator in an English primary school, you are interested in assessing colleagues' perceptions of the national curriculum attainment targets. You decide to carry out informal interviews with staff. One of your questions might be, 'Some of the attainment targets for key stage 1 look like posing problems for us. Our pupils might find them difficult to achieve. What do you think?' Not only does this question reveal your own value judgements, it also puts interviewees in the difficult position of having to decide whether or not to agree with your assessment of the situation, particularly if their perceptions are different. It would be better to ask, 'What is you impression of the attainment targets for key stage 1? How do you think our pupils will fare on these?'

Bias can influence the selection of children you chose to observe or test and it can affect the choice of people you decide to interview. Do you interview all staff, or only those known to be sympathetic to your research? At the data collection stage, you can fall prey to bias by failing to report on all the relevant data. For example, keeping field-notes can be highly selective and people sometimes fall into the trap of recording facts and incidents which confirm their own ideas and interpretations rather than others. Similarly, when carrying out documentary analysis, one can select arguments and evidence which favour one viewpoint and ignore contradictory evidence.

When recording interviews or taking notes at a meeting, again it is easy (and only human) to give more weight to some arguments and opinions than others. It is easier to remember information that matches our own expectations and values. Also, observations, assessments or interviews can be subject to 'halo' effects. These arise from involuntary reactions to how people are dressed, how clean they are, the sort of language style they use, how influential they are and so on, and can affect judgement.

Once the data have been collected, bias can enter into analysis and interpretation, again through selective reporting of aspects of the research which support particular beliefs. Also, people can be highly partisan about their choice of evidence from published studies, choosing only that which supports their own findings.

There are a number of things you can do to guard against bias. Simply being aware of it is a first step. Bassey's ground rule 5 which states that 'researchers must be self-critical and should scrutinize their own assumptions, methods of inquiry and analysis, and ways of presenting their findings' is obviously important here. Both Burgess (1981) and Hutchinson (1988) recommend using a diary or journal to record personal feelings and reflections on the research process as a way of becoming aware of, and transcending, personal bias.

If you choose to use your professional diary as a source of evidence it is important that you find some method of distinguishing between the various classes of information it can contain. Virginia Winter (whose research was discussed above) describes her research diary as follows:

> My research diary contained substantive (factual) accounts of events in lessons, methodological accounts giving biographical details [of interviews and the children interviewed] and analytical (interpretive) accounts, in which ideas, hunches and questions were noted and anything else which might be of use in follow up interviews.
>
> (Winter, 1990, pp. 158–9)

Winter's diary contained a mixture of facts and interpretations of the facts. Unless fact and interpretation are kept distinct in your diary you run the risk of using your interpretations of events in place of the observable facts. Methods for keeping facts and interpretations distinct are discussed in sub-section 4.3.

Another practical step you can take is to pilot, or try out in advance, any instruments and procedures that you are developing. Piloting is an excellent way of revealing hidden sources of bias in your research instruments.

Another strategy is a procedure known as 'triangulation'. Triangulation simply means comparing two or more views of the same thing so that data from different sources can be used to corroborate, elaborate or illumine the research in question. If, for example, you were carrying out an observational study in order to understand some aspect of classroom interaction, then you might choose to:

(a) observe a particular lesson acting as a non-participant observer;

(b) interview the pupils so as to record their impressions of the lesson;

(c) discuss your observations with the teacher who took the lesson to see if his or her perceptions and interpretation matched your own.

You can also compare documentary evidence (for example, formal records of meetings or statements of policy) with different individuals' oral interpretations and/or practice. If you are assessing pupils' learning, then you might want to employ both formal and informal assessment techniques. Whatever you choose to do, projects designed to use multiple cases and informants and more than one data-gathering technique are more likely to be accurate than those which do not, and will provide more support for the arguments and recommendations you may want to put forward.

RELIABILITY

In a broad sense, when we refer to an inquiry as 'reliable', it means that you can be confident that nearly identical conclusions would be reached if it were to be repeated at another time, either by yourself or someone else. Your findings, or those of someone else, should be similar if you choose to repeat your observations on the same people on a different occasion, or you were to carry

out the inquiry again with a different sample of people drawn from the same population. In a narrower sense, reliability is particularly important when it comes to designing questionnaires and interview and observation schedules. For example, in order for a questionnaire to qualify as reliable, a person's answers to the questions should be the same if he or she is asked to complete it a second time. If their answers are not the same, it may mean that the questions are ambiguous and do not provide reliable information. Piloting is very necessary when designing things like questionnaires and structured interview schedules.

Observation schedules and the way you record observations also need to be reliable, that is they need to mean the same to others as they do to you. This is particularly important if you are going to ask someone to help you with your observations. You need to make sure that you negotiate with each other to arrive at mutually agreed definitions of the behaviours and situations you want to concentrate on. As Coolican points out:

> ... We know that each person's view of a situation is unique and that our perceptions can be biased by innumerable factors. An untrained observer might readily *evaluate* behaviour which the researcher wants reported as objectively as possible. Where the trained observer reports a hard blow, the novice might describe this as 'vicious'.
>
> (Coolican, 1990, p. 63)

Once again you can see how important it is to pilot instruments and methods.

VALIDITY

Although you may have taken great care to ensure that your methods are reliable, it is not always the case that they will give you true, or 'valid', information concerning the phenomenon you are interested in. For example, a questionnaire designed to obtain general information from staff about their views of the role of governors in the local management of schools might instead tap individual opinions about particular governors' ability to administer school resources. In this case you would not have a valid measure of the topic you are interested in. In an interview, the interviewee might try to please the interviewer by giving acceptable rather than honest answers. Again, the information you are obtaining does not provide a valid reflection of people's opinions on the topic you are interested in. Finally, observations are more likely to be valid reflections of people's behaviour when they are made in everyday contexts. For example, observing instances of children's aggression in the playground is more likely to give a valid measure of naturally occurring aggressive behaviour than observing an arranged boxing match where the aggression might be ritualistic rather than spontaneous.

You will find out more about bias, reliability and validity in the sections which follow this one. Also, the two books listed at the end of this section discuss these topics in greater detail.

1.7   RESEARCH PURPOSES

We are now going to look briefly at three different types of inquiry: exploratory, explanatory, and predictive. The difference between them lies in their purpose and in the way the initial research questions are formulated rather than in their inquiry methods. The main data-collection methods we describe in Sections 2–4 can be used for all three types of inquiry.

EXPLORATORY STUDIES

The purpose of exploratory studies is, as the name suggests, to explore or investigate little understood phenomena or behaviours and discover the important underlying patterns, themes, and factors which affect them. The information and insights resulting from exploratory studies often lead to the formulation of a more precise set of research questions and hypotheses.

An example is a study by John Cowgill, who was interested in equal opportunities. He observed that boys tend to dominate the girls in CDT, and also that girls underachieve in this area. He decided to focus on the different types of interactions that might be taking place between teachers and pupils in CDT and to compare these with interactions in home economics (HE) lessons. He wanted to *explore* the effects of gender on the interactions. His research questions were:

With special reference to gender in all observations and interactions: teacher–pupil, pupil–teacher, pupil–pupil:

> (a) What type of interactions are taking place?
>
> (b) How are these interactions dealt with in the different areas?
>
> (c) Are there any similarities between the two areas?

John's research strategy was to carry out a planned series of observations of the way pupils and teachers interacted in CDT and HE lessons. He acted as a non-participant observer, after discussing with his colleagues which lessons and pupil groups it would be appropriate to observe.

EXPLANATORY STUDIES

In an explanatory study, the researcher is interested in explaining the forces causing a particular phenomenon, and in identifying important events, beliefs, attitudes, and/or policies which might be shaping the phenomenon.

For instance, Christina Wojtak wanted to *explain* the relationship between the quality of children's writing, the criteria the children used to select books for reading, and the criteria they used to judge their own written work. She also wanted to assess changes in the quality of writing and in children's attitudes to their own writing, resulting from discussions about different ways of constructing stories. Christina's project involved analysis of children's writing, interviews with individual children, tape recordings of discussions, and observations of children writing.

In practice it can be difficult to distinguish between exploratory and explanatory studies. Much practitioner research involves an element of both.

PREDICTIVE STUDIES

Finally, we come to predictive studies which, as the name suggests, involves the planned investigation of the outcome of a particular prediction or set of predictions. For example, Margaret Khomo and Keith Farley had the idea that an active learning approach might be more effective than a didactic one in teaching a migration module to pupils in a comprehensive school. They *predicted* that pupils' appreciation and understanding of the relationship between patterns of migration and British culture would be enhanced by teaching methods which drew on pupils' personal experience and family histories of migration.

In order to see if there was any support for their prediction, Margaret and Keith decided to compare two classes' understanding of the concept of migration using questionnaires, both before and after they had worked through the module. Margaret taught one class using active learning methods; she taught the other class, the control class, using a more didactic approach. Margaret carried out observations in both classes during the lessons where they were working on the module. Keith also interviewed individual pupils.

Margaret and Keith's study has the feel of an experimental design, although the data they collected were mainly qualitative. They made a firm prediction that could be stated in the form of an hypothesis: 'encouraging children's active learning will be a more effective way of teaching the concept of migration than more traditional methods'. Their techniques were to compare an experimental or 'research' class with a control class, and to use questionnaires to compare changes

in children's understanding and learning. Their study was also partly exploratory: Keith and Margaret wanted to understand why active learning might be a better approach to teaching the module. Classroom observation and interviews with pupils were the research strategies they used to help them with this aspect.

These examples highlight a point that we made right at the beginning of this introduction: practitioner research can be carried out for a number of different purposes using a number of techniques. Very often several purposes and techniques are combined into a single study.

FURTHER READING

BELL, J. (1999) *Doing your Research Project,* Buckingham, Open University Press.

> This has become something of a 'bible' for first-time researchers in social science. It assists students in carrying out their first research projects successfully, without wasting lots of time in trial and error. It helps students to develop sound techniques and good practice which will serve them well in future research projects and assumes no prior knowledge of research methodology or experience of carrying out research.

PRACTITIONER AND ACTION RESEARCH

FREEMAN, D. (1998) *Doing Teacher-Research: from inquiry to understanding* (Teacher source), Boston (Mass.), Heinle and Heinle.

> This book examines the issue of teacher research from three perspectives: teachers' voices – authentic accounts of teachers' experiences; frameworks – comprehensive discussions of theoretical issues; and investigations – enquiry-based activities.

ROBSON, C. (1999) *Real World Research: a resource guide for social scientists and practitioner researchers*, Oxford, Blackwell.

> Practitioners and professionals working with people (e.g. in education, health and the social services) are increasingly required to be involved in studies where they are called upon to carry out some form of enquiry outside the laboratory. This text gives advice and support in carrying out such real world research. It is an invaluable guide to all aspects of practitioner research in education, psychology and the social sciences.

GENERAL EDUCATIONAL RESEARCH

COHEN, L., MANION, L., and MORRISON, K. (2000) *Research Methods in Education,* London, Routledge.

> This is the classic textbook on educational research methods. It has been updated to include current developments in research practice, action research, developments in ICT, questionnaire design, ethnographic research, conducting needs analysis, constructing and using tests, observational methods, reliability and validity, ethical issues and curriculum research.

2   GETTING INFORMATION FROM DOCUMENTS AND SCHOOL RESOURCES

2.1   INTRODUCTION

This section provides guidance on using written documents as evidence. 'Written documents' here means anything that is written down – however formal or informal.

This section covers the following topics:

- sub-section 2.2 deals with deciding what sort of documents to draw on and with problems of access;
- sub-section 2.3 looks at written documents other than classroom resources used with children (this may be anything related to your research interest, from government reports to a handwritten letter);
- sub-section 2.4 considers how you may draw on published facts and figures (national and local statistical information);
- sub-section 2.5 examines classroom resources used with children (books, posters, worksheets, etc.);
- sub-section 2.6 reviews the methods discussed in the section, considering their strengths and weaknesses.

The reason for separating classroom resources from 'non-classroom' documents is that, in practice, it is likely you will wish to ask different questions about them. Children's own written work, which is also a kind of document, is considered separately in Section 4, 'Seeing what people do'. This is because children's work is the outcome of activities they engage in – it seems sensible to consider the two things together.

Evidence from documents may complement that obtained from other sources. For instance, if you are interested in what happens in a meeting, you may be able to observe the meeting and/or interview one or two participants. But it may also be worth checking the minutes to see which items are officially recorded. If you are focusing on classroom practice, it may be useful to examine a written policy, or syllabus, or some of the resources used, as well as making observations of lessons.

The guidance provided here should help you choose an appropriate method, or methods, to collect evidence from documents.

2.2   DECIDING WHAT INFORMATION YOU NEED, AND WHAT SOURCES TO TURN TO

There is a variety of information you can glean from documents, but you will need to be selective, both in the range of documents you use and in the aspects of the documents you draw on for your research. Your selection of documents will depend, most obviously, on your research question(s), but other, more mundane, factors will have a bearing on what you are able to do. For instance, some documents may be less accessible than others, while some may be confidential or be restricted in their use.

I shall deal below with three factors that will affect your use of documents as evidence for your project. What information do you need? What types of question do you wish to ask of the documents? And what form of access will you be allowed?

WHAT INFORMATION DO YOU NEED?

There will be several possible documents you could draw on to provide evidence for your research. So the first point to consider is the type of document(s) you should select. If you are reviewing practice, or developing some aspect of policy in a department, do you want to look at existing policy documents, or classroom resources, or schemes of work, or all of these? Which will provide the most appropriate information for your research question(s)?

If you are faced with a large number of documents, you may need to construct an appropriate sample of these. For instance, if your interest is in classroom resources – say the selection of reading books available to children in a class – you probably will not wish to look at all of them. You could select a large sample of books and look at certain (limited) aspects of these. You could examine a small number of books in greater detail or even look at a single book (or worksheet, etc.) that was the focus of some work you were interested in. You will also need to decide how to construct your sample. Will you make a random sample of books, by, for instance, selecting every fifth book from the bookshelves? Or will you focus on books that are of interest for a particular reason, such as books that children select most frequently? Similar questions about sampling apply to documents other than classroom resources (see also sub-section 1.6).

Having selected your document(s), a further decision is which aspects of these to focus on. Are you interested in the content of documents (what is said and what isn't said), or in how information is conveyed, or in the format/presentation of the document (e.g. the layout of a worksheet), or in all of these? Will you focus on the text, or visual images, or both?

WHAT TYPES OF QUESTION WILL YOU ASK?

Having decided (more or less) what you're going to focus on, you need to decide what questions you're going to ask of the document(s). Do you have in mind very specific questions, or more open-ended questions? Example 2.1 shows what questions might be asked by a teacher with an interest in bilingual books. The example is based on a project carried out by a teacher working on an Open University INSET course.

Example 2.1   Questions about bilingual books

Carola Zeegen was a support teacher working with bilingual pupils in Harrow. She wanted to find out more about the bilingual books available in a local middle-school library. She wanted to know what children and parents thought about the books, and also how they used the books. She wanted to know what value teachers thought the books had, and how, if at all, they used them. And she wanted to look at the books themselves – what kinds of books were they? She aimed to make recommendations to the school about the purchase and use of such books.

Carola selected ten books, at random, from those available on the library shelves. She decided to look through the whole book in each case – text and illustrations. Given her interests, she could ask open-ended questions, such as what types of books were available in bilingual form, and in what respects, if any, they were distinctive (different from the range of English books).

As it happened, Carola had rather more specific questions in mind. She had taken these from published checklists designed to evaluate classroom resources. They included such questions as whether the book was fact or fiction, which age range it was appropriate for and whether it presented stereotyped images of ethnic minority groups.

The first, open-ended questions, suggest that the teacher should seek to gain a general impression of the books, and then begin to identify features that were of interest, given her overall aims. She would make notes on the books, and use these as the basis of a qualitative account, perhaps identifying what seemed to be key characteristics of the books.

The second, more specific, questions suggest that the teacher has already decided what features to look for. She can say whether a book possesses a certain characteristic or not. She can allocate books to different categories on the basis of each question. In some cases, allocating a book to one of a series of categories will be relatively unproblematical (e.g., saying whether the main character in a story is Asian, black or white). In other cases, such allocations are a matter of judgement, and others may disagree with your judgement (e.g., that an image is 'stereotyped'). This issue will be discussed below (see sub-section 2.5). Allocating books to categories provides quantitative information, that is, information that can be counted. In this case Carola Zeegen was able to say that the books were mainly fiction; that most were aimed at young children (below the age of 11 years); that most did not present stereotyped images of ethnic minority groups (though some showed gender stereotyping).

Throughout this section I shall make a similar distinction between open-ended notes on documents, which produce qualitative information for your report; and assigning documents, or aspects of documents, to certain categories, which may produce quantitative information. This does not mean, however, that the two methods are mutually exclusive. You may decide to make open-ended notes on documents as a way of identifying categories of information to look for. Or you may wish to supplement quantitative information about a set of documents with a qualitative account that provides a fuller description.

The distinction between qualitative and quantitative methods was discussed in Section 1, and will recur in other sections of this Handbook.

WHAT FORMS OF ACCESS WILL YOU BE ALLOWED?

You may wish to look at published documents. As long as these are available locally, there is no problem of access – the documents are in the public domain. Other documents may be more personal, or confidential. Use of such documents (perhaps notes from a meeting, lesson plans produced by another teacher, or a whole host of other documents) involves certain ethical considerations. You will need to negotiate access to such documents.

It is important to carry out such negotiations before beginning your research, otherwise your plans may be upset by someone unexpectedly refusing you permission to use something important to your work. You will need to identify whom to ask for permission (if this is not obvious). It is best to tell the person about your interests and then ascertain what form of access you can have to the relevant document(s) and what restrictions, if any, will be imposed on your use of them. The specific questions you need to ask will vary depending on the kind of documents in which you're interested – but they might include the following:

- Assuming you can have access, what use are you allowed to make of the information? For instance, will you be allowed to quote from documents?

- What degree of confidentiality, if any, is required? For example, do you need to use pseudonyms for any people or institutions mentioned?

- Who will be allowed to see your report? Can anyone see it, or are certain restrictions imposed?

- Does the person supplying the document wish to see your report before you allow others to see it?

Checking your account with someone else (perhaps the writer of a locally produced document) also allows you to check your analysis and may change the way you interpret the document (see also sub-section 1.4 on ethics).

While published documents don't present problems of access, you *may* need to think about copyright. Copyright is *not* an issue for work submitted for assessment. It *only* becomes an issue if:

- you wish to publish your report, or to make *multiple copies* (for distribution to colleagues),

- you *also* wish to quote *whole* documents (e.g. a poem) or *large parts* of documents. 'Large parts' of documents means:

  – a quotation of 400 words or more, or a quotation that constitutes more than 20 per cent of the whole document;

  – several quotations that together total 800 words or more, or that constitute more than 40 per cent of the whole document.

While it is highly unlikely you will wish to include lengthy quotations in the body of your report, copyright applies also to extracts in appendices if these are duplicated along with your report.

The selection of appropriate documents, deciding what questions to ask of documents, and problems of access need to be considered at an early stage in your work as they will affect the kind of information you collect and how you are able to use this.

2.3   USING DOCUMENTS OTHER THAN CLASSROOM RESOURCES

I mentioned above that a document, in the sense I'm using in this section, means virtually anything written down: local or national policy statements, government or LEA reports, examination board reports, newspaper articles, school brochures, schemes of work, minutes of meetings, letters, etc. Documents are a useful source of information about something you are not able to observe for yourself – perhaps events that occurred outside your own school, or before you began work on this project. In this case, they may provide a social or historical context for the work you wish to carry out. Documents may present a particular viewpoint – perhaps the 'official' view of a committee, or parents' views – that you wish to compare with information from another source. Documents may also be plans, or statements of intent (a lesson plan or a policy statement) that you can draw on alongside observations of practice.

Whatever kinds of documents you are interested in, it is important to bear in mind that they are not complete and impartial accounts of events. They may be deliberately designed to argue a certain case. Even when they seek to present a factual account they must necessarily be selective. You may be interested as much in what is not said as in what is included in the document.

MAKING NOTES ON DOCUMENTS

The most common way to use documents is simply to read them, noting down points of interest. Such notes will be relatively open-ended: your scrutiny of the documents will be guided by your research questions, but you won't have a pre-specified set of points to look out for. This sort of open-ended examination will provide qualitative information.

When making notes on documents it is important to distinguish between your notes on the *content* of documents, and any *comments* or *interpretations* that occur to you. A colleague said that she saw the value in this when watching someone else take notes at a seminar: he made two columns for his notes – a left-hand column for what the speaker said and a right-hand column for his own response:

> I now do this when making notes on documents, using two colours – one for noting the content and the other for my responses and interpretations. It's like having a dialogue with the document. It's

helped me become more critical in my reading and it also helps me relate what I'm reading to my research interests.

It's possible to draw on qualitative information in a variety of ways in your final report: you may wish to provide an account of relevant parts of the document in your own words, or to quote selected extracts, or to quote longer extracts, or the whole document if it is short (e.g., a letter) – perhaps subjecting this to a detailed commentary.

Example 2.2 comes from a published account of a study of English teaching. The researchers were interested in what constitutes the English curriculum in secondary schools, and how this varies between different schools. As well as carrying out classroom observation and interviewing pupils and teachers, the researchers examined the English syllabuses in use in several schools. In this extract, one of the researchers, Stephen Clarke, begins to characterize the different syllabuses.

Example 2.2   Using documents: the Downtown School syllabus

'Downtown School syllabus espouses a 'growth' model of language and learning and is concerned to show how different kinds of lessons in reading, writing and speaking can work together, each having a beneficial effect upon the others and leading to a broad improvement in language competence by pupils:

The development of language will arise out of exploration in reading, writing and speaking.

The actual content items to be learnt comprise a traditional list of writing skills such as spelling, paragraphing and punctuation, as well as speech skills, but these are not to be imposed on pupils in a way that would make them seem an alien or culturally strange set of requirements:

The aim should not be to alienate the child from the language he [*sic*] has grown up with, but to enlarge his repertoire so that he can meet new demands and situations and use standard forms when they are needed, a process which cannot be achieved overnight.'

(Clarke, 1984, pp. 154–5)

ASSIGNING INFORMATION FROM DOCUMENTS TO CATEGORIES

It is possible to examine the content of documents in a more structured way, looking out for certain categories of information. This method of examining documents is sometimes known as 'content analysis'. It provides quantitative information. Many studies of the media have involved content analysis. Researchers may, for instance, scan newspapers to see how often women and men are mentioned, and in what contexts. They may categorize the different contexts – reports of crime; sport; politics, etc. It is then possible to count the number of times women, and men, are represented in different contexts.

It is unlikely you will wish to subject educational documents to a quantitative analysis, but this method is mentioned here for the sake of completeness. Quantitative analyses have frequently been applied to classroom resources (see below).

2.4   DEALING WITH PUBLISHED FACTS AND FIGURES

You may be interested in statistical information collected either nationally or locally. Some researchers have used published statistics as their only or their main source of evidence. For example, it is possible to compare aspects of educational provision in different LEAs in England and Wales by drawing on statistics

published by the authorities or by the DES. (Section 6 of this Handbook lists several sources of national statistics.)

INTERPRETING STATISTICAL INFORMATION

Published statistics are often presented in the form of tables. These are not always easy to use. They may not contain quite the information you want, or they may contain too much information for your purposes. Examples 2.3 and 2.4 below show two tables that provide information on the number of pupils that stay on at school after the age of 16, but they provide slightly different information and they present the information in different ways. Both examples give separate figures for pupils of different ages (16-, 17- and 18-year-olds or 16-, 17-, 18- and 19-year-olds). Both allow comparisons to be made between girls and boys, and between staying-on rates in different years (but not the same set of years).

Example 2.3 covers the whole of Great Britain (England, Scotland and Wales but not Northern Ireland). The table presents staying-on rates in the context of 16- to 18-year-olds' 'educational and economic activities'. It allows comparisons to be made between the percentage of young people who stay on at school and the percentages who are engaged in other activities. But different types of school are grouped together. (It is not clear whether the table includes special schools.)

Example 2.4 covers England and Wales. It gives figures for 16-, 17-, 18- and 19-year-olds as a percentage of the relevant cohort of 15-year-olds one, two, three or four years earlier. It does not give any information about what young people who aren't at school are doing. But it does distinguish between maintained and non-maintained schools. It also explicitly excludes information from special schools.

If you wanted to know, say, the percentage of 16-year-olds who stay on at school nationally, the tables give similar figures: 31 per cent in 1988 in Example 2.3 and 30.1 per cent in 1988 in Example 2.4. (The slight discrepancy may be because of differences in the samples drawn on in each table.) But Example 2.3 masks large overall differences between maintained and non-maintained schools, and a small gender difference in maintained schools that is reversed in non-maintained schools. Both tables mask regional variation in staying-on rates (another DES table gives this information) and variation between pupils from different social groups – except in so far as maintained and non-maintained schools are an indicator of this.

When drawing on published statistics, therefore, you need to check carefully what information is given. Does this have any limitations in relation to your own research questions? Is there another table that presents more appropriate information (e.g., information from a more appropriate sample of people or institutions)? It is important to look at any commentary offered by those who have compiled the statistics. This will enable you to see the basis on which information has been collected – what has been included and what has not. If you are using local (e.g. school or local authority) statistics it may be possible to obtain further information on these from the relevant school/local authority department.

DRAWING ON PUBLISHED STATISTICS IN YOUR REPORT

You may wish to reproduce published statistics in your report, but if these are complex tables it is probably better to simplify them in some way, to highlight the information that is relevant to your own research. Alternatively, you may wish to quote just one or two relevant figures.

Example 2.5 shows how the table in Example 2.3 has been adapted and simplified by June Statham and Donald Mackinnon (1991), authors of a book on educational facts and figures designed for Open University students. Statham and Mackinnon present information from the original table as a histogram. They give combined figures for girls and boys to show overall staying-on rates. But they import information from another table to enable them to make a comparison between 1988 and 1980. They comment: 'During the 1980s, there has been a

Example 2.3   How many pupils stay on at school after the age of 16?

Table showing 'educational and economic activities of 16- to 18-year-olds'

POST-COMPULSORY PARTICIPATION RATES

Educational and economic activities of 16-18 year olds(1)

TABLE 21   Great Britain

	16			17			18			16-18 age range		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
	January 1988			January 1988			January 1988			January 1988		
Population (thousands)(2)	435	412	847	429	408	837	441	422	863	1305	1242	2547
Percentage of the age group												
In Full-time education												
School	30	32	31	19	19	19	3	2	2	17	18	17
Further education(3)	13	19	16	10	16	13	6	7	6	10	14	12
Higher education(3)	-	-	-	1	1	1	10	9	10	4	4	4
In Employment (outside YTS)(4)	20	20	20	34	39	36	66	71	68	40	44	42
On YTS(5)	29	21	25	25	17	21	1	1	1	18	13	16
Unemployed(6)	9	7	8	11	9	10	14	11	13	12	9	10
Of which in part-time day education (included in employed/unemployed)(7)	7	3	5	10	4	7	13	5	9	10	4	7

	16-18 age range											
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
	January 1976			January 1981			January 1986			January 1987		
Population (thousands)(2)	1231	1178	2409	1405	1343	2748	1349	1284	2633	1319	1257	2577
Percentage of the age group												
In Full-time education												
School	16	16	16	16	17	16	17	17	17	17	17	17
Further education(3)	7	9	8	7	11	9	8	13	11	8	13	11
Higher education(3)	3	3	3	3	3	3	4	3	3	4	3	4
In Employment (outside YTS)(4)	65	66	65	54	52	53	42	44	43	42	44	43
On YTS(5)	-	-	-	5	5	5	12	9	10	14	11	12
Unemployed(6)	9	7	8	14	12	13	17	13	15	15	12	14
Of which in part-time day education (included in employed/unemployed)(7)	22	5	14	19	5	13	12	5	8	11	4	8

(1) Age as at 31 August of the preceding year.
(2) Some 10 per cent of the age group attend evening only courses. These cannot be classified by education/employment status and are not shown separately in this table. See Table 22.
(3) Full-time and sandwich excluding private education outside school. Excludes those on YTS within colleges.
(4) Including in 1976 and 1981 the unregistered unemployed and those who were neither employed nor seeking work (eg because of domestic responsibilities) and for 1986-88 those who were seeking work but not claiming benefit and those who are neither employed nor seeking work.
(5) Including those on YOP in 1976 and 1981 and those in further education establishments attending YTS/YOP courses.
(6) Registered unemployed in 1976 and 1981 and claimant unemployed in 1986-88 (DES estimates).
(7) Public sector part-time day study only, excluding those attending YTS courses. In addition, DES estimate of employer provision outside Local Education Authority colleges or YTS is 4% of 16 year olds and 6% of 16-18 year olds in 1983-84 (source: Department of Employment: New Entrant Survey). The majority of part-time day students are in employment but some are receiving unemployment benefit under the "21 hour rule".

(Source: Government Statistical Service, 1990, Table 21)

Example 2.4   How many pupils stay on at school after the age of 16?

Table showing 'percentage of pupils remaining at school beyond the statutory leaving age by type of school'

TABLE A14/89

PERCENTAGE OF PUPILS REMAINING AT SCHOOL BEYOND THE STATUTORY LEAVING AGE(1)

(A) BY TYPE OF SCHOOL: TIME SERIES 1985 TO 1989(2)

	Maintained schools			Non-maintained schools			All schools		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Age at 31 August of preceding year									
Aged 16									
1985	25.2	28.3	26.7	75.0	66.6	71.2	28.8	30.7	29.7
1986	25.5	28.3	26.9	76.1	68.1	72.5	29.1	30.8	29.9
1987	25.0	27.5	26.3	75.6	69.8	72.9	28.8	30.3	29.5
1988	25.4	27.9	26.6	75.6	71.7	73.8	29.3	30.9	30.1
1989	27.8	31.2	29.5	78.6	73.6	76.3	31.9	34.2	33.0
Aged 17									
1985	16.0	17.2	16.6	59.8	50.6	55.6	19.1	19.3	19.2
1986	15.9	16.7	16.3	59.7	52.4	56.4	19.0	18.9	18.9
1987	15.9	16.7	16.3	60.7	54.9	58.1	19.1	19.1	19.1
1988	15.7	16.4	16.0	63.2	57.6	60.7	19.2	19.1	19.1
1989	16.7	17.9	17.3	64.7	59.6	62.3	20.4	20.7	20.6
Aged 18									
1985	2.3	1.9	2.1	7.4	5.7	6.7	2.6	2.1	2.4
1986	2.3	1.9	2.1	7.9	6.5	7.3	2.7	2.1	2.4
1987	2.2	1.7	1.9	7.9	6.9	7.4	2.6	2.1	2.3
1988	2.0	1.7	1.8	8.0	7.0	7.6	2.4	2.0	2.2
1989	2.0	1.9	2.0	8.5	7.7	8.1	2.5	2.2	2.4
Aged 19 and over									
1985	0.2	0.1	0.2	2.0	1.6	1.8	0.3	0.2	0.3
1986	0.2	0.1	0.2	1.8	1.6	1.7	0.3	0.2	0.3
1987	0.2	0.2	0.2	2.6	2.1	2.4	0.4	0.3	0.3
1988	0.2	0.2	0.2	2.5	2.3	2.4	0.3	0.3	0.3
1989	0.2	0.2	0.2	2.8	2.3	2.6	0.4	0.3	0.4

(1) Pupils aged 16,17,18,and 19 remaining at school in January of each year expressed as a
    percentage of the relevant cohort aged 15 one,two,three and four years earlier respectively
    – see paragraphs 19-21 of the explanatory notes.
(2) Excluding special schools.

(Source: DES, 1990, Table A14/89)

slight increase in the percentages of young people over 16 staying on at school.'
The comparison is clear and easy to understand when information is presented in
this form. Although Statham and Mackinnon have chosen to compare different
years, other comparisons might be made if suitable information is available – one
might compare the national picture with a particular region, for instance.

Statistical information may be presented in several other ways. Ways of presenting
numerical information you have collected yourself are discussed in Section 5 of
this Part. These could equally well be used for adapting information from
published sources.

Any table, or set of figures, is bound to be partial. You increase this partiality
when you further select and simplify published statistics for inclusion in a report.
June Statham and Donald Mackinnon issue some cautions on interpreting the
educational statistics they have compiled from several sources:

> First, and most obviously, [our] book is bound to contain errors. Some
> of these may come from our sources; others, alas, will be all our own
> work. We hope that these are few and trivial, but we are resigned to
> accepting that a book of this character will have some.

> Secondly, we have inevitably made choices about which facts to
> include, and which to leave out. Some of these have been slightly
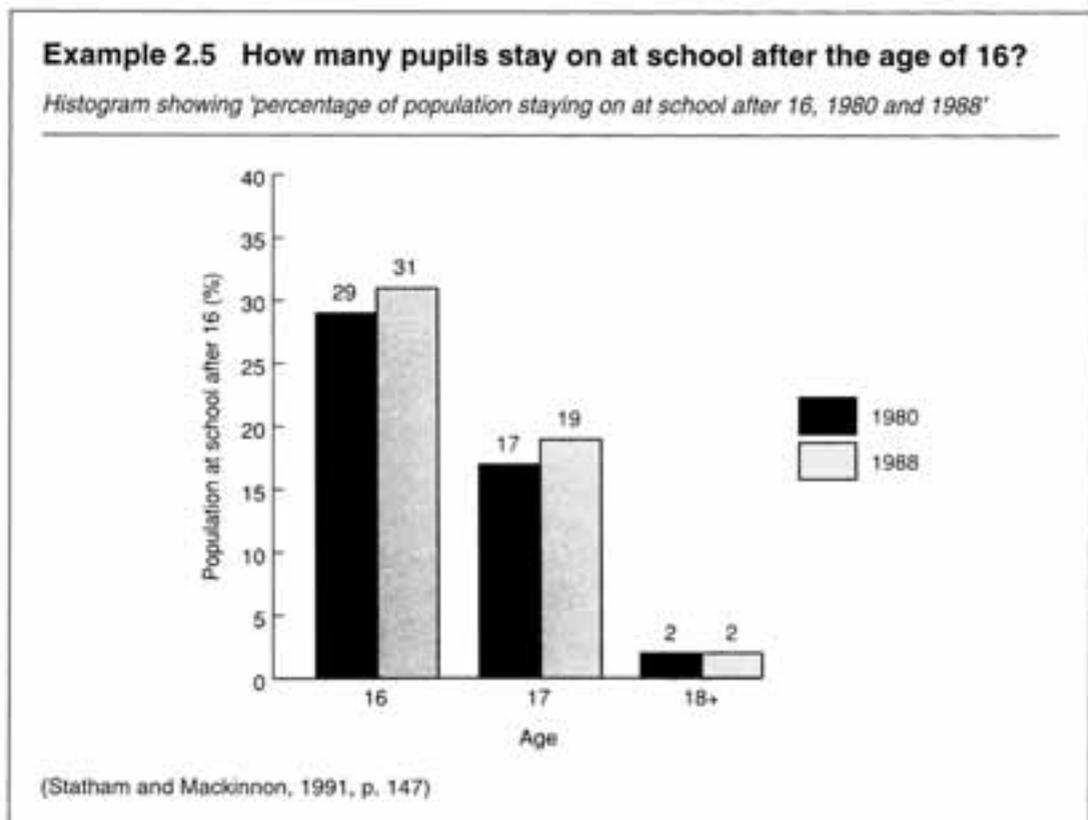> forced choices, because of gaps and limitations in the available data.

But much more often, we have had to decide what we considered most significant and telling from an embarrassment of information. This is where interpretation is unavoidable, and prejudice a very real danger. We cannot, of course, claim to be unprejudiced; people are not normally aware of their own prejudices. What we can and do say is that we have never knowingly excluded or modified any information in order to favour our own beliefs, values or political preferences.

Thirdly, even the categories in which data are presented depend on controversial judgements, and are open to unintended distortion. There are different ways of defining social class, for example, or of identifying ethnic groups, and these can lead to very different pictures of the class structure or ethnic composition of the country, and of the relationship between class or ethnicity and, say, educational attainment ... Choosing categories for presenting the facts is fraught with uncertainty and controversy.

Finally, we would like to warn against leaping too quickly to what may seem obvious interpretations of facts and their relationships, such as conclusions about cause and effect. Above all, we should be cautious about accepting plausible interpretations of one fact or set of facts in isolation, without at least checking that our interpretation fits in with other relevant information.

(Statham and Mackinnon, 1991, p. 2)

Not all those who use and compile statistics are so cautious or so candid about the limitations of facts and figures.

Example 2.5   How many pupils stay on at school after the age of 16?

Histogram showing 'percentage of population staying on at school after 16, 1980 and 1988'

(Statham and Mackinnon, 1991, p. 147)

2.5   USING CLASSROOM RESOURCES

If your interest is in the curriculum, or in how children learn, you may wish to include an examination of the range of resources available in the classroom. The methods mentioned here have most frequently been applied to children's books in the classroom, but similar methods may be applied to other classroom

resources (particularly print resources such as worksheets, posters, etc.) or resources in other areas (e.g., the school hall or library).

I mentioned at the beginning of this section that an examination of existing resources may be particularly relevant if you are interested in developing some aspect of the curriculum or school policy. Information about classroom resources may supplement information derived from other sources, such as observations of how children use the resources, or interviews to find out what children think of them. Children may themselves be involved in monitoring resources.

MAKING NOTES ON CLASSROOM RESOURCES

As with other documents, you may wish to scan classroom resources noting points of interest. This will be particularly appropriate if you wish to look at the teaching approach adopted, or at how certain issues are treated, without a specific set of categories to look for. You may have questions such as: How are people represented? How do textbooks deal with certain issues, such as environmental issues? What approach do they take to teaching a particular subject? How open-ended are tasks on worksheets? Do they give pupils scope to use their own initiative? These sorts of questions are probably best dealt with, at least initially, by open-ended scrutiny of the resources. This will provide qualitative information for your project.

You may wish to carry out a detailed analysis of a single book or resource item. Ciaran Tyndall was using the book *Comfort Herself* (Kaye, 1985) as a reader with a group of young secondary-school children. The book is about an 11-year-old girl with a white mother and a black Ghanaian father. Ciaran Tyndall became concerned about the imagery in the book, which she felt perpetuated cultural stereotypes. She made a careful examination of the text, as a prelude to preparing materials for her pupils to analyse it.

Among other things, Ciaran Tyndall's scrutiny revealed disparities between what she terms 'black imagery' and 'white imagery'. Example 2.6 shows how she documented this by selecting examples of images.

Example 2.6   Identifying 'black' and 'white' imagery in a children's story

Black imagery	*White imagery*
There were no streetlights and night was like a black blanket laid against the cottage windows.	Granny's hair was all fluffy and white round her head like a dandelion clock
Darkness creeping over the marsh like black water ... the window was a black square now.	Round white clouds like cherubs.
Palm tree tops which looked like great black spiders.	The cabin was bright white like vanilla ice-cream.
The black backdrop of an African night.	Achimota school – white buildings with graceful rounded doorways.
The citrus trees floated like black wreckage on a white sea.	As Comfort cleaned the cooking place, daubing white clay along it.
There was drumming now, a soft throbbing that was part of the Wanwangeri darkness.	The garri was made and stored away in a sack like white sand.

Comfort wrote in her diary pressing hard and dark.	Abla's smile flashed white.
The struts which supported it were riddled with black termite holes. burnt black shell	White clay was smeared round a deep cut on his leg ... his leg has been covered with a white bandage and he has been given pills white and gritty.
The anger in her grandmother's eyes, shining black like stones. Spare parts are Kalabule, black market.	Dry Leaf Fall' shone white on the bonnet of the lorry.

(Tyndall, 1988, p. 16)

As with other documents, notes on classroom resources should distinguish between what the resource says, or depicts, and how you interpret this. You will be able to draw on both sets of notes in your report. Ciaran Tyndall includes her tabulation of black and white imagery in an account of her study, alongside her interpretations of these images:

> The 'black' imagery is completely negative, used to convey feelings of fear or loneliness, ignorance or decay, whereas the 'white' imagery is always positive, carrying the sense of warmth, security, cleansing or healing.
>
> (Tyndall, 1988, p. 16)

ASSIGNING INFORMATION FROM CLASSROOM RESOURCES TO CATEGORIES

Classroom resources, or aspects of classroom resources, may, like other published documents, be allocated to a set of (pre-specified) categories. This provides quantitative information – you can count the number of books, or whatever, that fall into each category. Such an analysis may complement information you derive from a more open-ended examination.

As with other documents, it is possible to focus on any aspects of books or resources. Researchers may look at the printed text, or visual images, or both. They may be interested in the content of resources, in how information is presented, or in what tasks are required of readers. For instance, if you have examined worksheets in your class to see how far they encourage pupils to use their own initiative, you may decide that it is possible to allocate resources to one of three categories: 'contains only open-ended tasks'; 'contains a mixture of tightly-specified and open-ended tasks'; 'contains only tightly-specified tasks'. You may be able to combine the quantitative information you obtain from such an analysis with a qualitative account of the approach taken by some of the worksheets.

Books are often categorized using a more detailed checklist. Many published checklists have been produced to detect some form of imbalance in texts, such as gender, ethnic group or class imbalances. Example 2.7 shows a checklist devised by a group of teachers concerned about gender imbalances in modern languages textbooks.

Example 2.7 allows various numerical comparisons to be made between female and male characters. For instance, of 136 characters/examples in a textbook, 71 (52 per cent) may be male; 54 (40 per cent) female; and 11 (8 per cent) indeterminate. Giving results as percentages allows comparisons to be made between different books.

Many checklists rely on you making a judgement of some kind as was mentioned briefly above. This can be a problem as it may not be apparent why you are making a certain judgement, and someone else completing the same checklist may come to a different judgement. The checklist in Example 2.7 tries to solve this problem in two ways. First, it breaks down major categories into sub-categories that are more specific and more readily identifiable: 'subordination' is thus broken down into eight sub-categories. Secondly, it gives examples of those sub-categories thought to require further clarification: 'dependence' on another character is exemplified as 'Peter's secretary', 'John and his girlfriend', 'so and so's wife'. This makes it easier to check on the validity of the categories. Anyone else using the checklist, or a reader of a study based on this checklist, can see whether they think 'John and his girlfriend' actually is an example of women's dependence on men. It is also likely that these specific categories make the checklist relatively reliable so that two people using the checklist with the same book will reach a higher level of agreement on their results. You will still need to check on this, however, by piloting your checklist. (See also sub-section 1.6 on reliability and validity.)

It is best to pilot your checklist with a few books that represent the range you are interested in. Trying out your checklist in this way may reveal ambiguities in your categories or you may find the categories do not fit your data (so that you end up with a large set of items you cannot categorize, or that go into 'other'). You can check the reliability of categories by asking a colleague to help test your checklist, or by trying it out on the same book on two separate occasions. Finally, piloting will enable you to see if you are generating too much information. (This is a danger with the checklist in Example 2.7.) If you collect too much information it may be time-consuming to analyse.

2.6 REVIEWING METHODS

In this section I have discussed several ways in which you may draw on documents to provide evidence for your project. No documents provide perfect sources of evidence, and nor is any method of collecting evidence perfect. I shall summarize here the strengths and limitations of the methods I have referred to.

Example 2.7
Checklist to detect gender imbalances in modern languages textbooks

```
                        CHECKLIST 3
                        ==========

AN EXAMPLE OF SUBJECT-SPECIFIC CHECKLIST
========================================

                  MODERN LANGUAGES TEXT BOOKS
        (Devised by a group working at the Modern Languages Teachers' Centre)


Name of school ................................................

Filled in by ......................    Date completed ...............

Title of book/course  ...............
Chapter/unit/page reference ..........
Publisher ...........................
Publication date ...................
Name of reviewer ...................
```

I   SEXISM BY EXCLUSION OR OMISSION

                                                    F   M

(Are women or girls absent from texts or less represented
than men or boys?)

* Number of female characters or females mentioned in the texts
* Number of male characters or males mentioned in the text

ANONYMITY
* Number of nameless females
* Number of nameless males

II SEXISM BY SUBORDINATION (Who has the more dominant role?)
* Number of females initiating a conversation
* Number of males initiating a conversation

Taking 'Turn' in dialogues
* Number of contributions made by females
* Number of contributions made by males

* Number of women dependent on men, e.g. Peter's secretary,
  John and his girlfriend, so and so's wife etc ....
* Number of men dependent on women

* Number of women mentioned in their own right, e.g. not as
  so and so's wife
* Number of men mentioned in their own right

Jobs and occupations

* Number of women doing a paid job
* Number of men doing a paid job
* Number of women involved in housework or looking after
  children
* Number of men doing housework or looking after the children

* Number of women involved in intellectual activities
* Number of men involved in intellectual activities

* Number of women with a high status job or occupation
* Number of men with a high status job or occupation

III SEXISM BY DISTORTION

* Number of females presented as being emotional, weepy,
  irrational, irresponsible, etc.
* Number of males presented as being emotional, weepy, etc.

* Number of females who have a passive or negative role, e.g.
  doing as they are told, appearing helpless, being mentioned
  for their looks rather than for their actions
* Number of men who have a passive role

* Number of females involved in physical activities: leisure
  and work, e.g. doing sports, driving cars, decorating the
  house, etc.
  Number of males involved in physical activities

IV SEXISM BY DEGRADATION

* Number of women presented as sex objects
* Number of men presented as sex objects

* Number of females shown as talking too much, chatting and
  wasting time
* Number of males shown as talking too much, chatting and
  wasting time

* Number of females presented as stupid, mindless, spending
  money carelessly etc .....
* Number of males presented as stupid, mindless, spending
  money carelessly etc .....

ANY EXAMPLES where women are shown as inferior to men,
patronised by, e.g. 'Not bad for a girl', or 'sponging'
off men

(Myers, 1987, pp. 113–4)

DOCUMENTS AS A SOURCE OF EVIDENCE

Documents other than classroom resources

Evidence the document can provide	Limitations
Gives access to information you can't find more directly (e.g. by observation).	Will inevitably provide a partial account.
May provide a particular (authoritative?) viewpoint (e.g. an official statement).	May be biased.

Published facts and figures

Evidence the document can provide	Limitations
Provides numerical information – may provide a context for your own work.	Published tables are not always easy to use. They probably contain too much information that you need to select from and may not contain exactly the information you want.
Allows you to make comparisons between different contexts or different groups of people.	Information may be misleading. Need to check the basis of the statistics (how information was collected; from what sources; what is included and what is not) to ensure any comparison is valid.

Classroom resources

Evidence the document can provide	Limitations
Provides information on what is available for children to use – characteristics of resources.	Cannot tell you how resources are used, or how responded to by pupils – needs to be supplemented by other sources of evidence if this is of interest.

OPEN-ENDED SCRUTINY VERSUS CATEGORIZATION

In sub-sections 2.3 and 2.5, I distinguished between making open-ended notes on documents, which provides qualitative information; and categorizing documents, or aspects of documents, in some way, which normally provides quantitative information. Both types of method have advantages and limitations. I shall give their main features below.

Making open-ended notes

- Provides a general impression of the content, style, approach, etc. of the document.
- Allows you to take account of anything of interest that you spot.
- Particularly useful if you do not know what specific features to look out for, or do not want to be restricted to specific categories of information.
- You may draw on your notes to provide a summary of relevant parts of the document, or quote directly from the document to support points you wish to make.
- This sort of note-taking is selective, and two researchers with the same research questions may (legitimately) note down different things about a document.

- You need to check that you don't bias your account by, for instance, quoting something 'out of context' or omitting counter-evidence.

Assigning documents to categories

- Allows you to look out for certain specific features of the document that are relevant to your research question(s).
- Provides numerical information about a document (e.g. in a set of worksheets a certain proportion of tasks are 'open-ended' and a certain proportion 'tightly specified').
- Allows numerical comparison between different documents (e.g. one set of worksheets has a higher proportion of 'open-ended' tasks than another).
- You will miss anything of interest that doesn't form part of your category system.
- Some category systems can be applied reliably so that two researchers will produce a similar analysis of the same document; where personal judgement is involved, this tends to lessen the reliability of the category system.
- Assigning information to categories abstracts the information from its context. You need to take account of this in interpreting your results (e.g. you may detect a numerical imbalance between female and male characters, but interpreting this depends upon contextual factors).

Although I have contrasted these two ways of collecting information, I stressed earlier that the two methods may be used together to provide complementary information about a document.

FURTHER READING

ALTHEIDE, D.L (1996) *Qualitative Media Analysis (Qualitative Research Methods Paper) Volume 38*, Thousand Oaks (Calif.), Sage.

> This book is a short guide to media studies and includes advice on content and document analysis of newspapers, magazines, television programmes and other forms of media.

DENSCOMBE, M. (1998) *The Good Research Guide*, Buckingham, Open University Press.

> This book is written for undergraduate, postgraduate and professional students in education who need to undertake reearch projects. It offers a pragmatic approach particularly suitable for those interested in how to use research methods for a specific piece of small-scale research and for whom time is extremely limited. It has a chapter on documentary analysis and useful checklists.

DENZIN, N.K. and LINCOLN, Y.S. (eds.) (1998) *Strategies of Qualitative Inquiry,* Thousand Oaks (Calif.), Sage.

> This book covers case study, ethnography, grounded theory, participative inquiry and much more. Chapter 9 on 'Historical social science' offers an interesting account of using historical documentation in research.

HITCHCOCK, G. and HUGHES, D. (1989) *Research and the Teacher: a qualitative introduction to school-based research*, London, Routledge.

> This book provides useful guidance on various aspects of practitioner research. It includes a discussion of 'life history' and historical approaches to documentary sources.

ILEA (1985) *Everyone Counts: looking for bias and insensitivity in primary mathematics materials*, London, ILEA Learning Resources Branch.

As the title suggests, this book provides guidance on analysing mathematics texts, focusing on various forms of 'bias'. Many published checklists for analysing published material focus on bias of one form or another (gender, 'race' or class).

It is worth enquiring locally (contacting, perhaps, local authority equal opportunities advisers or subject advisers) for guidance that relates to your own concerns.

LEE, R. M. (2000) *unobtrusive Methods in Social Research,* Buckingham, Open University Press.

This book describes all kinds of unobtrusive ways of collecting data such as obtaining archival material and other forms of documentary evidence.

MYERS, K. (1992) *Genderwatch! Self-assessment schedules for use in schools,* London, SCDC Publications. Available from Genderwatch Publications, PO Box 423, Amersham, Bucks, HP8 4UJ.

Contains checklists and schedules for looking at all aspects of school and classroom life.

3   GETTING INFORMATION FROM PEOPLE

3.1   INTRODUCTION

This section examines how you can collect evidence for your project by obtaining information from people and recording it in some way. It is possible to obtain information from people in a number of ways. Sometimes it can be collected directly, as is the case with individual and group interviews; sometimes it can be collected indirectly by asking people to keep diaries or to complete questionnaires.

As you saw in Section 1, in order to provide evidence for your project, information needs to be collected and recorded systematically. Some of the methods suggested here may require little more than formalizing something which is already part of your teaching role or administrative routine. Others require more time – perhaps time to liaise with colleagues. You may also require additional resources, such as a tape recorder or a computer. The method(s) you select will depend on the nature of your research and what is practicable in your circumstances.

3.2   DECIDING WHAT INFORMATION YOU NEED AND HOW BEST TO OBTAIN IT

You may already have some of the information you require, derived from informal discussions with your colleagues and/or from documentary sources. In deciding what new information you require, there are four points to consider: *what type* of information is required; *whom* you will approach to obtain this information; *what to tell* your informants about your study; and *how* you are going to get the information.

This sub-section considers the first three points, later sub-sections discuss how to set about obtaining information from adults and children.

WHAT TYPE OF INFORMATION IS REQUIRED?

Section 1 identified three different types of inquiry: exploratory, explanatory, and predictive. In this section I shall show how specific research questions relate to the purpose of your study and the type of information you need to collect. Thinking about the relationship between the purpose of your study, the information you need to collect and your research questions will help with the design of your research activities. As was pointed out in Section 1, inquiries may have more than one purpose, and the distinction between exploratory, explanatory and predictive inquiries is not always clear cut. In the examples which follow, I shall pretend, for the sake of clarity, that it is clear cut.

Example 3.1   Staff and school development

The head of an inner-city primary school wanted to initiate discussions about formulating a school development plan (SDP). She thought that this was an important step because SDPs are a recognized means of managing change in schools faced with innovations in curriculum and assessment and with the introduction of local financial management of schools (LMS). The head began with a brainstorm by the staff. This raised staff development as a major concern. As a result of this consultation the head decided to draw up a self-completion questionnaire that was given to each member of the staff and which sought information about each individual's needs for professional development.

You can see from this example that the purpose of the head's inquiry is to produce a school development plan. When staff raised their professional development as a concern, the head came up with a specific question: 'What are our priorities for staff development in relation to the SDP?' In order to answer this question she needs to find some way of surveying the attitudes and opinions of all her staff. Individual interviews would be very time-consuming and would require a great deal of timetabling and organization. Her solution is to design a questionnaire which staff can complete in their own time. Questionnaires are discussed in sub-section 3.5.

Now let's look at an example of a predictive study. You will remember from Section 1 that predictive studies allow one to test hypotheses about causal relationships. Example 3.2 describes a predictive study carried out by a group of advisory teachers responsible for co-ordinating induction programmes for probationary teachers. They were recruited by their LEA to investigate why some school-based induction programmes were more successful than others.

Example 3.2   What makes school-based induction effective?

An induction scheme had been in operation within the local authority for five years. An earlier authority-wide survey of probationers had indicated that probationary teachers expressed a high measure of satisfaction with the provision made for them by teachers' centres but that the provision within schools was much less satisfactory and experience was much more variable. It was apparent that probationers judged some aspects of school-based induction as being more important than others. One important factor was whether or not the probationer obtained a regular release from teaching and another one was thought to be connected with the role of the 'teacher-tutor' responsible for facilitating induction within the school. Other factors were also identified, such as whether the probationers were on temporary or permanent contracts. The induction co-ordinators needed to find out more about the relative importance of these different factors. They decided to conduct in-depth interviews with a new sample of probationers from schools in their authority. They also decided to supplement the information they gained from these interviews with their own observations in these probationers' schools.

This example shows how information resulting from an initial exploratory study (the authority-wide survey), can lead to a more focused predictive inquiry. The induction co-ordinators were able to formulate a specific hypothesis: 'Successful school-based induction programmes depend first on probationary teachers being allowed a significant amount of release time, and secondly on them establishing a good relationship with their teacher tutor'. If this hypothesis held good for a new sample of probationers, then the induction co-ordinators would be able to make some specific recommendations to their LEA.

In order to test this hypothesis they needed to establish whether the majority of their new sample of probationers identified the same factors as the probationers taking part in the original survey. As a further test the co-ordinators decided to check the information they obtained from the interviews with information from their own observations. Unlike Example 3.1, where it was not feasible for one head to interview all staff, in this example time-consuming, in-depth interviews were appropriate, as there was a team of people to do them. Sub-section 3.4 gives advice on conducting interviews and designing interview schedules. You can find out more about observation in Section 4.

Finally, let's take a look at an example of an explanatory study (this example comes from an ILEA report, *Developing Evaluation in the LEA*).

Example 3.3   Why are pupils dissatisfied and disaffected?

'[Miss Ray, the teacher with responsibility for BTEC courses at Kenley Manor, was extremely concerned about the fourth-year pupils.] Throughout the year on the BTEC course, [these pupils] were dissatisfied and disaffected. At the suggestion of the evaluation consultant, the deputy head agreed to relieve Miss Ray for four afternoon sessions to investigate the causes of pupils' dissatisfaction and to suggest changes. Miss Ray was to visit a nearby school to look into their BTEC course where it was supposedly very popular. Miss Ray, who had often complained about 'directed time' and lack of management interest in the BTEC course, got so involved in the project that she gave a lot of her own time (about 45 minutes interviewing each pupil after school in addition to group discussions and meetings with staff) and produced a report with some recommendations to the senior management. The main grievance of the BTEC pupils was the low status of the course as perceived by other 4th years. The room allocated to BTEC was previously used by the special needs department and two of their teachers were probationers and according to one pupil had 'no control' over them.'

(ILEA Research and Statistics Branch, 1990, pp. 10–11)

Miss Ray's study sought an explanation of why the BTEC course was not popular so that she could make appropriate recommendations for change to the senior management team in her school. Miss Ray obviously needed to sample pupils' opinions on the course. Individual interviews with pupils in her own school provided her with this information. To gain a broader picture, however, she was advised to compare her school's course with a similar, but more successful, course at another school. She needed to find out how the other school's BTEC course was taught and group discussions with staff provided this information. Sub-section 3.4 gives advice on interviewing children and discusses how to manage and record group interviews.

When you have decided what sort of information to collect, you will need to think about the types of questions to ask your informants. In this section, I shall make a distinction between *open-ended questions,* which allow your informants to give you information that they feel is relevant, and *closed questions,* which impose a limitation on the responses your informants can make. This is a useful distinction, though it isn't always clear cut (people don't always respond as you intend them to). Open-ended questions will provide you with *qualitative*

information. Closed questions may provide information that you can *quantify* in some way (you can say how many people favour a certain option, or you can make a numerical comparison between different groups of informants).

Information that you collect in the form of diaries or logs kept by others, and much of the information from face-to-face interviews, is likely to be qualitative. It is possible to design questionnaires so that you quantify the information they provide if you wish. (See also 'The qualitative/quantitative distinction' in sub-section 1.5.)

WHO WILL PROVIDE THE INFORMATION?

As you can see from the three examples discussed above, deciding who can provide you with information is as important as deciding what information you need. You would have to make similar decisions in all three cases about who to approach, how many people to approach, when to approach them and so on.

You first need to identify who has the information that you require, then to obtain access. Setting up interviews, arranging group meetings, and getting permission to interview pupils or staff in another school can eat into valuable research time before you have even collected any information. You will need to consider this alongside the time which you have available for data collection (carrying out interviews, chasing up questionnaires and so on), which is also time-consuming. You may need to limit your study and not collect all the information that you would ideally like.

Consider carefully whether the compromises you consider will undermine either the validity or reliability of your research. In connection with the former you have to be assured that the information you obtain does address the questions you pose. How can you be sure of this? You will need to weigh up various approaches at this stage. One approach may be more time-consuming than another, but the information may be more valid. Do not compromise where the validity of your study is at risk.

As far as the reliability of the information is concerned, you need to be sure that your informants are representative of the population you are investigating. If you feel you might be compromising the reliability of the data by covering too wide a population, limit your research by focusing on one particular group. It is important that you have a sufficient number in your sample if you wish to make general claims that apply to a larger population. Make a note of any limitations in the size and nature of your sample at the stage of data collection and be sure to take these into account when you come to the analysis and writing your report. If, for example, you can only approach a limited number of people for information you will have to be very tentative about your findings.

When deciding whom to approach, refer back to your research question(s). In Example 3.1 above, you can see how important it would be to have the initial reactions of *all* members of the staff to the formation of a school development plan, and I discussed why questionnaires were a more appropriate means of data collection in this case.

In Example 3.2, there would need to be a sufficiently large number of probationers in the study to be able to make generalizations about the probationers' experience of induction with any degree of confidence. It would also be important for those selected to be representative of the total population of probationers. If the intention was to compare the experience of different groups of probationers, for example probationers in primary and secondary schools, it would be necessary to select a sample representative of both these sectors.

In Examples 3.1 and 3.2, identifying who to ask for information was straightforward. In Example 3.3, however, it was important for the teacher concerned to identify key informants both inside and outside her school. She was aided by her local evaluation consultant who was able to tell her about a nearby

school where the BTEC course was popular with pupils. Sometimes it is relatively easy to find out who is likely to be of help to you just by asking around. If you draw a blank with informal contacts, however, you may find that key people can be identified by looking through policy documents, records, and lists of the names of members of various committees. Section 6 gives advice on how to get access to documentary information, and also gives the names and addresses of a number of national educational organizations.

WHAT TO TELL PEOPLE

Collecting information from people raises ethical issues which need to be considered from the outset. Whether you can offer a guarantee of confidentiality about the information you are requesting will influence the presentation of your findings. Some points to consider are:

- *Should you tell people what your research is really about?* Bound up with this question is your desire to be honest about your research interest. At the same time, however, you do not want to influence or bias the information which people give you. Sometimes informants, particularly pupils in school, think there are 'right' answers to interview questions. One way of getting over this is to make a very general statement about the focus of your research before the interview and then to share your findings with your informants at a later stage.

- *Should you identify the sources of your information when you write up your research?* In Example 3.2, the study of probationary teachers, it was fairly straightforward to offer a guarantee of confidentiality to those who participated: large numbers of probationers were involved and anonymity could be ensured. Where practitioners are doing research within their own institution, as in Example 3.3, guaranteeing anonymity and confidentiality can be more of a problem. In this example, the names of the teacher and school have been changed, but you can imagine that in a local context it would be fairly easy to identify people and institutions. One way of dealing with this problem is to show your informants your record of what they have said, tell them the context in which you want to use it and seek their consent to that use. In discussing your interpretation of the data with them you will be able to check your understanding of the situation with theirs. Any comments that they make may also furnish you with additional information.

Deciding what information you need, who to ask and what degree of confidentiality you can offer informants will affect how you plan your research. Try to make some *preliminary* decisions on these points before reading the sub-sections that follow.

3.3   KEEPING DIARIES

Section 1 discussed how practitioner-researchers can use research diaries to record their own observations and reflections. It is also possible to get other people to keep diaries or logs over a set period of time and to use these written accounts as a source of data. This method relies very heavily on the co-operation of the informants. Its attraction as a method of data collection is that it can provide quite detailed information about situations which you may not have easy access to, such as someone else's classroom. Burgess gives some useful guidance as to how diaries in particular might be used as research instruments:

> ... Researchers might ... ask informants to keep diaries about what they do on particular days and in particular lessons. Teachers and pupils could be asked to record the activities in which they engage and the people with whom they interact. In short, what they do (and do not do) in particular social situations. In these circumstances, subjects of the research become more than observers and informants: they are co-researchers as they keep chronological records of their activities.

> The diarists (whether they are teachers or pupils) will need to be given a series of instructions to write a diary. These might take the form of notes and suggestions for keeping a continuous record that answers the questions: When? Where? What? Who? Such questions help to focus down the observations that can be recorded. Meanwhile, a diary may be sub-divided into chronological periods within the day so that records may be kept for the morning, the afternoon and the evening. Further sub-divisions can be made in respect of diaries directed towards activities that occur within the school and classroom. Here, the day may be sub-divided into the divisions of the formal timetable with morning, afternoon and lunch breaks. Indeed within traditional thirty-five or forty-minute lessons further sub-divisions can be made in respect of the activities that occur within particular time zones.
>
> (Burgess, 1984, pp. 202–203)

The form the diary takes (whether it is highly structured, partially structured, or totally unstructured) and what other instructions are given to the informant depends on what is appropriate in relation to your research question(s).

Often, asking people to keep a log or record of their activities can be just as useful to you, and not as time-consuming for them, as asking for a diary. Logs can provide substantial amounts of information. They tend to be organized chronologically, and can detail the course and number of events over brief periods of time (a day or a week), or they can provide less detailed records over longer time intervals (a term or even a whole year). Examples 3.4 and 3.5 illustrate some possible uses for diaries and logs.

Example 3.5 (drawn from Enright, 1981, pp. 37–51) shows how a diary can be used to explore certain phenomena in detail. It was not desirable in this instance to be prescriptive about what should be recorded or to impose any structure on the diary. This diary was kept by an individual teacher for his own use but the observations were shared with another teacher who also taught the class.

Example 3.4   Using a staff log to support a home–school liaison project

A junior school (with 130 children in six classes) had obtained an INSET grant of £1,000 for a one-year project entitled 'home–school liaison' within the school development plan. There was a history of lack of liaison with parents and the teaching staff were aware that this needed to be rectified. The head hoped that the liaison proposed would bring about changes in other areas of the school. The school had a stable teaching staff but there had been many changes at management level. There was some discontent, discouragement and disunity among the teaching staff.

Staff kept a log for one year in which they recorded initiatives designed to involve parents in school life (shown in Figure 2). Positive and negative reactions were also recorded and discussed. The log provided the staff with a cumulative record which helped the reviewing, planning and formative evaluation of the project.

Example 3.5   Keeping a diary to share with a colleague

The teacher kept a diary, written up in considerable detail every evening, over a seven-week period at the beginning of the summer term. He repeated the exercise the following year, for the same period with the same class. He shared the information with another teacher who taught the same class and who added her own comments.

The detailed information recorded in the diaries enabled the teachers to explore questions and illuminated key issues which enabled some conclusions to be reached. For example, some insight was gained as to how good discussion among children can be effected.

```
2 May                  appointment of teacher with special
                       responsibilities (incentive A) for SDP.  She will
                       undertake 3 hours home visiting weekly and
                       co-ordinate all the work.

4 May                  social evening:          parents, teacher,
                                                governors and friends.
                       Discussion (informal): development planned.
                                                shared reading.
                                                friends association
                                                (including community).

June - July            6 Wednesday afternoons.
                       Topic:  Olympic games.
                       children split across ages into 8 groups with a
                       teacher.
                       parents invited to join us each week.

Activities offered:    fresco production, computer skills, flags and
                       design, sports and athletics, gymnastic dance,
                       science themes and construction skills.
                       history of Olympic games and sportswear design.
                       sports equipment and rules (practical and art).

19 July                Consultant Evaluator met full staff for initial
                       review of progress with SDP.
                       SDP as part of full school learning.
                       priority to set up a new room for parents.
                       positive spin-off of shared open afternoons.
                       Children had enjoyed these.
                       Discussion about the importance of strategies to
                       bring parents into school - to develop a coherent
                       and common approach to the children's learning.

October - November     6 open afternoons with cross-school groupings and
                       parents invited.  Skills:
                                                wood work.
                                                computer skills.
                                                puppet making.
                                                patch-work.
                                                cookery.
                                                art.
                                                model construction.

Autumn term: Development of shared-reading scheme.  Work on class
reading corners.  Meetings with parents.  Home visiting continued
throughout the term.

13 October:            Consultant Evaluator met head teacher and deputy
                       head.
                       Objective discussion on events so far.
                       Problem - of involving parents.
                              slow pace of change.
                              facilitating staff
                              reflections.

26 January             Consultant Evaluator met head teacher and deputy
                       head.
                       Thoughts about National Curriculum and overall
                       long term planning across curriculum areas.
                       what has been achieved/learned?
                       where do we focus next?
                       has the quality of education been improved for the
                       children?
                       has the SDP contributed to needs of
                       staff/school/wider community.
```

Figure 2   Part of the school's log.

In both of these examples the log and diary were kept over a considerable period of time, and yielded a lot of valuable information. Diaries and logs do not have to be kept for long periods in order to be useful, however. Asking people to keep a record over a few days or a couple of weeks can be just as revealing. Also, it may already be the practice in your school for teachers to keep *informal* day-to-day records of children's progress or what happens in their classroom. Gaining access to these accounts and just looking at a limited sample over a week or so can provide you with a great deal of information. *Formal* written records, such as developmental guides or observations made of children's behaviour, are highly confidential, and you will probably need to seek formal permission in order to use them as a source of evidence.

Older children may also be asked to keep diaries. In Example 3.3, Miss Ray could have asked a selected number of her BTEC pupils to keep diaries of what happened during their lesson times as an alternative to interviewing them. As with all practitioner research, it is important to respect people's rights to anonymity and confidentiality when asking them to share their diaries and logs with you. This is just as important a principle when dealing with children as when dealing with adults.

3.4   FACE-TO-FACE INTERVIEWING

Interviewing is one of the most popular methods of obtaining information from people, and researchers frequently have to weigh up the advantages and disadvantages of using interviews as opposed to questionnaires. In general, the attraction of the interview is that it is a two-way process which allows you to interact with the informant(s), thus facilitating a more probing investigation than could be undertaken with a questionnaire. The use of individual interviews, however, is very time-consuming.

I set out below some general advice on the use of interviews, whether individual or group. The approach you adopt will depend on the nature of your research questions and the time and facilities that you have available.

INDIVIDUAL INTERVIEWS

When you interview someone you are establishing a relationship with them, however briefly. Interviews are not simply a means of extracting 'pure' information from someone, or eliciting their 'real' beliefs and attitudes. What your informant tells you will depend upon their perceptions of you and of your inquiry, upon how they interpret your questions, and upon how they wish to present themselves. This is not to suggest that your informant is deceitful, but that they will provide you with the version of the information that they think is appropriate.

With this qualification, it is possible to provide some practical guidance on planning and conducting interviews.

Designing the interview schedule

1   First, set out the information you require. Depending on your research question, this may be a very detailed list or it may simply be some broad areas which you expect to cover in the interview (an *aide-mémoire*).

2   Place the information or areas in some logical sequence. Begin with a non-threatening question which will help to put the interviewee at ease. Leave the more sensitive questions to the end.

3   Decide on a preamble which will tell your informant what the research is about, and say how you anticipate using the information. If you are able to do so, give a guarantee about confidentiality. Whether you can do this or not you should in any case offer the interviewee the opportunity to see either your transcript (if you are using a tape recorder) or that part of your report which uses the information they have provided. At the end of the interview ask the interviewee whether there is anything they would

like to add to what they have said. Also, ask whether there is anything further that they would like to ask you about the study, thank them for their co-operation, and tell them when you will be in touch again to let them know the outcome.

4 Consider the phrasing of the questions. Do not use 'leading' questions. Use language which is easily understood by the informant(s). Do not use multiple questions. Only address one question at a time.

For example, a leading question might be: 'How often do you punish your pupils for late attendance?' A more appropriate non-leading version of this question would be, 'How do you deal with problems of late attendance in your classroom?' An example of a multiple question would be, 'Does your child do any writing at home, and if so what do you do when she or he asks you how to spell a word?' This question would be much better dealt with in two parts, 'Does your child do any writing at home?' and 'What do you do when your child asks you how to spell a word?'

5 Decide whether to use open-ended or closed questions or a combination of the two. Closed questions limit the range and type of answer that people can give. Often people are asked to choose one of a set of pre-determined options as an answer to the question. For example, a survey of how English primary school teachers plan their work might include the following question:

'When planning your work for the term do you:

(a) first choose which national curriculum statements of attainment you wish to cover and then plan your work round them?

(b) plan your work first and then fit the statements of attainment to your chosen activities or topic?

Neither of these?'

Because closed questions limit the range of possible answers, analysing the information you collect is much easier than when people have given you a wide variety of answers to each question. This can be important if you have to interview a large number of people. The other side of the coin is, of course, that the alternatives you provide may not contain answers which reflect your interviewee's attitudes, opinions and practice. Your interviewee may choose the option which most nearly matches their viewpoint, or they may choose an option like (c) above. In either case, the validity of your interview data is at risk, because you are failing to get some information people would provide if they had the opportunity.

An open-ended version of the question above might be phrased:

'When planning your work for each term, how do you make provision for covering the appropriate national curriculum statements of attainment?'

Open-ended questions have several advantages. People are free to respond as they wish, and to give as much detail as they feel is appropriate. Where their answers are not clear the interviewer can ask for clarification; and more detailed and accurate answers should build up a more insightful and valid picture of the topic. Open-ended interviews are, however, likely to take longer than those based on a series of closed questions. You will need to tape-record the interview (if possible) or take detailed rough notes, and transcribe the tapes or write up your notes afterwards. You will obtain large amounts of data which you may later find difficult to categorize and analyse.

You may wish to use open-ended questions, followed by a series of prompts if necessary, as well as some more closed questions.

6 Once you have decided on your questions you will find it helpful if you can consult other people about the wording of the questions. Their

comments might point out ambiguities and difficulties with phrasing which you have not spotted yourself. It is always wise to conduct a pilot and revise the schedule before you start interviewing for real.

7   If you are working collaboratively, each interviewer needs to conduct a pilot run. You will need to compare notes to see that you both interpret the questions in the same way.

8   Finally, you must consider how you will process and analyse the data.

Setting up the interview

1   First, you must obtain permission to interview pupils, staff, or other personnel.

2   Next you need to think how to approach the people concerned to arrange the interviews. Will you use a letter, the phone or approach them in person?

3   Where will the interview take place? How long will it take? You need to negotiate these arrangements with those concerned.

4   Will you use a tape recorder? If so, you should seek the permission of the interviewee to use it. Will you need an electric socket or rely on batteries? Is the recording likely to be affected by extraneous noise? All these things need to be planned in advance.

Conducting the interview

1   Before you actually carry out an interview check whether the time you have arranged is still convenient. If it is not, and this can frequently be the case, you will have to adjust your schedule.

2   As an interviewer, you need to be able to manage the interaction and also to respond to the interests of the interviewee. It can be useful to indicate to the interviewee at the start of the interview the broad areas that you wish to cover and, if the need arises, glance down to indicate that you want to move on to another area. Also, allow for silences – don't rush the interview. It is important to establish a good relationship with the person you are interviewing.

3   If you are using a tape recorder, check from time to time that it is recording.

After the interview

1   Reflect on how the interview went. Did you establish good rapport with the interviewee? Did you feel that the information you obtained was affected by your relationship with the interviewee? In what way? (Consider, for example, your sex, age, status and ethnicity in relation to those of the interviewee.)

2   Make a note of any problems experienced, such as frequent interruptions.

3   Record any observations which you felt were significant in relation to the general ambience of the interview.

4   Make a note of any information which was imparted after the interview was formally completed. Decide how you will treat this information.

5   Write to thank the interviewees for their help with your study and promise feedback as appropriate.

INTERVIEWING CHILDREN

Interviewing children may be a problem if you are also their teacher. Children will be affected by the way they normally relate to you. It can be difficult for them (and you) to step back from this and adopt a different role. If children

regard you as an authority figure, it will be hard to adopt a more egalitarian relationship in an interview. They may also be unwilling to talk about certain subjects. It is particularly important to try out interviews with children, maybe comparing different contexts, or individual and group interviews to see which works best.

Below I have set out a few points of guidance on interviewing children.

1 Open-ended questions often work best. Decide what questions you would like to ask in advance, but don't stick too rigidly to them once the child really gets going. Making the child feel that you are listening and responding to his or her answers is more important than sticking rigidly to your schedule.

2 Children are very observant and very honest. It is important that they feel at ease, so that they can talk freely. Deciding where to conduct the interview, therefore, is very important. Very young children may find it easier to talk to you in the classroom where you can relate the discussion to concrete objects, work on the wall, etc. Older children may be easier to interview on their own away from the gaze of their peers.

3 Decide whether to interview the child alone or in a pair. Children are sometimes franker alone, but may feel more relaxed with a friend.

4 You may need to ask someone to interview the child on your behalf (or arrange for someone to look after the class while you do the interviewing).

5 Start off by telling the child why you want to interview her or him. Here it is very important that you explain:

   (a)   that the interview is not a hidden test of some kind;

   (b)   that you are genuinely interested in what he or she has to say and want to learn from it (so often in the classroom teachers ask questions which are not for this purpose – children don't expect it);

   (c)   that what he or she says will be treated in confidence and not discussed with anyone else without permission.

6 During the interview either make notes or tape record (if the child is in agreement).

7 If you make notes, the best technique is to scribble as much as possible verbatim, using private shorthand, continuing to be a good listener meanwhile (difficult but not impossible). Then within 24 hours read through your notes and fill them out. Remember, if you are not a good listener the child will stop talking!

8 After the interview, show the child your notes and ask if it will be all right for you to discuss what has been said with other people. Be ready to accept the answer 'no' to part of the discussion (though this is rare in practice).

GROUP INTERVIEWS

The guidance given above on individual interviews and interviewing children is also relevant to group interviews. A group interview may be used in preference to individual interviews in some situations. Children may prefer to be interviewed in groups. Or there may be a naturally occurring group (e.g., members of a working group) that you wish to interview together. Group interviews may be useful at the beginning of your research, enabling you to test some ideas or gauge reactions to new developments or proposals. Initial group interviews of this nature can give you broad coverage and generate a lot of information and, perhaps, new ideas. Often in this situation the answers from one participant trigger off responses from another, giving you a range of ideas and suggestions. This can be more productive than interviewing individuals before you have sufficient knowledge of

the area of investigation. Much depends on the time you have available for your research. Using a group whose knowledge or expertise you can tap can be a fruitful and time-saving means of obtaining information. There are, however, some points to bear in mind when running group interviews.

The group dynamic

A group is different from the sum of its parts. The composition of the group is important. Do people know one another? Will some people be in awe of others' opinions? May some fear a hidden agenda?

Groups, it is said, typically 'form, storm, norm, perform and mourn' (Mulford *et al.*, 1980). You need to take this into account for group interviews to be successful. For the group to 'form' there needs to be some way of including everyone, making them feel that they are members of the group. Each person needs to say something within the first five minutes, if only to introduce themselves. Typically there follows a period of 'storming', when the group is working out the issues of power and control and when personalities emerge. A 'brainstorm' of issues could be quite fruitful at this stage. 'Norming' happens as people settle down and recognize that it is permissible to hold different opinions. The group is then ready to 'perform' and the questions on your schedule can be addressed. There should be a feeling of constructive activity. As the interview nears its end, the stage of 'mourning' is reached. This is a vital point. It is a process that has to be managed by the person convening the interview to indicate to the group that it is almost complete. At this point you could ask whether there is anything else that anyone wants to say, or whether there is anything else that they want to ask about your study or the interview itself.

A good group is one that reaches the 'performing' stage. The most basic ingredient for this to happen is for there to be an atmosphere of trust within the group. Recognizing the natural stages in the formation of a group, however, will help you facilitate the formation of a good group. It will also help you to sort out the information obtained at different stages of the interview. Not all information will be useful to you. The comments and responses people make during the 'storming' and 'performing' stages are likely to be more valuable than those occurring during the 'forming' or 'mourning' stages.

The composition of the group

A group should number no more than eight people. You need to consider whom you invite to participate. You may wish to ask people who are likely to have different points of view, as such interviews are useful for exploring issues.

Organizational factors

The group interview needs to be arranged so that it will not be disturbed. Contextual factors, such as where you hold the interview and the seating arrangements are also very important. You need to consider whether you want to create an informal friendly atmosphere, or a more formal, 'round-table', 'business-like' atmosphere. Who should sit next to each other? Where are you going to sit? And so on.

Recording information

Consider how you will record the discussion. It is much harder to transcribe a tape of a group interview than of an individual interview, but, if the group agrees, it is still worth the effort to record it. If you can arrange it, you might consider asking another person to take notes and look after the tape recorder for you, leaving you free to concentrate on establishing a rapport with the group.

It is worth practising recording and transcribing before recording your actual interview. You may find it hard to tell what is happening, or who is speaking, especially if more than one person speaks at a time. Asking people to

identifythemselves before they speak can make transcribing easier. (See also sub-section 4.7 on transcribing from audio- and video-recordings.)

Managing the discussion

In a group interview, it can be difficult to ensure that you cover what you had planned and still allow for some flexibility. You will need good memory and concentration so that you can remember what has been covered and link in new topics and issues. Try also to involve all members of the group. If you feel that the discussion is moving too far away from your brief, use a deferring statement – say you have a number of questions on this subject that you will come to later, but that you would like to explore A and B now. Avoid getting locked into a discussion with one person as this isolates the others. You have to balance breadth with depth. Watch for non-verbal cues from members of the group who are showing signs of frustration or boredom.

Many of the observations discussed above draw on the experience and expertise developed by Social and Community Planning Research (see Robson, 1986).

Now let's take a look at some practical examples of the use of interviews. In Example 3.6, from Kingsmead Primary School in London, parents, teachers and children were interviewed individually following a series of conferences which had been set up in the school. The ILEA Primary Language Record handbook (ILEA/CLPE, 1988) recommends holding language and literacy conferences to give children the chance to talk to their teachers about their experiences, achievements, likes and dislikes as language users. The conferences help teachers make formative assessments of children's progress, find out about their concerns, suggest new learning strategies, and so on. At Kingsmead it had been decided to try including children's parents in these conferences. Here members of staff wanted to evaluate how useful the conferences had been to all concerned.

As you can see, Example 3.6 (overleaf) uses fairly informal open-ended interview techniques, but the interview schedules were given a standard format because it was important that each child, parent and teacher was asked the same set of questions. As you can imagine, this example involved considerable numbers of people and took quite some time to carry out. An alternative to interviewing the parents and staff might have been to give them written questionnaires, and it is to these that we turn next.

3.5   USING QUESTIONNAIRES

Employing written questionnaires which people can take away and fill out is generally seen as fairly economical with time. However, this method does assume, first, that the respondents understand the questions in the terms intended and that they understand what information is required; and, secondly, that they have this information and are willing to divulge it. If the first condition is not met then the data will not be valid and worth processing. If the second condition is not met, and your questionnaire has a low response, the information you obtain may come from an unrepresentative sample of the population you want to survey, and will be unreliable. In either case, the value of any findings is undermined. It is a fairly skilled task to design a questionnaire relevant to your research question(s), and yet appropriate for the people to whom it will be administered.

Quite often you will need to weigh up the relative advantages and disadvantages of using questionnaires as opposed to interviews. The use of a questionnaire administered by the researcher '*in situ*' discussed below has some of the features of an interview. This method allows you to interact with the respondents and explain what is expected of them and, if necessary, clarify the questions. The response rate for *in situ* questionnaires is much higher than for postal questionnaires.

Example 3.6
Using interviews to evaluate language and literacy conferences

<u>Questions asked of parents</u>

1.   What did you think of the Conference?

2.   Successful because_____
     Unsuccessful because_____

3.   Did you have any fears about it?

4.   Did it change your understanding of what happens in
     school?

5.   After seeing the teacher, has your child been
     affected in any way?

6.   Would you repeat this exercise or change it?

<u>Questions asked of children</u>

1.   What happened when your mum/dad got home after the
     Conference?

2.   Will this meeting between your parent and your
     teacher help you in school?

3.   After the meeting, did it change you in how you
     should behave in school?

4.   Do you think it's a good idea to have meetings with
     your parents and teachers about you?

5.   Do you want another one?

<u>Questions asked of teachers</u>

1.   Was the P.T.C. Conference useful?

2.   Would you like to repeat the exercise again?

3.   Would you change the format?

4.   Has it taught you anything about the parents?

5.   Has it taught you anything about the children?

6.   Will the information affect and influence your
     teaching?

Below I shall consider some general points about the use of questionnaires, whether administered individually or *in situ* with a group. What form your questionnaire takes and how you administer it will depend upon your research question(s) and the people you want information from. I shall give some examples of different types of questionnaire towards the end of this sub-section.

QUESTIONNAIRES ADMINISTERED INDIVIDUALLY

Some preliminary points to consider

The following considerations will influence what you ask and the way you ask it.

- How will you administer the questionnaire? Is it to be posted, or, perhaps, handed to colleagues? If it is for people you know this will affect the style of the questionnaire and the approach you adopt.

- How do you persuade people to respond? Who will own the information – you, your department, your school? How will it be used? Of what value could it be to the respondents? Don't ask for more information than you need, and don't expect too much of the respondents or you may not gain their co-operation.

- Will the questionnaire be anonymous? Is this likely to affect the way in which people respond? How will responses from staff be affected if they know that the head of department, head or principal might see these? Even where questionnaires are anonymous, it may still be possible to identify individuals by their answers which may indicate their role within the institution or local authority. In this case, how will you treat this data? As always you need to be scrupulous about preserving people's anonymity and/or confidences.

- When is the questionnaire to be administered? For example, suppose you want to evaluate an in-service course, at what point do you use a questionnaire? Before the course, during the course, or on completion? How will you deal with those people who drop out? You could consider using a telephone follow-up with a small sample of those who do not complete the course to find out why.

- How are you going to process the information and analyse it? Consider the facilities, the time and skills available. If you are going to collect quantitative data you may need to use some sort of statistical analysis. If this is the case it may be necessary to get advice before you collect the data. If you are going to collect qualitative information, how will you process it? Section 5 of this Handbook gives advice on these issues.

- It is useful to find out whether any studies have been undertaken previously in your area of interest. What did they find? Could you use or adapt any questionnaires employed before? It is most unlikely that you will be able to use exactly the same questionnaire, but it is common practice to use other researchers' questions where these are relevant to your study as this allows you to compare your findings with those of other people.

- Have you made arrangements to pilot your questionnaire? This will help you spot any likely problems in administering the questionnaire, and any difficulties or ambiguities in question wording.

Devising questions

- As a first step you should list the information you require: sort this under broad headings, then identify specific items.

- When you start formulating questions you must take care over choice of language: don't make this too complex, or too simple for your respondents. You should avoid obscure terminology, acronyms and abbreviations. Don't use vague or over-general terms that are likely to be interpreted differently by different people, e.g. 'democracy', an 'effective' course. Sometimes it is useful to break down the idea you are trying to get at into items that typify what you mean. For example, if you were interested in how democratic decision-making processes were in a school, you might identify several specific questions that you felt would provide evidence of this, such as:

(a) Are parents involved in any of the school's key decision-making processes?
(If 'yes', which one(s)?)

(b) Are children involved in any of the school's key decision-making processes?
(If 'yes', which one(s)?)

(c) How are your governors elected?

(d) At meetings does everyone have a chance to have their say?

- Remember that it is worth trying out individual questions on other people to get the wording right, as well as trying out the whole questionnaire.

- Are there equal opportunities implications to consider? Are there, for example, standard ways in your local authority of asking people for information about ethnicity and gender?

- Will the replies tell you what you want to know? How do you know? If they do not, then this will affect the validity of your data and undermine the whole research exercise. Check for bias and leading questions.

- As with interviews, your questions should be clear, concise and unambiguous. You should try not to use multiple questions, and should avoid double negatives.

- You should consider grouping questions about similar issues together.

- Sometimes you may want to use a four or five-point scale as a way of getting answers to your questions. For example, you can ask your respondents whether a particular event happens '*never, occasionally, frequently, always* (please ring the term that most nearly applies)'. Example 3.9 provides an illustration of scales used in a questionnaire designed for young children.

- Are you using 'closed' or 'open-ended' questions? When it comes to written questionnaires issued to a large number of respondents use the latter sparingly – they take a lot of time to process.

The design of the questionnaire

- Use only one side of the paper.

- Give the questionnaire a heading showing what it is about.

- If the questionnaire is not to be administered personally, you should provide a covering letter or a paragraph of introduction at the beginning.

- Keep the questionnaire as short as possible. Space out the items. (Dense print is off-putting and will affect the response rate.)

- Do you need to insert a column on the right-hand side to help you process and analyse the information?

- Give clear instructions in capital letters, e.g. 'TICK' and 'WRITE IN'.

- Where the information you are requesting is of a sensitive nature you should give people the choice to opt out. For example, if asking for the ethnic background of the respondent you could have a category 'I prefer not to answer this question'.

- Order the questions so that the straightforward non-controversial questions come first and the more sensitive ones last.

- Try to order the questions so that they come in a logical sequence.

- You may need a 'Don't know' or 'Not applicable' category.

- It may be useful to have an 'Other' category with a 'PLEASE SPECIFY'.

- It is a nice gesture to finish the questionnaire with 'THANK YOU FOR YOUR HELP WITH OUR STUDY'.

- Always review your questionnaire periodically in the light of the information gathered and any feedback respondents provide about difficulties in completing it.

Questionnaires are never perfect. Ideally they should be custom-built for a specific purpose. Beware of 'off-the-shelf' versions – as pointed out above, these will require adaptation, a pilot and (usually) revision.

QUESTIONNAIRES IN SITU WITH A GROUP

The guidance above on questionnaires administered individually also applies to questionnaires given to a group or class *in situ*. Here I shall consider one or two points that are specific to questionnaires so administered.

There are many advantages to the practitioner-researcher in administering questionnaires to a class or a group. In the first place, there is an enormous saving in time and possibly also in cost. Secondly, the response rate is almost certainly going to be much higher and the information obtained will be much more representative of the population and is, therefore, likely to be more reliable. Thirdly, if you administer questionnaires yourself, you will be alerted to any difficulties people experience with the wording or format. You will be able to explain to the respondents what is required. If the exercise is not taken seriously you will know that the data you have collected should be discarded as they are unreliable. This could happen if a class was disruptive, or if another member of staff acted to influence pupils' attitudes towards the study, as in Example 3.7 (overleaf).

There are some particular points you need to consider when using questionnaires *in situ*.

- *Organizational factors*: There needs to be a suitable place and adequate time to complete the questionnaire.

- *The person(s) administering the questionnaire*: It will be clear from Example 3.7 that, ideally, you should administer the questionnaire yourself. Where this is not possible, you need to brief an alternative (suitable) person.

- *Absentees*: While the response rate is likely to be very high for questionnaires administered in this way, you still need to take account of people who are absent on the day the questionnaire is given. This absence could bias the information you obtain. For example, if a study of absenteeism in the fifth year were undertaken in which pupils were asked about their attitudes to the curriculum, the staff and other pupils, it is likely that the pupils present in class would be unrepresentative of the fifth-year group as a whole. You would need to follow up pupils who were absent on the day of the survey to obtain their views.

Let us examine some examples of the use of questionnaires by teacher-researchers in the field.

Example 3.9 (p. 182) is part of a questionnaire which was given *in situ* to eight-year-olds. Here the researcher was interested in whether the adoption of a developmental approach to teaching literacy would have an impact on children's enjoyment of reading and writing. The questionnaire was administered jointly by the children's class teacher and the researcher. As you can see, it did not necessitate any writing by the children. Children were asked a question for each numbered row (e.g., 'How much do you like writing a story?) and they had to tick the face indicating their response.

Example 3.10 (p. 183) is taken from a postal questionnaire sent to a sample of probationary teachers. This postal questionnaire was later followed up by in-depth interviews with a new sample of probationary teachers, as mentioned in Example 3.2.

Example 3.7   Problems in administering a questionnaire

A researcher wanted to discover whether a course on job opportunities would influence secondary school pupils' attitudes towards different types of work. In particular, she was interested in whether pupils' attitudes towards women's and men's domestic and work roles would change if they were taught subjects and acquired skills in 'non-traditional' fields (for instance, girls in CDT and boys in 'homecraft'). She devised the questionnaire shown in Figure 3, which was given *in situ* to classes of secondary pupils before they started their course on job opportunities. Another, identical, questionnaire was given on completion of the course. The skills pupils were learning about in the course related to the list of jobs given in the questionnaire.

```
SECTION II

The following questions are about jobs which people do outside of the
home.  Again for each job we would like you to say whether YOU THINK it
is

        very much a MAN'S job
        more of a MAN's job
        either a MAN or a WOMAN's job
        more of a WOMAN's job
        very much a WOMAN's job

There are no right or wrong answers.  It is not a test, it is what YOU
THINK which is important.  For each job tick the box which most nearly
matches YOUR VIEW.
```

	very much a man's job	more of a man's job	either a man or a woman's job	more of a woman's job	very much a woman's job
garage mechanic (repairing cars)	☐	☐	☐	☐	☐
electrician (wiring a house)	☐	☐	☐	☐	☐
painter and decorator	☐	☐	☐	☐	☐
printer (printing books)	☐	☐	☐	☐	☐

Figure 3
Questionnaire on gender attitudes (from ILEA Research and Statistics Branch, 1985a).

When piloting the course in a secondary school the researcher was present when a male class teacher who had been asked to administer the pilot questionnaires gave them out and instructed the class to 'fill in this rubbish and get on with some work'. The researcher realized that if the information in the main study was to be reliable then the administration of the questionnaires *in situ* had to be undertaken by the person responsible for the evaluation, *not* the class or subject teacher.

Example 3.8 Questionnaire to assess staff development needs

During the production of a school development plan, it became apparent that there was a need for information about the staff's perceptions of their needs for professional development.

The questionnaire in Figure 4 was designed by the staff development committee and the format agreed at a staff meeting. It was circulated to individual staff members through the internal mail.

Name:_____   Role:_____

Date:_____

SECTION A

1.   In the context of your present job description
     which aspects of your role give you most
     satisfaction and why? Please be as specific as
     you can

2.   Which aspects of your job description do you find
     most irksome and why?

3.   Are there parts of your present job description
     for which you would like more training? Please
     give details of why and how you feel those needs
     could be met.

Figure 4   A staff development questionnaire (from Hilary Street, London).

Example 3.9   Questionnaire administered to primary school pupils

Evaluation: INSET provided by the Language Development Team
Example of a 'Smiley' Questionnaire for 8-year old pupils.
Children were asked a question for each numbered row -
eg. 'How much do you like writing a story?'

Source: The Hackney Literacy Study ILEA RS 1176/38

(ILEA Research and Statistics Branch, 1988)

These examples provide a range of questionnaire styles and techniques. Some, like the one in Example 3.8, are relatively open-ended and unstructured and will provide qualitative information. Others, such as the one in Example 3.10, are very highly structured and will give you quantitative information. The type of questionnaire you design will depend very much on who you want to get information from and what your research question is. Advice on analysing both quantitative and qualitative information from questionnaires is given in Section 5.

Example 3.10
Questionnaire on an induction programme for probationary teachers

We would like to know whether any of the following aspects of living and
teaching in London are causing you difficulty:

	Much difficulty	Some difficulty	Little difficulty	No difficulty at all	
Having suitable living accommodation	☐	☐	☐	☐	(56)
Having sufficient money	☐	☐	☐	☐	(57)
Transport difficulties	☐	☐	☐	☐	(58)
Tiredness, feeling fatigued	☐	☐	☐	☐	(59)
Lack of social life	☐	☐	☐	☐	(60)
Holding the children's interest	☐	☐	☐	☐	(61)
Discipline problems	☐	☐	☐	☐	(62)
Conflict with school staff	☐	☐	☐	☐	(63)
Getting professional advice	☐	☐	☐	☐	(64)
Obtaining suitable teaching materials	☐	☐	☐	☐	(65)
Devising a suitable classroom organisation	☐	☐	☐	☐	(66)
Other (specify)	☐	☐	☐	☐	(67)

THANK YOU FOR YOUR CO-OPERATION WITH OUR SURVEY OF EDUCATION EXPERIENCE

(ILEA Research and Statistics Branch, 1985b)

3.6   REVIEWING METHODS

It will be clear from the examples above that the various methods of obtaining information from people – diaries, interviews and questionnaires – can take very different forms. Each method can be structured, semi-structured, or completely unstructured.

Which method you decide to adopt, and what form it will take, will depend very much on your research question(s) and on whether your study is predictive, exploratory or explanatory. If your study is predictive or explanatory, then it is likely that the instruments you adopt will be more structured than if it is exploratory.

Remember that adopting more than one method is often advantageous. Your prime consideration is the most appropriate method given your circumstances and the resources available (your time and that of colleagues, the expertise required and, possibly, also finance and equipment). I set out below the main advantages of the approaches discussed in this section and also some of the pitfalls associated with them.

WAYS OF COLLECTING INFORMATION

Diaries and logs

What the method can do	*Limitations*
Enables you to gain information about events you cannot observe.	You may get different amounts and types of information from different respondents.
Can be used flexibly.	Probably time-consuming to analyse.

Individual interviews

What the method can do	*Limitations*
Does not run the risk (as with questionnaires) of low response rate.	Takes time to administer.
Allows you to probe particular issues in depth.	Respondents will be affected by their perceptions of you and your research, and what responses they feel are appropriate.
Likely to generate a lot of information.	Takes time to write up and analyse.

Group interviews

What the method can do	*Limitations*
More economical on time than several individual interviews.	It may be hard to manage a group discussion.
Some respondents (e.g. children) may prefer to be interviewed as a group.	Respondents will be affected by others present in the interview.
May allow you to 'brain-storm' and explore ideas.	Note-taking may not be easy. Writing up notes and analysis is relatively time-consuming.

Questionnaires (posted and handed out)

What the method can do	*Limitations*
Questionnaires do not take much time to administer, so useful for a large sample.	Response rate may be low and you could get a biased sample.
Everyone is asked the same questions.	Danger of differing interpretations of the same questions – respondents cannot ask for explanations.
Can be designed so that analysis is relatively simple.	People's preferred responses may not be allowed for in your questionnaire.

Questionnaires in situ

What the method can do	*Limitations*
Take less time to administer than individual interviews.	Less flexible than individual interviews.
Higher response rate than postal questionnaires. If need be, you can ask others to administer the questionnaire.	If you are not present while the questionnaire is administered, responses may be affected by something you aren't aware of.

OPEN-ENDED VERSUS CLOSED QUESTIONS

I made a distinction above between asking open-ended questions, which provides qualitative information, and asking closed questions, which may provide information you can quantify. The main features of each approach are set out below.

Open-ended questions

- Allow your informants some degree of flexibility in their responses – they can select what seems relevant.
- Particularly useful if you're not able, or don't wish to anticipate the range of possible responses from informants.
- You may discover something unexpected – providing greater insight into the subject of your investigation.
- In interviews, you can probe – ask informants for clarification or further information.
- Open-ended interviews probably take longer to administer; you will also need to write up a set of interview notes, which takes time.
- Analysing open-ended information from interviews or questionnaires is relatively time-consuming.

Closed questions

- Limit the response(s) your informant can give.
- The choice of responses you allow may not cover your informants' preferred response(s).
- Probably take less time to administer in interviews.
- Analysis takes relatively little time.

In this section I've also stressed that it may be beneficial to use a combination of open-ended and closed questions, depending upon your research interests.

FURTHER READING

BURGESS, R. (1984) 'Keeping a research diary' in BELL, J., BUSH, T., FOX, A., GOODEY, J., GOLDING, S. (eds) (1984) *Conducting Small-scale Investigations in Education Management,* London, Harper and Row/The Open University.

> Robert Burgess discusses the use of different kinds of diaries in educational research, including diaries kept by researchers and by informants. He also considers how diaries may be used as the basis of interviews with informants.

KEATS, D. (2000) *Interviewing: a practical guide for students and professionals*, Buckingham, Open University Press.

> This book is very accessible and is packed with practical advice on how to get the best out of an interview. It includes chapters on interviewing children and adolescents, people with disabilities and interviewing across cultures.

LEWIS, A. and LINDSAY, G. (1999) *Researching Children's Perspectives*, Buckingham, Open University Press.

> This book addresses the issues and practicalities surrounding the obtaining of children's views, particularly in the research context.

MIDDLEWOOD, D., COLEMAN, M. and LUMBY, J. (1999) *Practitioner Research in Education: making a difference*, London, Paul Chapman.

> This book explores the effects of teachers' and lecturers' research on organizational improvement. It includes material on how to conduct research in school and college settings when investigating topics such as the management of people, the management of the curriculum and researching the effects of organizational change.

PETERSON, R. A. (2000) *Constructing Effective Questionnaires*, Thousand Oaks, California, Sage.

> This book provides practical advice to both new and experienced researchers on all aspects of questionnaire design.

SEIDMAN, I. (1998) *Interviewing as Qualitative Research: a guide for researchers in education and the social sciences*, New York, Teachers College Press.

> This volume provides guidance for new and experienced interviewers to help them develop, shape and reflect on interviewing as a qualitative research process. It offers examples of interviewing techniques as well as a discussion of the complexities of interviewing and its connections with the broader issues of qualitative research.

WARREN, C. A. and HACKNEY, J. K. (2000) *Gender Issues in Ethnography*, Thousand Oaks, California, Sage.

> This book summarizes the state of the art of gender issues in fieldwork. Warren and Hackney show how the researcher's gender affects fieldwork relationships and the production of ethnography.

4   SEEING WHAT PEOPLE DO

4.1   INTRODUCTION

This section examines how you can collect evidence by watching, and recording in some way, what people do: what activities they engage in; how they behave as they carry out certain activities; how they talk; what kinds of work they do. The section also looks at the outcome of children's work – using children's writing as a main example: what can you say about children's work, and how can this be used as a source of evidence for your project?

You are already, necessarily, observing as part of your teaching. Your observations are recorded formally when you assess children or comment on their work. In addition to such formal observations, it is likely that you continually notice how children are behaving, or reflect on how a lesson has gone. Such observations may not be formally recorded, but will probably inform future work, such as how to group children so that they collaborate better or how to follow up a particular piece of work.

In order to provide evidence, you need to observe systematically and to record this in some way. Some of the methods suggested in this section will formalize what you already do as a part of teaching. Others require more time, or access to additional resources – perhaps a cassette recorder, or a colleague you can work with. The method(s) you select must depend upon your own professional context (including other commitments and demands upon your time) and on the nature of your research.

4.2   DECIDING WHAT AND HOW TO OBSERVE

You may derive ideas for making observations from other published studies you've read, or from discussing your research with colleagues – but the most important factor to consider is how the observations can fit in with your own professional context, and inform your own research questions. Four points to consider are *what to observe*; *what types of observation* to carry out; to what extent you should *participate* in the event you're observing; and *what to tell* those you are observing about what you are doing.

WHAT TO OBSERVE

Since you cannot observe everything that is going on you will need to sample, that is, to select people, activities or events to look at.

People

If you're observing pupils, or pupils and a teacher in class, which pupils, or groups of pupils, do you want to focus on?

- Do you want to look at a whole class? If you teach several classes, which one(s) will you observe? Are you going to focus on the pupils, or the teacher, or both?
- Do you want to focus on a small group working together? Will this be a pre-existing group, or will you ask certain pupils to work together? Will you select children at random, or do you want to look at certain children, or types of children? (For instance, is it important that the group contains girls and boys? If you teach a mixed-age group, do you want to look at older and younger children working together?)

- Is your focus to be on one or more individual children? How will you select the child(ren)? Is there a child with particular needs that you'd like to observe more closely?

Similar decisions need to be made if your focus is on teachers (or other people) in a range of contexts. For instance:

- Do you want to observe the whole staff (e.g. in a staff meeting)?
- Do you want to 'trail' an individual colleague?

Activities and events

You will also have to make decisions about the contexts you wish to observe, when to make observations and what types of activity to focus on.

- If observing in class, which lessons, or parts of the day, will you look at?
- Will you focus on certain pre-selected activities or look at what happens in the normal course of events? In the latter case you will need to consider how far what you observe is typical of the normal course of events – what counts as a 'typical' afternoon, for instance?
- If you're looking at children's work, how will you select this?
- If you're looking at meetings, how will you decide which to observe?

In each case, it is important to consider why you should focus on any activity, or group of pupils, etc. How is this relevant to your research question(s) and professional context? (See also 'Sampling' in sub-section 1.6.)

WHAT TYPE OF OBSERVATION?

When you have decided what to observe, you need to consider what kind(s) of observation to carry out, for instance whether to use *qualitative* or *quantitative* methods. Examples 4.1 and 4.2 illustrate these. Both are examples of observations carried out by teachers.

Example 4.1   Observing children writing

Christina Wojtak, from Hertfordshire, was interested in how young (six-year-old) children judged their own and others' writing, and whether their judgements would change after certain types of teaching. She worked with the children to help them produce their own books, which would be displayed in the book corner. Christina observed the children to see how they responded to their writing tasks.

There are several questions one could ask about children's responses. Some may be open-ended, such as how the children behaved as they wrote. How (if at all) would their behaviour change over the few weeks of the project?

Other questions may be quite specific, such as how many pieces of writing different children produced. Over certain (specified) periods, how much time did each child spend (a) working alone; (b) discussing with other pupils?

Example 4.2   Monitoring classroom interaction

Staff in a CDT department wanted to encourage more girls to take up technology but were worried about the male image of the subject. They had also noticed that boys seemed to dominate interaction during lessons. John Cowgill, head of CDT, decided to monitor classroom interaction more closely – comparing Year 8 pupils' behaviour in CDT and home economics.

As with Example 4.1, questions about interaction may be open-ended, such as how girls and boys behaved in whole-class question-and-answer sessions. How were they grouped for practical work, and how did they behave as they carried out such work?

> Other questions may require more specific information, such as how often the teacher asked questions of boys as opposed to girls. How did different pupils get to speak during question-and-answer sessions: by raising their hands and being selected by the teacher, by 'chipping in' with a response, or by some other means?

In both examples the initial open-ended questions would lead the observer towards the use of qualitative methods, to noting down what was going on. The observer's detailed field-notes would form the basis of their account of the lessons.

The more specific questions would lead the observer towards the use of quantitative methods, to recording instances of certain specified behaviour. The information can be presented numerically: a certain number of pupils behaved in this way; 70 per cent of pupils used this equipment, 40 per cent used that equipment, etc.

In the event, Christina opted for open-ended notes and John opted to focus on particular types of behaviour.

The examples above are concerned with observations of activities and of classroom interaction, but the same principle applies to observations of pupils, or teachers or other adults, in other contexts, and to looking at children's work. Depending on your research questions, you may wish to use qualitative or quantitative observation methods, or a combination of both. Used in combination, quantitative and qualitative methods may complement one another, producing a more complete picture of an event. Open-ended observations may suggest particular categories of behaviour to look for in future observations. Or initial quantitative research may suggest something is going on that you wish to explore in more detail using qualitative methods. (See also the discussion of the qualitative/quantitative distinction in sub-section 1.5.)

I shall discuss below examples of observations using quantitative and qualitative methods. I shall make a broad distinction between field-notes and observation schedules. Field-notes allow you to collect qualitative information. Observation schedules are *normally* used to collect quantitative information, but some provide qualitative information. Section 4.9 reviews the methods I have discussed and considers what they can and what they cannot tell you.

TO PARTICIPATE OR NOT TO PARTICIPATE?

A distinction is commonly made in research between *participant* and *non-participant* observation. A 'participant observer' is someone who takes part in the event she or he is observing. A 'non-participant observer' does not take part. In practice, this distinction is not so straightforward. By virtue of being in a classroom (or meeting, etc.) and watching what is going on, you are, to some extent, a participant. When observing in your own institution, it is particularly hard to maintain the stance of a non-participant observer, to separate your role as observer from your usual role as teacher. John Cowgill commented that, although observing in other colleagues' lessons, he was interrupted by pupils and occasionally found himself intervening to help a pupil, or on safety grounds.

Michael Armstrong, whose study *Closely Observed Children* documents the intellectual growth and development of children in a primary school classroom, comments as follows:

> I was acutely conscious ... that teaching and observation are not easy to reconcile. On the one hand, the pressures of classroom life make it exceptionally difficult for an individual teacher to describe the intellectual experience of his pupils at length, in detail and with a sufficient detachment. Conversely ... to observe a class of children without teaching them is to deprive oneself of a prime source of

knowledge: the knowledge that comes from asking questions,
engaging in conversations, discussing, informing, criticising, correcting
and being corrected, demonstrating, interpreting, helping, instructing
or collaborating – in short, from teaching.

(Armstrong, 1980, p.4)

Michael Armstrong's solution was to work alongside another teacher, to give
himself more time for sustained observation, and to write up detailed notes of his
observations, interpretations and speculations at the end of the school day.

As part of your planning, you need to decide whether to combine observation
with your normal teaching or whether you wish (and are able) to make special
arrangements that free you from other duties and give you more time to observe.
This will affect what you observe and what methods of observation you choose.

WHAT TO TELL PEOPLE

Watching people, and writing down what they do, has certain ethical implications.
If you are observing adults – say in a staff meeting – it may seem obvious that
you need to get their permission first. But it is equally important to consider the
ethical implications of observing young children in a classroom. Such issues need
to be considered as part of planning an observation, because they will have an
impact on what you observe, how you carry out the observation, and how you
interpret the results of the observation. Some points to consider are:

- *Should you ask people's permission to observe them?* This must depend on
  the context and purpose of the observation. For instance, if the
  observation were being carried out entirely for the observer's benefit, it
  might seem necessary to ask permission (perhaps from parents in the case
  of very young children). At the other end of the spectrum, you probably
  feel it is a normal part of teaching to keep a note of how pupils are
  progressing, not something that would require special permission.

- *Should you tell people they are being observed?* Bound up with this
  question is the notion of the observer's paradox: the act of observing is
  inclined to change the behaviour of those being observed. It is likely that
  the more you tell people about your observation, the more their
  behaviour will be affected. Some researchers compromise: they tell
  people they are being observed, but are rather vague about the object of
  the observation. They may say more about this after the event. You may
  feel that you can afford to be more open; or that, as a colleague or
  teacher (rather than a researcher from outside), it is important to retain an
  atmosphere of trust between yourself and those you work with.

- *Should you discuss the results of your observation with those you have
  observed?* This is partly an ethical question of whether people have a right
  to know what you're saying about them. But discussing observations with
  others also lets you check your interpretations against theirs. It may give
  you a different understanding of something you have observed.

- *Should you identify those you have observed?* In writing reports,
  researchers often give pseudonyms to people they have observed or
  institutions in which they have carried out observations. As a teacher, you
  may find it more difficult to maintain confidentiality in this way – the
  identity of those you refer to may still be apparent to other colleagues, for
  instance. One solution may be to discuss with colleagues or pupils how
  much confidentiality they feel is necessary, and how this may be
  maintained.

(See also sub-section 1.4, 'Ethics and practitioner research'.)

Decisions about sampling, what types of observation to make, how far you will
participate in the events you're observing, and what you will tell those you
observe will affect the type of research you can carry out.

4.3   MONITORING CLASS OR GROUP ACTIVITIES

This sub-section discusses a variety of ways in which you can watch what people do or the activities they are involved in. Several examples come from classrooms. However, any method of observation will need to be tailored to your own context. Something that works in one classroom may not in another. Many of the ideas suggested here may also be used in other contexts, such as assemblies or meetings, corridors or playgrounds.

RECOLLECTIONS

If you are teaching a class, you will necessarily be observing what is going on. You can focus these observations on the research question(s) you are investigating. If you have sole responsibility for the class, however, you will probably find it difficult to take notes while actually teaching. How difficult this is depends on a variety of factors: the pupils themselves, the type of lesson you are interested in, how work is organized, and so on. If the class is working independently (for instance, in groups) you may be able to use this time to jot down observations about one particular group, or one or two pupils. If you are working with the whole class or a group, you will probably be thinking on your feet. In this case, it is unlikely that you will be able to take notes at the same time.

Observations made under such circumstances may still provide useful evidence. You will need to make a mental note of relevant events and write these up as field-notes as soon as possible afterwards. This was the method adopted by Michael Armstrong, whose work I mentioned above. To aid your recollections it helps to make very rough notes (enough to jog your memory) shortly after the lesson and write these up fully later in the day.

Example 4.3 (p. 193) shows extracts from field-notes based on recollections. Will Swann, who wrote these notes, wanted to document the introduction of group poetry writing to children in a school for pupils with physical disabilities and associated learning difficulties. The notes formed the basis of a case study written for The Open University course E242 *Learning for All*.

It helps to develop a consistent format for your notes. This is particularly important if they are to form a major source of evidence, as in Example 4.3. Here, the observer has dated the notes, and provided contextual information – about the nature of the lesson, children who were present, and so on (only extracts from this information are given in Example 4.3). The observer has decided to record observations as a series of 'episodes' – significant aspects of a lesson that might be followed up in some way (e.g., by discussions with colleagues or in planning the next lesson).

The notes in Example 4.3 provide an interpretive account of parts of a lesson. Such accounts are frequently used by teachers documenting work in which they are actively participating. In this case, the teacher's reflections and interpretations during the lesson are themselves part of the data. For instance, 'Episode 2' records an *observation*: children joined in reading the witches poem, with Lee especially vocal. This is followed by an *interpretation*: 'I don't think he saw his contributions as changes to what I had written, they were more of a sign of his active involvement in the poem.' This interpretation serves as an explanation for what happens next: 'I ... asked if they wanted me to change the poem ... They generated two alternative last lines, and finally settled on one.'

An alternative format for field-notes is to make a formal separation between observations (what happened) and a commentary containing reflections and interpretations. The field-notes in Example 4.4 (p. 194) attempt to do this.

Any recording system is partial in that you cannot and will not wish to record everything. An added drawback with field-notes based on recollections is that you are bound to collect less information than someone taking notes as they go along. There is also a danger of biasing your recording: observers may see what they

want to see while observing and having to remember significant events may introduce further bias. For this reason it helps to check out your observations by collecting information from at least one other source, for example by asking pupils about a lesson or looking at children's work. (See also 'Bias' in sub-section 1.6.)

On the other hand, this sort of observation intrudes very little on your teaching, and you do not need access to any other resources. For this reason alone you should be able to observe a larger sample of lessons (or track something of interest over a longer sequence of lessons) than someone who needs to make special arrangements to observe and record.

USING FIELD-NOTES TO RECORD ACTIVITIES AS THEY HAPPEN

Field-notes can also be used to record events as they happen. I mentioned above the difficulty of making notes while teaching but said that this might be possible during certain types of lesson or certain portions of a lesson. Alternatively, you may be able to enlist the help of a colleague, or a pupil, to observe in your class. In certain cases, you may be observing in a colleague's class. Or you may wish to use field-notes to record information in other contexts, such as assemblies or the playground.

This sort of observation is normally open-ended, in that you can jot down points of interest as they arise. You would need to focus on your research question(s), and this would necessarily affect what counted as points of interest. Field-notes can be contrasted with observation schedules, which structure your observations and may require you to observe specified categories of behaviour (observation schedules are discussed below).

Example 4.4 shows extracts from field-notes made by an Open University researcher, Janet Maybin, while watching an assembly in a middle school. Janet Maybin's observations form part of a larger study of children's collaborative language practices in school. In this case, she was interested in identifying the values laid down in school assemblies. She wanted to see whether, and how, these might resurface later in children's talk in other contexts.

As Janet Maybin was not taking an active part in the assembly, she could jot down observations and brief comments at the time. She also tape-recorded the assembly for later analysis (she occasionally jots down counter numbers in her field-notes). After school, she wrote up her field-notes, separating observations (what actually happened) from a commentary (her questions, reflections, interpretations, ideas for things to follow up later). Compare this with the 'interpretive' format in Example 4.3.

Separating 'observation' from 'commentary' is a useful exercise: it encourages the observer to think carefully about what they have observed, and to try out different interpretations. Bear in mind, however, that no observation is entirely free from interpretation: what you focus on and how you describe events will depend on an implicit interpretive framework (an assumption about what is going on).

It may be easier to attempt a separation if you are observing as a non-participant, but in principle either of the formats adopted in Example 4.3 and Example 4.4 may be used by participant and non-participant observers, and by those basing their field-notes on recollections, or on notes made at the time.

When writing up research reports that include observations based on field-notes, researchers frequently quote selectively from their notes, as in Example 4.5 (p. 195). These observations were made by Sara Delamont in a girls' school in Scotland. The observations form part of a larger study of classroom interaction. In this example, Sara Delamont documents some of the strategies pupils use to find out about a geography test.

Example 4.3   Group poems in a special school

Friday 29.12.90

Context : A short session this week
9.00 - 10.30. One of a series of weekly
sessions introducing the kids to poetry,
using drama to build up their own ideas
and language, which are then put into
a poem written up by me

Only some of the group in - Holley,
Alastair, Ajmol, Andrew, Claire, Lee

Episode 1: While gathering their ideas
and words on the board after the
improvisation. Andrew decided to take
his socks and shoes off again. He
passed them to me one at a time.
Disconcerted to get socks tossed at me
while trying to listen to the others,

Episode 2 : I wrote the poem, including
as many of their ideas and language
as possible, over break. Read it to
them when I came back. Last week
when we did the first group poem about
Giants, I had to rewrite it
slightly because Alastair insisted that
his Giant had been bigger than a
block of flats, not the ceiling. I'd
hoped to avoid anyone claiming
ownership of individual verses, so had
not considered the possibilities that his
intervention created. This week, as soon
as I began to read the Witches poem,
they joined in, with Lee especially vocal.
I don't think he saw his contributions
as changes to what I had written,
they were more a sign of his active
involvement in the poem. I then asked if
they wanted me to change the poem . All the
changes to the end improved it.
They generated two alternative last
lines, and finally settled on one. In
future I'll build this into the session
and talk explicitly about redrafting

Example 4.4   Field-notes of an assembly

'Sharing assembly' 22/11/90

Tape Counter	Notes	Comments/questions
134	3 children take it in turn to read out poems about animals which they have written. Seated class quiet and attentive.	I can't hear any of this – neither I suspect can most other children in the assembly. What is being communicated here?
	1 child asks teachers to come and sit on two rows of chairs placed diagonally at the front. Teachers go up to the chairs, acting as if reluctant (sounds of 'oh no').	I immediately realise teachers are being asked to pretend to be pupils, and the child will be their teacher. Air of puzzled anticipation among seated children. Maybe they aren't familiar with this kind of 'role-reversal' sketch?
142	Teachers mess about, pretending to punch each other, pull hair, tip chair etc. Child 'teacher' stands in front looking embarrassed. Seated children laugh and make occasional comments.	Seated children don't seem at ease with this situation and don't quite know how to react. Who exactly is in authority now? Teachers' acting out of pupil unruliness is exaggerated – to make it unreal?
	The child at the front is pretending to try and restore order to his 'class'.	The child 'teacher' in acting out his role is managing to remain respectful to his teacher 'pupils', so he's really acting two roles simultaneously (pupil and teacher)?
	The seated children watching now start to freely imitate the antics of the teachers at the front, and several scuffles break out as the noise level rises.	It's difficult for the watching children to cope with these two conflicting systems – teacher = fonts of authority v. teachers = naughty pupils. They seem very confused.
	Mr. Brown quickly steps out of the role of naughty pupil, and gives the watching children a threatening look as he says 'sh'.	Watching children seem almost relieved that traditional power relations are restored. They settle down very quickly.
150	Some children echo this 'sh', and the hall quickly becomes quiet. The teachers at the front stop messing about, and their pupil 'teacher' reads them rewritten versions of Jack and the Beanstalk, Goldilocks, and the 3 Little Pigs. Some whispering among seated children during the story.	The stories read by the 'teacher' to his 'class' are suitable for a younger agegroup than any classes in this school. Another way of making the event as 'unreal'?

Example 4.5   Extract from an account of a geography lesson

'On the third Wednesday of my fieldwork I went to the top geography set. The lesson opened with Mrs Hill being buttonholed by Jill with an involved query about fish farming. Then Mrs Hill called the class to order and announced a test on 'all Scotland' for the following week, giving them the rest of that lesson to revise for it. My notes continue:

A chorus of groans, protests and objections breaks out – dies away – to be replaced by questions on the nature of the test.

JACKIE:	What type of questions? Short answer or essay?
MRS HILL:	Short answer mostly.
JILL:	Why do we have to have tests all the time?
LORRAINE:	Will we be asked to draw anything?
KAREN:	Will it be on the board, or are you going to read them out?
MRS HILL:	(Says she'll read them out, and tells them they may have to draw. Then tells them to quieten down or she'll go on to the next topic – Newcastle.)

The girls were silenced, and the rest of the period consisted of revision, with girls asking questions about geography as they found points they were not sure of.

The following week I watched the test, which consisted of short answer questions read aloud, such as 'Name two coal-fired power stations in Scotland'. Once it was over the girls swapped papers and marked their neighbour's script.'

(Delamont, 1983, pp. 105–106)

There are several other ways in which field-notes can be drawn on in research reports. Example 4.6 is an extract from a chart that resulted from observing a primary school class. It was designed to identify problems that would be posed for a deaf child who was shortly to join this class – so the observations have been supplemented by identified problems and solutions. In this extract, *Siân* refers to the class teacher; *Ben*, to the deaf child; *Judi*, to a member of the support staff; and *Lorraine*, to Lorraine Fletcher, Ben's mother, who made the observations.

Recording at the time allows you to make fuller notes than recollections. It shares with recollections the problem of selectivity, and scope for unintended bias. It also has the advantage that, because it is open-ended, it leaves you free to note down anything of interest – you may spot something entirely unexpected.

USING AN OBSERVATION SCHEDULE

Observation schedules allow you to look out for certain specified types of behaviour, or participation in specified activities. Several observation schedules have been designed to record younger children's participation in a range of activities. The schedule in Example 4.7 (p. 197) was devised by Glen McDougall for use in a nursery school.

The list in this schedule contains all the activities available to children in the school in which it was developed. It was intended to be completed by staff at 30 minute intervals, but it proved impossible to maintain this degree of regularity. Staff therefore ticked the list at random intervals. In Example 4.7 five separate observations have been made. Some children have fewer than five ticks because they were out of the room for part of the time.

Glen McDougall used her schedule to identify differences in activities selected by girls and boys. (She wrote an account of her work – see Thomas, 1986.) But the schedule could be used as a record of activities selected by individual children over a certain period. It could also be adapted for use in other areas of the

Example 4.6   Observation of classroom activities presented as a chart

OBSERVATION OF CLASSROOM ACTIVITIES: TUESDAY 18 JUNE 1985

1.   *Pre-9.10*   Children arrive. Informal relaxed time, lots of social interaction between Siân and children and amongst the children. No problems.

2.   *9.10*   Assembly. Usual format.
Problem: suggest assembly is inappropriate for Ben: may be a good time for computer work with Judi.

3.   *9.30*   (a)   Children return. Preparation for TV: *Let's Go Maths.* Children sit round TV, teacher-led discussion about light and heavy. Lots of ideas emerge; all participating.
Problem: Extremely difficult to include Ben and Judi here. Suggest good preparation essential. The teacher's booklet contains a brief summary of content of the programme plus very useful ideas for activities and further reading. Judi needs to be very familiar with the content of the programme and ideas behind it before the class watch it.
Solution: Judi sees resource material in advance and discusses it with Siân. Children watch the second transmission. Lorraine records the first, takes notes for Judi, and watches the programme with Ben at home before he sees it at school.
(b)   Siân explains activities planned for after TV. A lot of instruction given orally.
Problem: Instructions are quite detailed and complex.
Solution: Judi has her own copy of the timetable and lesson plans, with explanation of the aims of the activity.

4.   *9.44*   TV. The programme contains songs, a story as well as mathematical experiments. No problem if adequately prepared as outlined above.

5.   *9.58*   Siân directs children to activities. Discussion between Siân and children to make sure all know what to do. No problem if Judi is familiar with activities.

6.   *10.00*   Activities carried out in groups:
● pictures of light and heavy things
● working with a balance, finding out what balances 100 g weight, estimating first, with pre-printed charts to fill in; children work in pairs or together
● weighing everyone in the class and making up a bar chart of the results
Children very busy and active. Lots of talk about what they are doing.
Problem: Only that Ben would miss out on the very productive chat between children.
Solution: Plenty of discussion with Judi about what he is doing and everyone else is doing and why.

7.   *10.15*   Siân walks around groups. She supervises and chats with children about their work. No problem: easy to check that Judi and Ben are OK.

8.   *10.20*   Milk. Two children serve milk while the others are still working. People are finishing, chatting, helping each other, talking about what they've done, going round to see what others are doing. Maybe this would be an opportunity, as children finish their work, for Ben and Judi to talk to them about it, to encourage communication between the children and Ben and to make sure that Ben understands as much as possible of what has been happening.

9.   *10.40*   Playtime.

10.   *11.00*   Same activities, different children: groups rotate. Siân hears reading.

11.   *11.40*   Five minute warning. Children advised to finish off work. No problem: this is easy for Siân to sign.

(Downs *et al.*, 1987, pp. 53–4)

Example 4.7   Observation schedule for nursery activities

Date .. 2\7\84 ..   Indoor Activities

	Home Corner	Music Corner	Book Corner	Creative	Pliable	Drawing	Constructional	Manipulative	Imaginative	Maths	Games	Sand	Water	Puzzles
Marina														
Robyn						present	but	outdoors						
Tamara	....		.											
Danielle	..		.											
Aleah	.													
Charlene	.													
Sasha	.		.											
Tahira	....													
Julie	....		.											
Zoe					.									
Nicola					ab	sent								
Natasha	..													
Adaora	.				.									
Nikki														
Rosalind	...													
Clare					present	but	outdoors							
Rommel							..		.					
Tay							..		.					
Faisal	.								.					
George	.											.		
Rupesh							.							
Adam	.						.							
Nathan					present	but	outdoors							
Shalohuddin	.		.						.			..		
Nou					ab	sent								

school, such as the playground. Similar schedules may be used whether your focus is on activities or on pupils – schedules can identify how often, or by whom, particular pieces of equipment are used, as well as what particular children do during the day.

An alternative way of recording activities, particularly in the playground, or in open-plan areas, is mapping: drawing a plan of an area showing the location of different activities or pieces of equipment. Such a plan can be used as background information for observations since it shows where, for instance, different pieces of equipment are in relation to one another. The plan may also

be used to record observations: an observer can mark on it which children are in particular locations, and what activities they are carrying out. In this case you are getting a snapshot of behaviour at any one time. You would need to decide when to carry out the observations and would have to use a new plan for each observation.

Observation schedules may also be used to monitor pupils' behaviour in a more open-ended way. The schedule in Example 4.8 provides a means of recording pupils' activities in small groups. Observers are advised to prepare several copies of the schedule to observe in a lesson, and to conduct observations as follows:

- When you start your observation, pick one group of pupils – the farthest away from you to your left. Note the time, what activities the female pupils are engaged in, and the names. Note anything about behaviour and record any teacher intervention. Then, using the same group, repeat the observations for the male pupils in the group.

- When you've written notes on your first group, move round the room repeating the observations for each group. Go round the groups as many times as you can during the lesson.

    (Myers, 1987, p. 25)

Example 4.8, like Example 4.7, is meant to allow comparison between girls' and boys' behaviours (several published schedules have been devised with similar aims). But the schedule could be used to monitor the behaviour of individual pupils working in groups.

Both schedules involve time-sampling. An observer is meant to write down what a pupil, or pupils, are doing at one particular time. The schedule in Example 4.7 specified a regular sampling every 30 minutes (though this regularity wasn't maintained). Example 4.8 doesn't specify particular sampling intervals, but the assumption underlying such a schedule is that practised observers will develop a regular 'rhythm' as they pass from group to group. With such methods only a certain proportion of pupils' behaviour is being sampled. The more frequently an observer samples, the more complete a picture they obtain, but it is still 'snapshots' that are being collected. It is not possible to follow through connected sequences of behaviour. Also, time-sampling will highlight frequently occurring behaviour, but this is not necessarily what is most important in a lesson. Something highly significant may happen only once – when you are jotting down notes about another pupil.

Example 4.7 specifies particular categories to look out for – involvement in certain activities. The schedule provides quantitative information. Glen McDougall, in producing her report of observations carried out in different classes, is able to say that more boys than girls participated in certain activities and more girls than boys in others. Example 4.8 does not provide quantitative information, but on reading through the notes afterwards an observer may identify certain patterns in the way pupils behave that merit discussion in any written report.

Sometimes researchers try to code open-ended observations such as those that might come from using the schedule in Example 4.8. They allocate behaviour they have observed to specific categories, such as talking to another pupil; talking to the teacher; listening to another pupil or the teacher; handling equipment; other 'on task' behaviour; mucking about, etc. By coding observations you can transform qualitative information into quantitative information – you can say how many pupils behaved in a certain way, or you can compare how different pupils behave. It can be difficult to use pre-specified categories – it may be best if categories grow out of the observations themselves. It may also be difficult to code written observations after the event and there is no way of going back to check on pupils' behaviour. Coding is likely to be more reliable if you have access to a video-recording (see sub-section 4.6). In this case you could also ask a colleague to check your coding.

Example 4.8 Observation schedule to monitor groups

CLASSROOM INTERACTION/OBSERVATION

FORM A – SMALL-GROUP WORK

Name of school................................. Filled in by.......................... Date completed....................

Time	Activities	FEMALE PUPILS			MALE PUPILS			
		Names	Comments	Teacher Intervention	Activities	Names	Comments	Teacher Intervention

(Browne and France, 1986)

I've given examples of two schedules, each one tailored to particular needs. It is unlikely you will be able to find an observation schedule you can use off the peg. You will need to: identify carefully what kinds of behaviour you wish to observe, and in which contexts (open-ended observation using field-notes may help in this); draft, or adapt, a schedule to suit your own interests; then pilot this to make sure it works before using it 'for real'.

4.4   MONITORING CLASS OR GROUP DISCUSSION

I have just discussed ways of monitoring children's behaviour in a whole class or as members of groups. But your focus may be less on *what* children, or adults, are doing and more on *how* they are interacting. Talk is quite pervasive, and a very good source of evidence for a variety of research questions. There are several ways in which you can find out about talk. This section focuses on observing interactions *between* people. Examples include talk between a teacher and pupils; small-group talk in the classroom; and talk between a group of people in other contexts, such as meetings. If your focus is on an *individual* speaker (for instance, looking at their talk in different contexts), see also sub-section 4.5, 'Monitoring an individual'. If you wish to ask people to provide information about their talk (for instance, asking pupils to keep 'talk diaries') see also Section 3, 'Getting information from people'. If you wish to analyse formal records of discussions (such as minutes of meetings), see Section 2, 'Getting information from documents and school resources'.

This sub-section discusses techniques of monitoring talk as it happens using methods similar to those used to monitor other activities or aspects of behaviour. Such methods provide an overview of talk, which may be what your project requires. If you wish to look in more detail at what is said, or at how people interact, you will need to use an audio- or video-recording (see Part 3, Section 2). You may also wish to transcribe extracts of talk for close analysis (in which case, see Part 3, Section 2).

As with observing activities in a classroom, it is very difficult to carry out observations of talk as it happens if you are also an active participant. If you are involved in classroom talk as a teacher, you may be able to make notes from recollections after the event, but these are likely to be of the most general kind, for instance: what was talked about; who seemed to have a lot to say; any particularly salient feature, such as a dispute that broke out. If you wish to look at talk in any more detail you will need to observe on the spot as a non-participant – to observe while someone else is teaching, or to observe a small group working independently.

If you are chairing a meeting you will be in a similar position to a teacher taking a leading role in class discussion. It will be difficult to take systematic notes, but you may be able to ask a colleague to help. If you are a participant in a meeting (but not the chair), you may be able to note down main points that are relevant to your research question(s). You will still find, however, that it is difficult to take an active part in discussion while taking notes – you may find you note down points made by everyone except yourself! You need, therefore, to balance the needs of your recording against your wish to have a say in what is discussed.

The examples of observation methods in this section are all designed for observers who are not (simultaneously) taking a leading part in discussion.

USING FIELD-NOTES TO RECORD TALK

An observer may use field-notes to jot down points of interest about any interaction. Such notes may be your main source of information, or they may supplement other forms of recording. If you are taking notes on the spot, you will find that the talk flows very rapidly. This is likely to be the case particularly in informal talk, such as talk between pupils in a group. More formal talk is often easier to observe on the spot. In whole-class discussion led by a teacher, or in

formal meetings, usually only one person talks at a time, and participants may wait to talk until nominated by the teacher or chair. The teacher or chair may rephrase or summarize what other speakers have said. The slightly more ordered nature of such talk gives an observer more breathing space to take notes.

Example 4.9 provides an example of detailed field-notes made at a school governors' meeting. The notes were made by Rosemary Deem, from The Open University. Rosemary Deem was collecting evidence for a research project on school governing bodies, carried out with two other researchers, Sue Hemmings and Kevin Brehony. As well as observing governors' meetings, the researchers issued questionnaires to a sample of governors and interviewed some chairs of governing bodies and head teachers. Observations of meetings provided information on how governors coped with their responsibilities (how they dealt with issues that were referred to them; whether issues were resolved in meetings or referred to the head, or to a governors' sub-group, etc.); on power relations in meetings (e.g., who contributed and how often); and on the roles taken by lay people and professionals.

The notes in Example 4.9 begin with the head's suggestion that governors attach themselves to houses within school. This gives rise to concern about the level and nature of governors' involvement in school life.

In these notes, Rosemary Deem has tried to note down, as near verbatim as possible, the points people made. She also wrote up recollections after the meeting in a research diary. To help in her analysis she created an index of issues that were discussed, and that she could track through subsequent meetings. In this case, she would index changes in school structure (the introduction of a new house system) and governor involvement in school life.

USING AN OBSERVATION SCHEDULE TO RECORD TALK

You can use an observation schedule to help you structure your observations of talk. You may be interested in who talks, or how much people talk. In this case, you could simply list participants' names, and make a tick alongside each name whenever the person *begins* speaking.

Schedules that record the number of contributions someone makes to a discussion can help you to identify very general patterns in the distribution of talk between different participants. This has the limitation that the number of contributions is only one measure of the amount someone talks. Someone may make very few but long contributions or frequent one-word responses.

Some schedules permit the observation of different categories of talk. The distinctions you're able to make will depend upon the type of talk you're observing. In teacher–pupil question and answer sessions you may be able to distinguish between pupils' contributions that are responses to a teacher's question or spontaneous contributions. Other distinctions may be appropriate in practical sessions when the teacher is walking from group to group checking on progress or offering help.

The schedule in Example 4.10 was devised by Jim McGonigal while working with a class of 12-year-old pupils in a school in Glasgow. Jim McGonigal wanted to assess children's contributions to group discussion in English lessons. He devised a system of 'doodles' to distinguish different types of talk. He allocated each child a box, divided into four sections, one for each five-minute portion of the talk he observed. Example 4.10 shows the pattern of talk for the first ten minutes.

Example 4.9 Field-notes from a governors' meeting

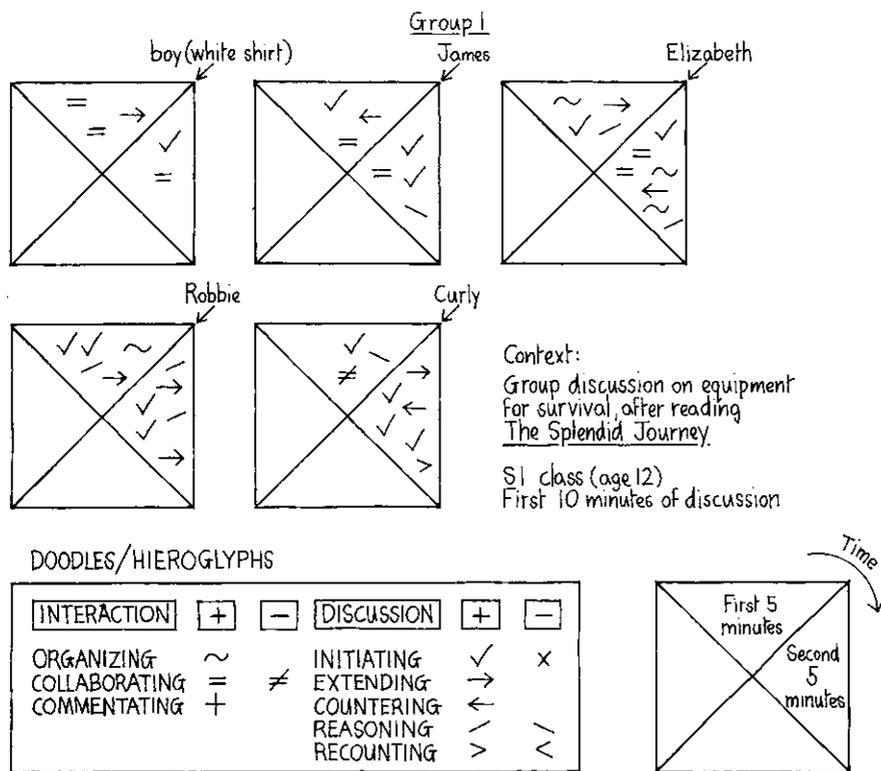*Cotswold School 19/2/91 7.00 p.m. – 9.40 p.m. shortest ever (!)*

Seating plan
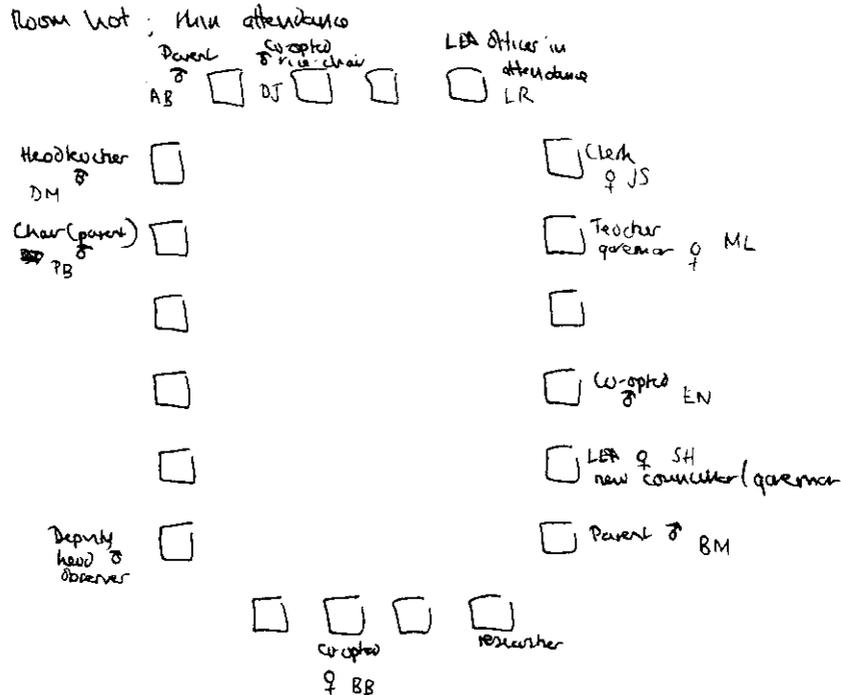
DM	Report next meeting – house structure – Govs cd form view themselves by visit or attachment cd put you all down for a house	
BM	Many govs cd be involved further in sch life	
ML	More useful than curric visits – 2 yr gps each house so gives better understanding of curric & small no staff so govs get to know them. Hses provide microcosm of sch	
BB	I think it is good idea – hve we had paper on hse structure?	
DM	Cd give you one.	
BB	Don't want to make wk – is there anything already	
DJ	If govs do this, need strategy – not just go for chat – must know from staff what they hope for.	
PB	Shall we just put names against houses – 2 govs per hse	
BM	Need to be clear a/b purpose – no reltnshp to gov subgps or other staff gps – hses x cut this + for one small gp. How do we monitor this in gov body	
PB	I perceive concern – no govs involved or sp resps etc. – are we getting into schl in ways giving us reasonable picture life sch in student/teacher view – when visited clroom, first time seen sch at wk in that way – help govs be involved – + cd tailor to own needs	
BB	I know I don't come into sch at all & as governor I should	
BM	No enthusiasm – reached capacity govs to visit – if devise new scheme	
BB	There's more to being gov than meetings.	

Example 4.10
Record of a group discussion, distinguishing different categories of talk

Group 1

boy (white shirt)   James   Elizabeth

Robbie   Curly

Context:
Group discussion on equipment
for survival, after reading
The Splendid Journey.

S1 class (age 12)
First 10 minutes of discussion

DOODLES/HIEROGLYPHS

INTERACTION	+	−	DISCUSSION	+	−
ORGANIZING	~		INITIATING	✓	X
COLLABORATING	=	≠	EXTENDING	→	
COMMENTATING	+		COUNTERING	←	
			REASONING	╱	╲
			RECOUNTING	>	<

First 5 minutes / Second 5 minutes — *Time*

(The Open University, 1991, p. A280)

Jim McGonigal describes how he came by his doodles:

> The boxes I had drawn were too small to record all the functions in writing as they occurred, and I found myself using an imitative quasi-hieroglyphic doodle to note each occurrence. For *organizing* (identifying the task, directing, concluding) I used ~ which seemed a smoothing, facilitating form. *Collaborating* (agreeing, encouraging, yielding turns, moderating personal views in the light of other contributions) was drawn as an = sign. *Commentating* (a relatively rare and sophisticated skill, involving monitoring the speaker's own or others' contributions) seemed a +. *Initiating* (a good idea-producing move at the start of a stage of the discussion) was a ✓, and a ✗ would serve contrary-wise for negatively disruptive comments.

> We were well into discursive skills now (although interactive skills continued to play their vital role throughout) and the children were *extending* each other's ideas through rephrasing or additional detail (→), or *countering them* rationally (←) by raising objections or qualifying previous statements. As they were forced by the context to select from and choose between many items of potential usefulness for survival, *reasoning* skills (explaining, justifying, comparing, hypothesizing, generalizing) came into play and were recorded / (flawed reasoning or chop-logic got a \ ). *Recounting* (using relevant coherent anecdote or paraphrasing events in the text) was set down similarly as >), by raising objections or qualifying previous statements. As they were forced by the context to select from and choose between many items of potential usefulness for survival, *reasoning* skills (explaining, justifying, comparing, hypothesizing, generalizing) came into play and were recorded / (flawed reasoning or chop-logic got a \). *Recounting* (using relevant coherent anecdote or paraphrasing events in the

text) was set down similarly as >, with < for fruitless anecdotal timewasting (though none of that occurred in the time I spent with the groups).

(The Open University, 1991, p. A280)

If you wish to devise an observation schedule, it is useful to do some form of open-ended observation to identify appropriate categories of talk. You'll also find it is difficult to categorize talk in any very complex way when observing and recording on the spot. If you wish to look at different types of talk in detail, it is necessary to use an audio-or video-recording.

The further reading list at the end of this section gives references to published schedules. Most of these have been tried and tested, but you will probably still wish to adapt published schedules for your own purposes. Some published interaction schedules are difficult to use, and a schedule that works perfectly well in one context may not in another. If you do use a published observation schedule, it is important to practise first. If you devise your own schedule you should pilot this to check that it works and provides the sort of information you want.

4.5   MONITORING AN INDIVIDUAL

The different types of observation mentioned in sub-sections 4.3 and 4.4 could allow you to identify activities carried out by individuals: field-notes are likely to mention pupils by name, and some observation schedules allow pupils' names to be specified. But you may wish to focus more closely on the behaviour of one or more individual pupils – or teachers, or other adults.

You will probably already be carrying out observations of individual pupils as part of record-keeping and assessment, but whereas assessing pupils normally involves keeping track of their progress over a school year, or at least a term, in monitoring one or more individual pupils as part of your project you will be involved in a more short-term (but possibly more detailed) exercise. Nevertheless, similar principles apply, in that you will need to decide which activities to observe and when, and to devise an appropriate format for recording your observations.

USING FIELD-NOTES TO OBSERVE AN INDIVIDUAL

You could use field-notes to jot down observations about a particular child while he or she carries out an activity. The ILEA Primary Language Record suggests one format for recording a diary of observations of pupils' language use (with separate sections for speaking and listening, as opposed to reading and writing) to support the assessment of a pupil's language. Example 4.11 shows observations made about a pupil's writing.

A more recent book, *Patterns of Learning* (CLPE, 1990) suggests how the Primary Language Record may be adapted to cover other subject areas within the framework of the national curriculum.

If you want to use the Primary Language Record, it is important to refer to the *Handbook for Teachers*, which gives guidance on completing the record itself and the accompanying diary of observations. But it is likely that you will wish to select your own format in line with your research questions. You will also need to decide how often, during which activities, and for how long, you wish to observe the child you're focusing on.

Field-notes may also be used to record an adult's behaviour. Example 4.12 is a 'condensed account of two hours' in the life of a primary head teacher. The notes were made by Marie Stacey, then a project co-ordinator in the National Writing Project, who was work-shadowing the head.

Example 4.11   Record of a child's writing

2 Reading and Writing: diary of observations
(reading and writing in English and/or other community languages)

Dates	Reading
	Record actual examples of the child's reading (including wider experiences of story) across a range of contexts.
1st week of term.	K shows little inclination to look at books when in the book corner. He enjoys conversation with other children at this time.
2.10.87	M.(K's cousin) read 'The Cat Sat on the Mat' with him. K. became greatly excited, "Miss, can I read it to you?" He took the book home to read.
16.10.87	K. returned to 'Cat on the mat' after quite a long gap — asked me to listen to him reading it. Confidently recalled the story.
2.11.87	K. read a small caption which accompanied a drawing of a sycamore 'wing' on the nature table.
13.11.87	Browsing in the book corner he became excited by finding the smaller version of 'The Hungry Giant'. "It's the same as this book!" pointing to the 'big book'
16.11.87	K. brought in 3 pages from a Hindi date calendar for our 'Home Writing' Board'.

	Writing
	Record actual examples of the child's writing (including stories dictated by the child) across a range of contexts.
Sept.	K. tried to make his first book (other children were making some so he wanted to join in). Tried to write his name but became frustrated.
2.10.87	K. asked me to help him write his name. We talked about it and practised each letter. Finally managed a 'k'. He was delighted.
6.10.87	Father sent in a Hindi/English alphabet & put it on the noticeboard.
9.10.87	Big breakthrough — K. managed to copy his name today.
14.10.87	K's first attempts at 'independent writing'. "I'm going to write a story." Echoes of 'the hungry giant' story. Chest story. Evidence of letters from his name in his writing.
15.10.87	K. suggested a notice for our bottle collection & dictated it to me. Drew a bottle to illustrate the notice.
16.10.87	Playing in the class shop 'Mr. Baker's Sandwich Bar' he took orders on the telephone & wrote on the jotter pad.

K *Reception — boy*
Languages: **Hindi, English**

(ILEA/CLPE, 1988, p. 42)

Example 4.12   Record of two hours in the life of a primary head

'Opens post; signs cheques; organises his secretary's tasks; updates staff noticeboard; discusses dangerously cracked wall in playground with caretaker; discusses assembly with colleagues; examines leak on the electricity junction box; discusses problems over timing of parents' appointments; reads letters infants have written following visit to clinic; discusses discipline problems with temporary teacher; answers phone; amends addresses on child's record card; takes phone call from fellow head; sees teacher who wants time off; child reads to him; marks record and discusses reading; answers letters left over from

> yesterday; caretaker reports on wall – the Authority has promised to send
> someone; into Infants' assembly to warn them about danger from wall; sends
> note for Junior assembly about wall; secretary arrives, discusses her tasks; goes
> through his governors' report; goes through catalogue for staple guns; lists his
> own priorities for the day; tries to phone swimming instructor over a disciplinary
> problem (line engaged: this is his third attempt); phones pastoral adviser (line
> engaged); tries swimming instructor again (she's out); phones pastoral adviser re
> staffing; head refused telephone request for fundraising; wet playtime – he walks
> around, talks to children; inspects wall anxiously.'
>
> (Stacey, 1989, p. 15)

As a result of the whole observation Marie Stacey is able to make comments
about aspects of the head's professional life, such as the amount of routine
administration he is obliged to do.

USING AN OBSERVATION SCHEDULE TO OBSERVE AN INDIVIDUAL

You may want to carry out more structured observations of specific activities or
types of behaviour. Of the observation schedules mentioned above, Examples 4.7,
4.8 and 4.10 provide information about the behaviour of individuals. Alternatively,
you could construct your own schedule focusing on the types of behaviour you
are interested in.

Beate Schmidt-Rohlfing, a teacher from Leeds, trailed a seven-year-old girl, Asima,
for a school day. The girl was deaf but, along with other deaf children, attended a
mainstream school. Some lessons were spent in a special 'base' with other deaf
pupils, others in a classroom with hearing pupils. The school had a bilingual
policy – deaf pupils used British Sign Language as well as English. Beate Schmidt-
Rohlfing wanted to see who this particular girl communicated with over a day.
She noted down how often the girl initiated communication with others (members
of the school staff and deaf and hearing peers) and how often others initiated
communication with her. The information was written up as a case study for the
Open University pack P535 *Talk and Learning 5–16.* The results of the
observation were presented as a chart, reproduced as Example 4.13.

For a discussion of recording and transcribing talk, see Section 2 of Part 3 of this
Handbook.

4.6   USING CHILDREN'S WORK

So far in this section I have discussed how you can observe children and adults,
documenting their behaviour or the range of activities they engage in. But what if
there is a tangible outcome to children's activities, a piece of work that you want
to use as evidence in your project?

Pupils' work forms a useful source of evidence of their responses to a lesson, or
of their knowledge, understanding or interests. It is something tangible that you
can discuss with colleagues or pupils, so you can compare your interpretations
with others'. You may find colleagues can supply you with examples of the same
pupil's work from different contexts, though in this case you will lack contextual
information on how the work was produced.

In considering ways of recording impressions of children's work, a similar
distinction can be observed to that in previous sub-sections – between open-
ended scrutiny of children's work (as with field-notes) and using a fixed set of
categories to examine children's work (more akin to using an observation
schedule). Children's written work is used as an example throughout this sub-
section, but the general principles discussed will apply to other forms of work
(drawings, models, etc.).

Example 4.13   Chart showing whom a child communicated with

	'A' to deaf peers	deaf peers to 'A'	'A' to hearing peers	hearing peers to 'A'	'A' to deaf Instructor	deaf Instructor to 'A'	'A' to support staff	Support staff to 'A'	'A' to class teacher	class teacher to 'A'
1. session base 9 – 9.40	26	24			17	12				
2. session classroom 9.40 – 10.30	14	15	3	6			18	21	0	1
playground	8	5	4	3						
3. Session base 10.50 – 11.55	21	23					16	22		
lunch 12.00 – 12.20	12	12	4	6						
4. session classroom 1.05 – 2.25	25	26	4	7			23	15	2	2
playground	5	7	2	5						
5. session base 2.45 – 3.15	9	8			10	10				

(The Open University, 1991, p. A101)

Focusing on the tangible product of children's work necessarily provides a partial picture of what children can do. You may also wish to know how children carry out their work. In this case, you will need to look at one or more of sub-sections 4.3–4.5, depending on which aspects of behaviour interest you. You may wish to know what children think about their work, in which case, see Section 3, 'Getting information from people'. It is often useful to combine information from one or other of these sources with information derived from the product of children's work.

OPEN-ENDED SCRUTINY OF CHILDREN'S WORK

The Primary Language Record (PLR) illustrated in Example 4.11 provides one format for drawing on a combination of methods – it allows a teacher to record observations about the way a child writes as well as impressions about the written work itself. The PLR is not totally open-ended. It highlights certain aspects of writing to look for. In the same way, your own scrutiny of children's work will be guided by your research questions – it is unlikely to be completely open. You may intend to focus on formal conventions of writing (e.g. a child's developing use of punctuation), on content, or style, or on a combination of features.

When writing up an account of children's writing, teacher-researchers often include extracts from writing to support a point they wish to make, or they may include one or more whole pieces of writing with an attached commentary. Example 4.14 is part of a case study of the writing development of a four-year-old child, Christopher. It was written by Margaret J. Meek, a co-ordinator with the National Writing Project, who observed the context of Christopher's writing as well as looking at the finished product.

If you wish to refer to work other than a piece of writing (or drawing) in your report it may be difficult to include examples. You could include photographs, or you may need to resort to a description of the work.

Example 4.14   Using a child's writing as evidence

On another occasion, Christopher's teacher asked a group of children to illustrate their favourite nursery rhyme. She intended to accompany these by writing out the rhymes (alongside) herself, but Christopher wrote his own version of 'Humpty Dumpty' quite unaided. Later, he asked his teacher to write out the rhyme correctly — the first time he had acknowledged the difference between his writing and that of adults.

What does he know about writing?

- that rhymes are arranged in a particular way on the page

- that print usually starts at the top of the page and moves downwards

- how to write a large range of capital and lower case letters

- how to represent each sound in a word with a letter, although he occasionally uses one letter only to stand for a whole word, eg *K* for *'King's'* and *s* for *'sat'*.

- that words carry a consistent phonic pattern — *ol* is used to represent *'all'* in *'fall'* and *'all'*

- how to hold a long piece of text in his head as he writes

(Meek, 1989, pp. 77–8)

ASSIGNING CHILDREN'S WORK TO A SET OF CATEGORIES

You may wish to examine a single piece of work according to a set of categories, but it is more likely you will want to use this method to compare a range of work, perhaps the writing produced by a child in different contexts, or work from several pupils.

Some teachers involved in the Sheffield Writing Project wanted to find out about the range of writing produced by upper-primary and lower-secondary school pupils during a normal week of school. They collected all the writing produced by a sample of pupils (including rough notes and 'scribbles'). To compare the *amount* pupils wrote in different subjects, they simply counted the total number of words produced in English, history, and so on.

The teachers also wanted to record certain characteristics of children's writing: the extent to which pupils used their own words; how much control pupils had over what they wrote; how 'engaged' pupils seemed to be in their writing; whether the process or the product of writing was emphasized; and how teachers responded to pupils' writing. Example 4.15 shows a chart they devised to record the extent to which pupils used their own words.

Example 4.15   Record of a ten-year-old pupil's work for one week

	Origin of words		
Derivative <..> *Pupil's own*			
Totally	*Mostly*	*Mostly*	*Totally*
Maths 1		Geography	History 1
Maths 2		French 2	History 2
French 1		Science 2	English
			Science 1

Note: 'French 1' = first piece of work completed in French.

In this case, the Sheffield teachers identified four categories of work: 'totally derivative', 'mostly derivative', 'mostly pupil's own', 'totally pupil's own'. The categories form a continuum. The teachers provided a description of each category:

> *Totally derivative* includes not only directly copied or dictated writing, but the writing in which a pupil may be required to fill in blanks with words from a given text as in a comprehension exercise.

> *Mostly derivative* indicates that there is limited scope for pupils to use some words of their own choice or, for example, to write up in discursive prose some information on which notes had previously been dictated. The most common example in the data was sentence length answers where pupils had to extract information from a text.

> *Mostly pupil's own* might include, as an example, a poem in which pupils had to include a given repeated line.

> *Totally pupil's own* indicates that the pupils were free to choose their own means of expression, although, for example, class discussion may have preceded the writing.

> (Harris *et al.*, 1986, p. 6)

Specifying the characteristics of each category in this way will probably make a coding system more reliable, but there is still scope for disagreement between

coders. This is particularly likely between categories such as 'mostly derivative' and 'mostly pupils' own', where some personal judgement is called for.

When devising a category system it is important to try this out to see if it is appropriate for the children's work you want to examine. Trying it twice with the same pieces of work, or asking a colleague to use it, also acts as a test of your system's reliability.

Assigning pupils' work to a set of categories provides you with quantitative information: the Sheffield Writing Project teachers were able to specify, for each school subject, the number of pieces of pupils' written work that fell into each of their categories. They could then discuss, for instance, the extent to which pupils used their own words in different subjects.

When discussing quantitative information like this, it is possible to quote 'raw' figures – the tallies made of pupils' writing. But it is often better to give percentage figures when making comparisons between groups. Figures may also be presented as a table or histogram. Section 5 provides advice on presenting numerical information.

4.7   REVIEWING METHODS

This section discusses several ways of 'seeing what people do'. No method is perfect – each has strengths and weaknesses. What follows is a summary of what each method can do and what its limitations are.

WAYS OF COLLECTING EVIDENCE

Recollections

What the method can do	*Limitations*
Allows you to reflect after the event on part of the school day, or a meeting. You are likely to recall episodes that stand out.	There is a danger of unintended bias, exacerbated if you rely on recollections.
Does not require any special arrangements for the observation.	You cannot go back and check on any observations you are not sure of.
Interferes very little with normal teaching or participation in a meeting.	You will not be able to remember events in detail.
Because it can be fitted in with everyday work, you may be able to carry out more	On any occasion, you will collect less information than someone recording extensive observations at the time.

Observation at the time of activities, of talk, or of a particular individual

What the method can do	*Limitations*
Allows you to observe points of interest as they occur. You can observe across a whole lesson/meeting or at selected intervals.	You only have a short time to decide what to record.
Requires preparation – pen and paper, perhaps a schedule – but no special hardware.	You cannot go back and check your observations afterwards.
On any occasion, you will be able to make fuller observations than someone relying on recollections.	You cannot do as detailed an analysis as would be possible with an audio- or video-recording.

May be carried out in your lesson by a colleague or pupil.	Is difficult to carry out while teaching or taking an active part in a discussion or activity.
You can observe in a colleague's lesson.	You need a relationship based on trust – and you may still be intrusive. Pupils may interrupt to ask for help.

Children's work

What the method can do	Limitations
Can provide partial evidence of how your teaching has gone, or of pupils' knowledge and/or understanding.	Focuses on product of work – you may want additional evidence on process.
Data can be collected by someone else.	Work may be hard to interpret if you don't know the context in which it was produced.
You can return to, and reconsider, the evidence, and share interpretations with a colleague/pupils.	Extensive scrutiny of children's work is time-consuming.

FIELD-NOTES VERSUS OBSERVATION SCHEDULES

Throughout this section I have made a broad distinction between open-ended observation (using field-notes or open-ended scrutiny of children's work) to provide qualitative information; and more structured observation (using an observation schedule or assigning children's work to specific categories) which usually provides quantitative information. The main features of the two approaches include:

Field-notes (or open-ended scrutiny of children's work)

- Field-notes are open-ended. Observers note down points of interest. Anything can be noted down (though researchers will clearly be guided by their research questions).
- Sometimes observations may be unexpected, or things may be noted down that only begin to make sense later when mulled over and compared with other information. Such flexibility is useful, particularly when you feel it is too early to stipulate exactly what you want to look for.
- The information provided is qualitative. One of the commonest ways of using such information is to quote from field-notes (or transcripts, or examples of children's work) to support a point you want to make.
- Open-ended observation is selective – two different observers may (legitimately) notice different things about the same event/talk/piece of work, or make different interpretations of events.
- There is a danger of bias, in that observers may see what they want to see, or ignore counter-evidence.

Observation schedules (or assigning children's work to categories)

- Schedules focus on peoples' participation in specified activities, or on specific features of talk or pieces of work.
- They produce quantitative information that can be represented numerically (for instance, as a table or bar chart).
- They allow systematic comparisons to be made between people or between contexts.
- They may be constructed so as to be relatively reliable so that two different observers would get similar results from the same observations.

- When they involve making a personal judgement about something, they are likely to be less reliable.
- They necessarily restrict what an observer can observe – important information not included in the schedule may be missed.

When deciding how to carry out your research, it is often useful to draw on a combination of methods – these may complement one another and provide a more complete picture of an event.

This section should have given you some ideas for how to analyse the data you collect (how to make sense of it and how to sort it so that you can select information to use as evidence in your report). Section 5 provides further advice on analysing data and presenting your results to others.

FURTHER READING

ATKINSON, P. and HAMMERSLEY, M. (1998) 'Ethnography and participant observation' in N. K. DENZIN and Y. S. LINCOLN (eds.) *Strategies of Qualitative Inquiry*, Thousand Oaks, California, Sage.

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

> This book takes the reader through the various stages in conducting case study research and includes a helpful account of data collection and data analysis methods.

CAVENDISH, S., GALTON, M., HARGREAVES, L. and HARLEN, W. (1990) *Observing Activities*, London, Paul Chapman.

> A detailed account of observations carried out in primary schools in the Science Teacher Action Research (STAR) project. The book provides some general discussion of classroom observation and describes the Science Process Observation Categories (SPOC) system devised for STAR.

COOLICAN, H. (1990) *Research Methods and Statistics in Psychology,* London, Hodder and Stoughton.

> This contains a very useful section on observation and coding. It is written for the novice researcher and is clear and easy to follow.

CORSARO, W. A. and MOLINARI, L. (2000) 'Entering and observing in children's worlds: a reflection on a longitudinal ethnography of early education in Italy' in P. CHRISTENSEN and A. JAMES (eds.) *Research with Children: perspectives and practices*, London, Falmer Press.

> A resource book on the methodology of childhood research. The chapter by Corsaro and Molinari is written by two leading researchers in the field of child observation and ethnography.

MYERS, K. (1987) *Genderwatch! Self-assessment schedules for use in schools* (see full reference and description in the further reading list for Section 2).

> The *Genderwatch!* schedules also cover classroom, school and playground observations.

ROBSON, C. (1999) *Real World Research: a resource guide for social scientists and practitioner researchers*, Oxford, Blackwell.

> Chapter 8 covers all aspects of observational methods.

THE OPEN UNIVERSITY (1991) *PE 635 Working with Under Fives: an in-service training pack*, Milton Keynes, The Open University.

> This pack provides detailed guidance on observing young children, and includes video activities.

WRAGG, E. C. (1999, 2nd edn) *An Introduction to Classroom Research*, London, Routledge.

> A best-selling book written in clear and accessible language. It shows how various people study lessons for different purposes and in different contexts. It contains numerous examples of coding schemes as well as discussing how to develop them.

5 INFORMATION AND DATA: ANALYSIS AND PRESENTATION

5.1 INTRODUCTION

This section of the Handbook contains general advice on the analysis and presentation of data. You will probably have realised from reading the other sections that processes of analysis and interpretation begin to take place as soon as you make a start on collecting your data. During the initial phases of your project you will find yourself making decisions about what to observe and record, which questions to ask in interviews, which documents to select and so on. In a sense these decisions are a preliminary form of analysis as you are beginning to identify potentially important concepts and hypotheses which will aid later analysis and explanation.

During the course of carrying out a piece of research, something unexpected may occur which causes a change in direction and the formulation of new research questions or hypotheses. When this happens, researchers try to analyse why things departed from the expected. Was the original focus of the research inappropriate? What implications can be drawn from the new information? Should the research instruments (questionnaires, interview and observation schedules) be redesigned to take account of the unexpected? Usually this type of exploratory analysis happens during the pilot stage.

As soon as you begin to collect your data you can start to explore what it is telling you, although the picture will probably keep changing as you collect more information. During this phase researchers often begin to formulate preliminary hypotheses about what the data might mean.

The main business of analysis begins once all the information or data has been collected. This is the most exciting phase of the project. All the hard work of data collection has been completed. Now you can start to look for patterns, meaning and orderings across the complete data set which could form the basis of explanations, new hypotheses and even theories.

Analysing and interpreting data is a very personal thing. No one can tell you precisely how to set about it, although, as you have seen in previous sections, guidelines do exist. For quantitative data, things are a little easier as there are standard ways of analysing and presenting numerical information.

This section contains some very general guidelines and examples of the analysis of information. The section also includes advice about presenting data in your project report. First of all I shall discuss how to deal with 'unstructured' information from informal interviews, open-ended questionnaires, field-notes and the like. Then I shall take a look at how more structured information, such as that from interview and observation schedules, can be tackled. In the latter case it is usually possible to quantify the information and present it as tables and/or graphs. A set of further readings is given at the end of the section. These can give more detailed guidance on the topics covered here.

You should read this section while you are still designing your study and before you begin to collect any data. You will find it most useful to read through the whole section quickly, and then to go back to the sub-sections which you need to read in more detail when you are deciding which methods to use for your project. You will need to return to this section once you have collected your data. This time you will probably want to concentrate only on those sub-sections of direct relevance to your project.

5.2   DESCRIPTION, ANALYSIS, EXPLANATION AND RECOMMENDATION

Data can be used in two ways: *descriptively* or *analytically* (to support interpretations). In practitioner research the main purpose of analysis and interpretation, whether the data are qualitative or quantitative, is to move from *description* to *explanation* and/or *theory*, and then to *action* and/or *recommendation*. Let's look at some extracts from Margaret Khomo's project report in order to illustrate this.

Example 5.1   Moving from description to recommendation

In her report, Margaret gives the following account of pupils' reactions to recording their family histories on tape:

> The pupils were very enthusiastic when they had to record their findings about their family. Even sensitive information – for example revealing that a mother had been adopted – was included. Most of the pupils couldn't wait to hear the finished tape-recording, the only ones who did not were those pupils who did not like the sound of their voices on tape. Listening to the tape caused amusement.

This is a descriptive piece of writing drawn from Margaret's record of her classroom observations. She also, however, tried to analyse why it was that her 'active learning' approach generated so much interest and enthusiasm from pupils, particularly the 'less able' pupils:

> The active learning approaches used ... created a working situation in which the pupils were sharing their findings and working out their answer(s) together. This appeared to generate a sense of unity within the class whereas within the control group it was very much a case of each individual completing his or her work without a sense of class involvement ...

> The active learning approaches used provided more opportunities for the less able pupils ... to contribute positively to the work of the class.

Here Margaret has been able to propose an explanation as to why 'active learning' is an effective way of teaching about migration. It encourages a sense of unity among pupils by providing a co-operative learning environment where all pupils, including the less able, feel able to share their own personal knowledge and make positive and valued contributions.

Finally, as a result of her observations Margaret was able to make recommendations concerning the management of an active learning environment. Her main recommendation was that active learning was an extremely effective method of teaching history, and that it had particular benefits for less able pupils. When using active learning methods, however, teachers needed to be aware that lesson plans must be more tightly structured than when a more didactic approach is used. Also, time limits need to be set for each activity if pupils are to get through all the work.

I have been able to present neat and tidy excerpts from Margaret's final report. What I have not been able to show are the processes of sifting, sorting and organizing her data that she went through to arrive at these explanations and recommendations. So just what do you do when faced with analysing and interpreting pages of field-notes, notes on documents, diary excerpts, observations, records of interviews, transcripts and the like? The next sub-section gives some guidelines.

5.3   DEALING WITH QUALITATIVE DATA

When dealing with qualitative data you have to impose order on it and organize it so that meanings and categories begin to emerge. One of the most commonly used methods for doing this is known as the method of constant comparison. Hutchinson explains this method as follows:

> While coding and analysing the data, the researcher looks for patterns. He [*sic*] compares incident with incident, incident with category, and finally, category with category ... By this method the analyst distinguishes similarities and differences amongst incidents. By comparing similar incidents, the basic properties of a category ... are defined. Differences between instances establish coding boundaries, and relationships among categories are gradually clarified.
>
> (Hutchinson, 1988, p. 135)

The main aims of this method are to simplify your data by establishing categories, properties of categories, and relationships between categories which will help you explain behaviours, actions and events. This in turn may lead to new theoretical understanding. In qualitative data analysis, looking for and predicting relationships between categories is the first step towards forming new theories.

In Section 1 I mentioned the notion of 'grounded theory' (Glaser and Strauss, 1967) as this applied to qualitative research. What this means is that, in comparison to quantitative or predictive studies where the researcher starts off with an hypothesis based on an existing theory, in qualitative research it is possible to construct and test hypotheses and theories after the data collection has begun. These new theories are 'grounded' in, or arise from, the data.

IDENTIFYING INCIDENTS

In the quotation above, when Hutchinson talks about an 'incident' she is referring to observations or records of segments of activity, behaviour or talk. Identifying where one incident or segment leaves off and another begins is important when analysing qualitative data. The examples of different kinds of field-notes in sub-section 4.3 illustrate some of the many ways in which researchers identify incidents.

In Example 4.3, Will Swann uses 'event-sampling' to identify two episodes or incidents which took place during his lesson. One was an incident where a pupil took off his shoes and socks during an improvization session. The second described children's participation in reading the poem that came out of the improvization session.

In Example 4.4, Janet Maybin organized her field-notes into a series of incidents which took place during a school assembly. This is another example of 'event-sampling'. Note how Janet used the tape counter to help her find each incident.

In Example 4.6, Lorraine Fletcher used a 'time-sampling' strategy to record a series of classroom activities over specified time periods. In this case, however, each segment of time may contain a number of incidents which must be identified.

An incident is not an arbitrary slice or piece of activity, as is a ten-minute section of time. It is a constituent part of an identifiable whole where the whole could be a lesson, an interview, a classroom day, an assembly, a meeting, a consultation and so on. When identifying where one incident begins and another leaves off (or where one topic begins and ends, if you are dealing with talk), you will find that events within an incident are more related to one another than they are to events outside the incident.

IDENTIFYING CATEGORIES

Once you have identified the incidents then you can begin to sort and categorize them. The process of categorization can probably be explained most clearly by an example.

Example 5.2   Identifying categories

In her paper in *Practitioner Research in the Primary School* (Webb, 1990), Susan Wright describes how she carried out an investigation of language use in the teaching and learning of mathematics. She conducted a 'closely focused case study of six middle infant children', and collected her data during normal maths teaching sessions over six months. In particular she concentrated on the topics of time, length and weighing. Her data consisted of tape-recordings, an observation diary and children's worksheets and maths notebooks.

Even before Wright started to collect her data, however, she categorized her research questions into the following four groups:

Questioning

For example,

       What kind of questions do I ask?
       What kind of questions do the children ask?
       What kind of response do the various questions elicit?

Word usage

For example

       Which words do children actually use?
       Are there any mathematical words which cause particular difficulty?

Shared meanings and misunderstandings

For example:

       Is there any discernible pattern in the areas of misunderstanding?
       Can I as a teacher learn anything from this?

Non-linguistic evidence of understanding

       What factors other than language indicate comprehension?

(adapted from Wright, 1990, pp. 127–8)

Once she had collected the data and started to analyse her transcripts she discovered further categories. For example, when Wright looked at her questions to children (there were some 750 examples of these), they could be grouped as follows:

       Factual knowledge questions
       Personal questions
       Prompting questions
       Reasoning or hypothetical questions
     (Wright, 1990, pp. 130–31)

Similarly, she found she could fit the questions the children asked into these categories:

> Checking up questions
> Tentative answers
> Requests for information
> Miscellaneous questions
> [Pupils' open questions to each other.]

(Wright, 1990, p. 133)

Wright concluded that,

> There should be greater use of reasoning questions by the teacher and more opportunity for children to hypothesize about their work; children's active use of mathematical vocabulary should be encouraged together with an awareness of the need to extend the personal vocabularies of some children ...

(Wright, 1990, p. 151)

In this example, the 'incidents' that Wright was particularly interested in were questions: the questions the children asked of each other and of their teacher, and the questions the teacher asked the children. When categorizing these questions Wright probably proceeded as follows:

1   Listened to tapes of the lessons, or read through transcripts and made a note of all examples of 'questions'.

2   Sorted these examples into three piles:

   (a)   teacher's questions;

   (b)   children's questions to teacher;

   (c)   children's questions to each other.

3   Sifted through each pile in turn to see if categories of question could be identified.

4   Once categories were identified, sorted the questions into further piles under each category.

5   Saw whether any questions which were left over formed a further category, or whether the first set of categories needed to be modified to accommodate these.

Sub-sections 2.3, 2.5, 4.3, 4.4 and 4.6 give further examples of how to construct categories.

As I mentioned at the beginning of this session there are no hard-and-fast rules about analysing qualitative data. As a starting point most researchers recommend actual physical sorting of the data into basic categories. They do this by writing up each incident on a separate piece of paper or index card which can then be arranged and rearranged into various piles as categorization proceeds. Wolcott (1990) advises that one should 'begin sorting by finding a few categories sufficiently comprehensive to allow you to sort all your data' (p. 33). For example, you could sort all the data from interviews with men into one pile, and that from women into another. Or you could differentiate talk produced by adults from talk produced by children; information from government documents with information from local documents, data collected in one school or class from data collected in another and so on.

If your data include samples of talk, you may find there are examples of *indigenous categories* which reflect a classification system used by the people in the setting you are studying. For example, children might categorize themselves as either 'brainy types' or 'sporty types'. Where indigenous categories exist in the data, then analysis involves discovering the properties of these categories, and offering explanations for their derivation.

Wright's categories in Example 5.2 are examples of *researchers' categories*, that is, categories you create for yourself. As you construct more detailed sub-categories within your original all-embracing categories you will probably find some incidents and statements that fall into more than one category, and some that will not fit at all. Some categories may have to be redefined or even abandoned either if they contain too few entries, or if they are becoming too large. If you have used triangulation (see sub-section 1.6) you will have a means of checking the validity of your categories. If they are valid they should be able to cope with data from different sources.

Finally, you can use *pre-specified* categories which others have used and published before you. Section 4 contains examples of these, such as the nursery observation schedule by Glen McDougall (Example 4.7).

The books in the further reading list at the end of this section give more detailed advice and techniques on analysing qualitative data. You should not feel bound to use the methods set out in this Handbook if you come across something which is more appropriate.

5.4   PRESENTING QUALITATIVE DATA IN YOUR REPORT

The selection of material to include in your report is one of the main tasks facing you when writing about qualitative data. Coolican offers the following advice:

> A qualitative research report will contain raw data and summaries of it, analysis, inference and, in the case of participant observation, perhaps feelings and reactions of the observer at the time significant events occurred. These are all valid components for inclusion but it is important that analysis, inference and feeling are clearly separated and labelled as such.
>
> (Coolican, 1990, p. 236)

The main body of your report should contain summaries of your data rather than the actual data itself, unless you want to discuss a particular piece of data in depth (such as a section from a transcript or examples of children's work). For the most part, raw data such as field-notes, accounts of meetings and interviews, transcripts and the like should be included as appendices. Your report should include brief interpretive accounts of how you analysed and categorized your data, and definitions of your categories. Well-chosen illustrative examples will help readers understand your choice of categories.

When you come to select data to summarize for your report, it is worth while remembering that if you have collected a lot of information, then you will not be able to include summaries of all of it in your report. You should go back to your original research questions for guidance on what to select. Data which answers these questions should be included; data which is interesting in itself, but which does not answer or throw new light on the original questions should be discarded.

While most of what you will include in your report will be summaries of your data, this does not mean that we do not want you to put *any* raw data in the report. Qualitative reports are brought to life by quotations. Here is Coolican again:

> The final report of qualitative findings will usually include verbatim quotations from participants which will bring the reader into the reality of the situation studied ... The quotes themselves are selections from the raw data which 'tell it like it is'. Very often comments just stick with us to perfectly encapsulate people's position, on some issue or stance in life, which they appear to hold.
>
> (Coolican, 1990, pp. 235–6)

Carefully chosen quotations can play a very important part in reports based on qualitative data. If you want to include quotations in your report then you must make them work for you. Brief quotations which go straight to the heart of the matter have much more impact than longer, more rambling ones, even if the latter do make important points.

No one can really tell you what to select to put into your report. You should, however, try to observe Coolican's guidelines about making clear distinctions between summaries of data, analysis, and interpretation.

5.5   DEALING WITH QUANTITATIVE DATA

The two principal methods of obtaining quantitative data are measuring and counting.

In sub-section 1.5, we defined as quantitative data anything that could be 'quantified' on some numerical basis. As an example, we gave children's scores on a reading test. Here, it is reading performance that is being measured, and the measure is the numerical score obtained from the test. A second type of quantification we referred to was the assignment of children to groups or categories.

For example, on the basis of the individual reading performance of 28 children, you might want to assign 8 to the category of 'above average reading ability', 15 to the category 'average reading ability' and 5 to the 'below average reading ability' category. In this instance you are counting how many instances or cases fall into categories you have selected beforehand.

In this sub-section we shall be dealing mainly with structured data generated by questionnaires, interview schedules, observation schedules, checklists, test scores, marks of children's work, rating scales and the like. Test scores, marks and rating scales all yield numerical data and are therefore quantitative by definition. The kind of information you collect when you are using an observation schedule, checklist or questionnaire is more likely to be in the form of ticks and crosses, and this data has to be converted to numbers before you can start analysing it.

As I mentioned above, qualitative data can be quantified by assigning instances to categories, and then counting up the number of instances in each category. This is a particularly useful technique for dealing with structured data. There is no reason why categories generated from the analysis of the type of unstructured data discussed in sub-section 5.3 cannot be treated in the same way so as to allow numerical comparisons to be made. However, this approach to unstructured data is less common in practice than the qualitative methods discussed in sub-section 5.3.

Discovering categories and assigning incidents to categories simplifies qualitative data and can help you discover patterns and relationships which lead to new hypotheses and interpretations. The same can be said of quantitative data, except that here we have to introduce some new ideas about how to describe the data.

Categories and variables

When you are planning your investigation two things you need to decide at an early stage are:

> What you intend to measure or count;
> What units of measurements you should use.

Here it is conventional to distinguish categories from variables. Categories have already been discussed in sub-section 5.3. Here we shall concentrate mainly on variables. Alan Graham (1990) describes the differences between categories and variables as follows:

> Whereas categories are labelled with names, variables are measured with numbers. Variables are so called because they vary, i.e. they can take different values. For example, age and family size are variables

because age varies from one person to another just as family size varies from one family to another.

... You may have noticed that it is impossible to measure someone's age with perfect accuracy – you might know it to the nearest minute perhaps, but what about the seconds, tenths of seconds, thousandths of a second ... ? With family size, on the other hand, perfect accuracy is possible, because there is a basic unit – people – and they tend to come in whole numbers!

... All variables like age, which can be subdivided into infinitely small units are often called continuous variables. The other type of variable, of which family size is an example, comes in discrete chunks, and is called a discrete variable.

(Graham, 1990, pp. 17–18)

When you are designing your study it is very important to work out whether your methods of data collection are going to give you discrete or continuous data, as this will influence the kind of analysis you are able to do and how you present your data. Unlike variables, which can be either continuous or discrete, categories are always discrete. For example, in a questionnaire about people's political attitudes, 'vote labour', 'vote conservative', etc., are names for discrete qualitative categories. Counting up the number of instances, or the number of people responding positively to each category, quantifies the data.

Analysing category data

Let's look at an example of some category data to see how we can begin to analyse it. Example 5.3 shows one of the observation schedules used by a student for a project on gender and classroom interaction in CDT and home economics (HE) lessons.

The observation schedules contained three main categories – teacher addresses pupil (teacher–pupil); pupil addresses teacher (pupil–teacher); and pupils address each other (pupil–pupil). The schedule in Example 5.3 is a record of interactions in an HE lesson on textiles. This lesson centred round the three activities shown on the lefthand side of the schedule. For each activity, under the appropriate category heading, the observer noted the number of times interactions take place between ten boys, five girls and their teacher. Each interaction (represented by a tick or a cross) occurs as a *discrete* instance of the behaviour being recorded. Note how the observer also recorded his own impressions to help him interpret the data later.

Once you have quantified your data, as I have done in Table 1, then there are a number of things that you can do with them. Figure 5 and Table 1 contain raw data. Without further analysis, raw data alone cannot tell you very much. Let's see what the category data in Table 1 can tell us when we start to analyse them further.

When I looked at Table 1, I approached it in the following way. First I added up the total number of observations in the table. This came to 134. Next I added up the total number of observations for the girls (48), and for the boys (86) and worked out what these were as a *percentage* of the total number. For the boys this came to 64 per cent ($86/134 \times 100$), and for the girls it came to 36 per cent ($48/134 \times 100$).

This was an interesting finding. On the face of it, it looked as if, in this lesson, the boys dominated classroom interaction and spoke, or were spoken to, twice as often as the girls. Before jumping to conclusions, however, I took another look at the table and noticed that there were *twice as many boys (10) as there were girls (5)* in this class. It is not really surprising, therefore, that there were more interactions generated by boys.

To confirm this I worked out the average or mean number of interactions per pupil by dividing the total number of interactions (134) by the total number of pupils (15). This comes to a mean of 8.9 interactions per pupil. Next I worked out

Example 5.3 Coping with categories

√ = BOY X = GIRL	TEACHER/PUPIL	PUPIL/TEACHER	PUPIL/PUPIL
ACTIVITIES IRONING /PRESSING	√√√√√√ xxxxx √√√ xx√	√√√x√√√kxx√√√ xx√	√√√xx√x√√√√√x √√ x x
SETTING UP SEWING MACHINE	√√xx √√√x x√x √x√	√√√√ xx√xxx √√√ xxx√√	√√√√xx√√√√x xx√
CUTTING - OUT PATTERN	√√√√ xx √√√x √√√x√√√√	√√√x √√√xx√ √√√x	√√√√√√xxx √√√√xx√
GENERAL COMMENTS BOY√ GIRL X	TEACHER TRIES TO INTERACT WITH ALL PUPILS BOYS DEMANDING.	BOYS SEEK/ASK FOR/ DEMAND HELP/ADVICE GIRLS GET ON WITH WORK NEED SPECIAL HELP/ADVICE	A LOT OF INTERACTING NOT CONCERNED WITH WORK ESPECIALLY BOYS
CLASS 2R LESSON HOME ECONOMICS TEXTILES		GROUP 4 NO. OF BOYS 10 NO. OF GIRLS 5	DATE 14.5.90

Figure 5   One of John Cowgill's observation schedules.

When you count up the number of ticks and crosses in each cell of Figure 5 you arrive at the figures in Table 1.

Table 1
The total number of interactions between pupils and teachers in an HE lesson.

	Type of interaction					
	Teacher–pupil		Pupil–teacher		Pupil–pupil	
Activities	Boys	Girls	Boys	Girls	Boys	Girls
Ironing/pressing	10	6	9	5	10	6
Setting up sewing machine	8	6	10	7	9	5
Cutting out pattern	12	4	8	4	10	5
Totals	30	16	27	16	29	16

Total no. of interactions = 134 (86 boys, 48 girls)

No. of girls = 5; no. of boys = 10

The number of interactions per category for boys and girls (bottom two rows of Table 1) can be converted into the percentages shown in Table 2.

Table 2   The percentage of interactions attributed to boys and girls according to type of interaction.

	Teacher–pupil	Pupil–teacher	Pupil–pupil
Boys	34.8	31.4	33.7
Girls	33.3	33.3	33.3

the mean number of interactions generated by boys, which came to 8.6 (86/10), and by girls, 9.6 (48/5).

While it is not strictly legitimate to calculate means when you have discrete data, as you cannot have 0.6 of an interaction, working out the means has told us something very useful. Boys and girls were equally likely to engage in some form of classroom interaction in this HE lesson. If anything, the girls engaged in more interactions on average (9.6) than the boys (8.6), and my first impression, that it was the boys who were doing all the talking, was wrong.

Of course, we cannot draw firm conclusions about patterns of classroom interactions on the basis of a single observation session of one lesson and one group of pupils. The student actually collected data from six lessons over a two-week period, which gave him a richer data base to work with. His analyses led him to the conclusion that, 'The opportunities for interactions within the lessons observed were equal for both boys and girls'.

Next I looked to see if the patterns of interaction were different depending on who was doing the talking. Did teachers address more remarks to boys or to girls? Did the girls talk among themselves more than the boys? Using the data at the bottom of Table 1, I worked out the percentages of interactions attributed to boys and girls in each category (see Table 2). Again, the pattern is quite clear. The 48 interactions attributed to the girls were equally divided between the three categories. The boys were addressed by their teacher slightly more frequently than the girls (34.8 per cent versus 33.3 per cent) and spoke to the teacher marginally less often than girls (31.4 per cent as opposed to 33.3 per cent). These differences between boys and girls are not sufficiently large to claim that there is a real difference between them.

You can see by this example that working out *percentages* and *means* are two very useful techniques for analysing category data, although as I explained above you must be careful when using means because of the discrete nature of the data. Means are more useful when it comes to dealing with data in the form of continuous variables. Converting things to percentages allows you to make direct comparisons of discrete data from unequally sized groups.

When you are dealing with this type of data the trick is to simplify it so that patterns begin to emerge. I did this for Example 5.3 by converting the data to percentages and means. Also, I looked at overall totals across Table 1 rather than the numbers in each individual cell. Looking at overall totals across categories is known as *collapsing the data*, and is a useful way of looking for patterns and relationships in quantitative data. Wolcott (1990) advises you to look for the broadest possible category divisions when you begin to analyse qualitative data (see sub-section 5.3). Similarly, collapsing categories is a good way to start looking at quantitative data.

Analysing variables

Example 5.4 gives a *summary table* of some data collected by Renfrow when she evaluated the effects of two different art training programmes for gifted children. Based on her own observations and observations in published literature, this study is an example of a predictive experimental study. Renfrow wanted to evaluate different methods of teaching art to gifted children, and to see how their drawing skills could be improved. Her own ideas about teaching art as well as those in published research reports led her to formulate the following hypothesis: '... Given nine weeks of systematic training in perception and copying, gifted ... students between the ages of eight and 11 would be able to draw the head of a human being more realistically than gifted students receiving traditional art instruction ... (Renfrow, 1983, p.28).

In this study the variables were (a) children's age; (b) two different types of art instruction and (c) two sets of scores on a drawing test. Variables (a) and (b) are known as independent variables. Independent variables are those which

researchers are free to control or 'manipulate'. For example, Renfrow was free to choose the art instruction programmes and the ages of the children she wanted to test. Variable (c) is known as a dependent variable because the effects it measures are dependent on the researcher's manipulations of the independent variable (or variables). In Renfrow's experiment, how well children performed on the drawing test *depended* on their age and the type of instruction they were given. In experimental research the dependent variable is always the one that is being measured.

To test her hypothesis, Renfrow's experimental group were given 18 forty-minute art lessons over nine weeks and worked on tasks such as copying upside-down line drawings; recording perspective; expressing shape through shadow; and copying photographs and drawings. The control group also had 18 forty-minute traditional art lessons and used a variety of media to explore texture, line, colour and composition. Renfrow taught the experimental group, one of her colleagues taught the control group.

Example 5.4   Coping with variables

Table 3 gives the data from the 36 children taking part in Renfrow's experiment. There were nine children in each of the two age-groups and 18 children in each of an experimental and a control group. The pre- and post-test scores in the table are the marks out of 20 given to drawings the children produced at the beginning and end of the experiment.

Table 3   Total (T) and mean (M) pre- and post-test scores for older and younger children's drawings in the experimental and control groups (N=36, n=9; maximum scores=20).

Age (years)		Experimental group			Control group		
		Pre-test scores	Post-test scores	Pre-test/ post-test gain	Pre-test scores	Post-test scores	Pre-test/ post-test gain
8–9	T	55.5	126.5	71.0	51.5	60.0	8.5
	M	6.2	14.1	7.9	5.7	6.6	0.9
10–11	T	82.5	138.0	55.5	68.0	93.0	25.0
	M	9.2	15.3	6.1	7.6	10.3	2.7
Overall	T	138.0	264.5	126.5	119.5	153.0	33.5
Overall	M	7.7	14.7	7.0	6.6	8.5	1.9

N stands for total number of children; n stands for the number in each group.

(adapted from Renfrow, 1983, pp. 30–31)

At the beginning of the nine-week programme all the children made a drawing of a human head. This pre-test established how well they could draw before the programme started. At the end of the programme they produced another drawing of a human head. This was the post-test. Drawings from the pre- and post-test were then randomly ordered so that it was impossible to tell which test or group of children they had come from. The drawings were given marks out of 20 by two teachers not involved in the training programme. Here 'marks out of 20' is an example of a continuous variable.

Although Table 3 is not raw data (raw data here would be each child's marks out of 20 on the pre- and post-test), it still contains too much information for you to see any patterns between the variables. Let's use it to try to extract the information which will allow us to compare children's pre- and post-test gains in the two groups.

If you look at the bottom of columns 2 and 5 in Table 3, you can see that the overall mean post-test score for the experimental group was 14.7 as against 8.5

for the control group. This means that after nine weeks of experimental art training this group of children's drawings were given higher marks than those of children following the traditional programme.

Before you can make any claim that the experimental art programme is superior, however, you need to look at the pre-test/post-test gains for each group. You need to do this because it is just possible that the children allocated to the experimental group were better at drawing in the first place. Subtracting the pre-test scores from the post-test scores gives a measure of how much improvement there has been. Looking at the bottom of columns 3 and 6, you can see that, on average, children's scores in the experimental group have improved by 7 marks, while those in the control group have only improved by 1.9 marks.

Next we can look to see whether the experimental programme was as effective for the younger children as for the older children. I found it useful to draw up another table here, again using the information in columns 3 and 6 of Table 3.

Table 4   Mean pre-test and post-test gains for older and younger children in the experimental and control groups.

Age (years)	Experimental group	Control group
8–9	7.9	0.9
10–11	6.1	2.7

Table 4 immediately shows that improvements in drawing skills were much greater for younger and older children in the experimental group than for children in the control group, in spite of the fact that both groups had nine weeks of art lessons. It also shows that the experimental programme was relatively more beneficial for the eight- to nine-year-olds (mean gain = 7.9) than for the older children (mean gain = 6.1). By contrast, the traditional art programme hardly improved the younger children's scores at all (mean gain = 0.9), and only had a small effect on the older children (mean gain = 2.7).

As with the student's data in Example 5.3, when you analyse raw quantitative data, it is best to try and simplify them first by drawing up a summary table of totals and means. You can then extract information selectively to help answer your research questions and hypotheses. Data like Renfrow's are suitable for statistical analysis.

5.6   PRESENTING QUANTITATIVE DATA IN YOUR REPORT

You should not include raw data from questionnaires, observation schedules and the like in the main body of your report. For example, you would not put Figure 5 in your report. As with qualitative data, raw data belongs in the appendices. There are a number of standard techniques for presenting quantitative data in reports. These include tables, graphs, bar and pie charts and histograms.

WHEN TO USE TABLES

You can see from Examples 5.3 and 5.4 above that tables which summarize raw data can be useful aids to analysis and interpretation. They are also useful for presenting your findings in your project report. You can use tables to display both category and variable data. If you choose to display your data in the form of a table, however, you need to make sure that it is clearly labelled with all the information your readers will need in order to interpret it for themselves.

In Tables 1 and 3 note that both the rows and the columns are clearly labelled. Both tables give information about the number of children taking part in the

study and what the numbers in the table represent. Some of this information is given in the caption for the table and some in the table itself. Writing an appropriate caption for a table is very important, as captions should contain information which helps the reader interpret the table.

The caption for Table 1 tells you that the figures in the table represent *the number of interactions* observed in the various categories. The caption for Table 2 tells you that the numbers in the cells are *percentages*. The caption for Table 3 tells you that the figures contained in the table are *total and mean scores* on a drawing test. Your readers need all of this information if they are to understand your arguments. If, for example, you do not know how old the children are, or what the maximum test score is in Table 3, then the information it contains is not very useful. Clearly labelled tables with well-written captions speak for themselves; they save you having to describe your data in words.

Another thing to remember when using a table is that it should not contain too much information. Drawing up tables like Tables 1 and 3 is a useful exercise for you, but does it help your reader? Less complex tables such as Tables 2 and 4 have much more impact, even though they contain information that can be extrapolated from their larger parent tables.

WHEN TO USE BAR CHARTS, PIE CHARTS AND HISTOGRAMS

Bar charts, pie charts and histograms are sometimes more effective ways of representing data than tables. Bar and pie charts should be used to represent discrete category data. Histograms are normally used for continuous data. Bar charts represent categories as columns and are commonly used to draw attention to differences between two or more categories.

Like bar charts, pie charts are useful for presenting discrete data. Each slice of the pie represents a particular category. The number of slices depends on the number of categories in the raw data (make sure you don't have too many or too few). The size of each slice is determined by measuring the angle it makes at the centre of the pie. If one category contains 10 per cent of the total number of cases, its angle will be one-tenth of 360 degrees, or 36 degrees. Pie charts are extremely useful for representing data expressed as percentages.

If you want to compare two pies, as in Figure 7 (p. 227), the size of each circle must be in proportion to the number of cases it contains. In Figure 7, for example, there are fewer females in part-time higher education than males. The circle representing information about female students, therefore is proportionally smaller than the one for males. As you can see from this example, pie charts can be useful for presenting statistical information from published sources.

The histogram in Example 5.7 (p. 228) shows that staff opinion in the 25–35 year age range is strongly polarized with almost equal percentages agreeing and disagreeing with the statement. A significant percentage of 36–45 year-olds also agree with the statement, but a higher percentage disagree, and in the two older age groups, the majority of staff members favour schools remaining in local authority control.

Histograms should be used whenever you have continuous data. The main difference between a histogram and a bar chart is that the columns of a histogram are allowed to touch, whereas the bars of a bar chart should not touch. This is because the scale on the horizontal axis of a histogram should always describe a continuous variable (such as 'age group' in Figure 8, p. 228), whereas on a bar chart, the horizontal axis should describe a discrete category. As with tables, the labelling of the axes of bar charts, pie charts and histograms needs to be accurate, and captions must be thought out carefully.

WHEN TO USE GRAPHS

As well as histograms, graphs can be used to plot continuous data. They should not be used for discrete data because it makes no sense to draw lines joining discrete data points. Graphs, however, are very useful for looking at relationships between continuous variables.

When the information from Table 4 is presented as a graph, the different effects the two art programmes had on younger and older children are immediately apparent. Note that both axes are clearly labelled. When you plan graphs, choosing the scales for the axes is all important. Large effects can be diminished by an inappropriate scale. Conversely, small effects can be exaggerated, as Example 5.9 (p. 229) shows.


Example 5.5   Using a bar chart to represent data

As part of a project designed to explore why some children found using the school computers easier than others, a primary school teacher collected information about how many children in each class had regular access to a computer at home. Of the 125 children in the school, 47 had access to computers (see Table 5)

Table 5   Number of children with access to home computers.

Reception	10	(no. in class = 18)
Class One	7	(no. in class = 24)
Class Two	3	(no. in class = 20)
Class Three	12	(no. in class = 23)
Class Four	9	(no. in class = 21)
Class Five	6	(no. in class = 19)

The information in Table 5 could be presented as the bar chart shown in Figure 6.
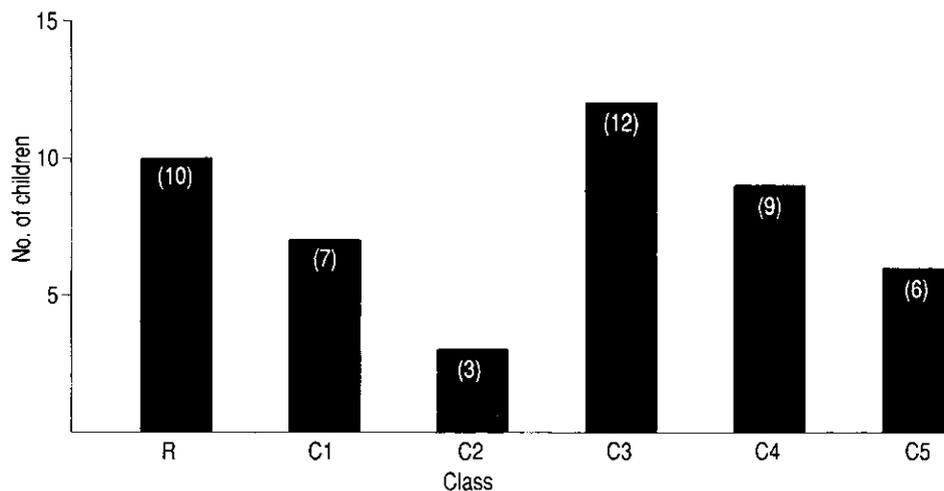
Figure 6   Bar chart showing the number of children with access to home computers.

If you compare the height of the bars in Figure 6, you can see that there is no obvious relationship between age and whether or not children have access to a computer. Reception class children's homes have the second highest number of computers, and the oldest children have the second lowest number of home computers. As there are approximately equal numbers of children in each class, computer ownership must be related to some factor other than children's age; parental income or occupation perhaps.

Figure 10a (p. 230), which has been plotted using reasonable scales on each axis, shows that there is quite a large difference between the two schools in terms of their examination scores. It also shows that while there is not much difference between the maths and English scores over three years for School A, School B's English results are better than their maths results. The maths results, however, appear to be improving.

If you were basing your interpretation on Figure 10b (p. 230), however, you might be tempted to think that School A's maths exam results show a pronounced decline over the years 1988–90, whereas those of School B show a marked improvement. This is because in Figure 10b the scale of the vertical and horizontal axes is not appropriate. Points on the vertical are too far apart and points on the horizontal axis are too close. In actual fact, School A's maths results decline from a mean of 69.6 in 1988 to a mean of 67.4 in 1990, a mean difference of 2.2 marks. For School B, however, there is a mean increase of 4.6 marks between 1988 and 1990. Without using some form of statistical analysis it is not possible to say whether these trends represent significant changes in maths performance or whether they are due to chance. The example does illustrate, however, how it is possible for graphs to give false impressions about data.

You can find out more about the construction of tables, bar and pie charts, histograms and graphs in Coolican (1990) and Graham (1990) (see the further reading list on p. 230).

Example 5.6   Using a pie chart to represent data

Figure 7 shows how government statistics about the number of part-time students in higher education in the years 1986/87 can be represented using a pie chart.

Males (222.8 thousand)   Females (136.1 thousand)
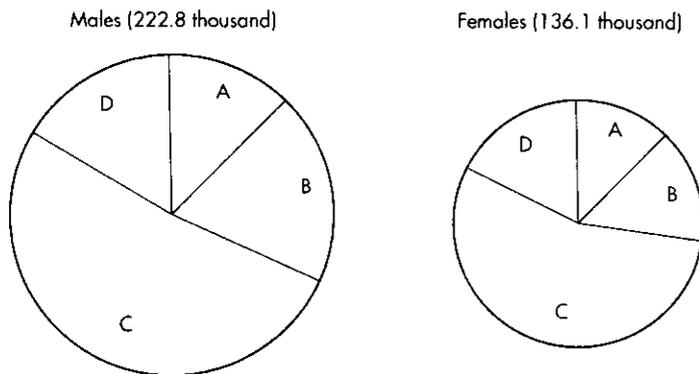
Key:

A Universities
B Open University
C Polytechnics and colleges — part-time day courses
D Polytechnics and colleges — evening only courses

Source: Central Statistical Office, *Social Trends 19*, London, HMSO, 1989, p. 60

Figure 7   Part-time students in higher education 1986/7 (from Graham, 1990, p. 31).

Example 5.7   Using histograms

Supposing you had drawn up a structured questionnaire using a five-point rating scale to measure staff's attitudes to recent changes in the way schools are managed. The questionnaire is sent to 200 staff in local schools, and 186 people return it. One of the statements contained in this questionnaire is:

> Statement 6: *Comprehensive schools should opt out of local authority control.*
> Strongly agree
> Agree
> Neither agree or disagree
> Disagree
> Strongly disagree

Responses to this statement from staff in different age groups might be as shown in Table 6.

Table 6
Numbers of teachers responding to Statement 6 by level of agreement.

Age (years)	Agree/ strongly agree	Neither agree nor disagree	Disagree/ strongly disagree
25–35 (n = 41)	18	5	18
36–45 (n = 80)	32	2	46
46–55 (n = 46)	10	7	29
56–65 (n = 19)	5	3	11
Totals	65	17	104

In this table I have collapsed the categories 'agree' and 'strongly agree' into one as there were not enough numbers in each. I have also done this for the 'disagree' and 'strongly disagree' categories. Using the total number of responses in each age group, I can convert the information in the table to percentages and represent it in the four-part histogram shown in Figure 8.
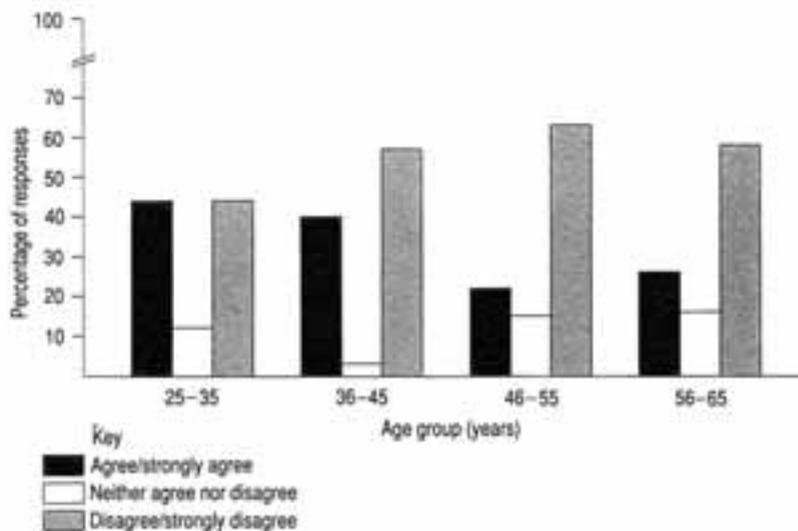

Key
■ Agree/strongly agree
□ Neither agree nor disagree
▨ Disagree/strongly disagree

Figure 8   Percentages of staff responses to Statement 6 by age group.

Example 5.8   Using graphs

The data from Renfrow's experiment given in Table 4 could equally well be presented as the graph shown in Figure 9.
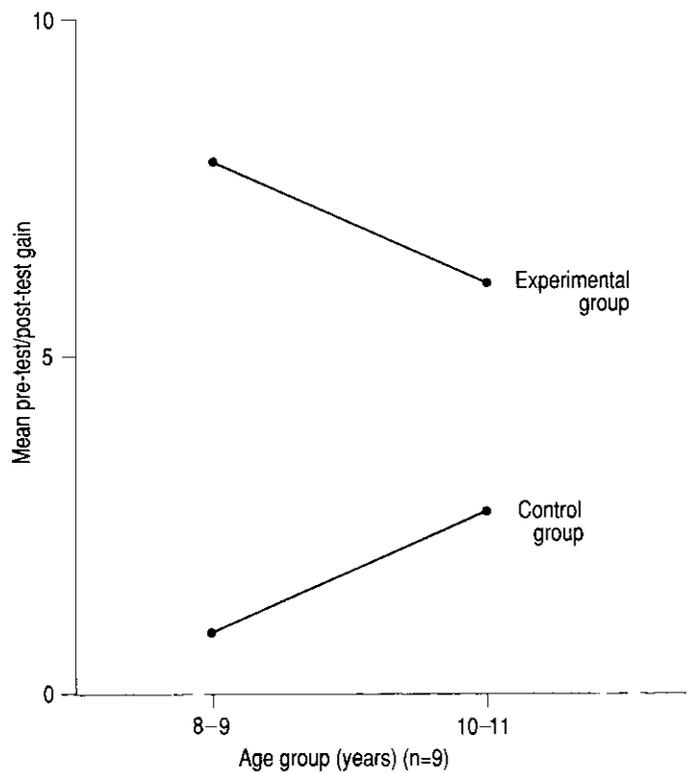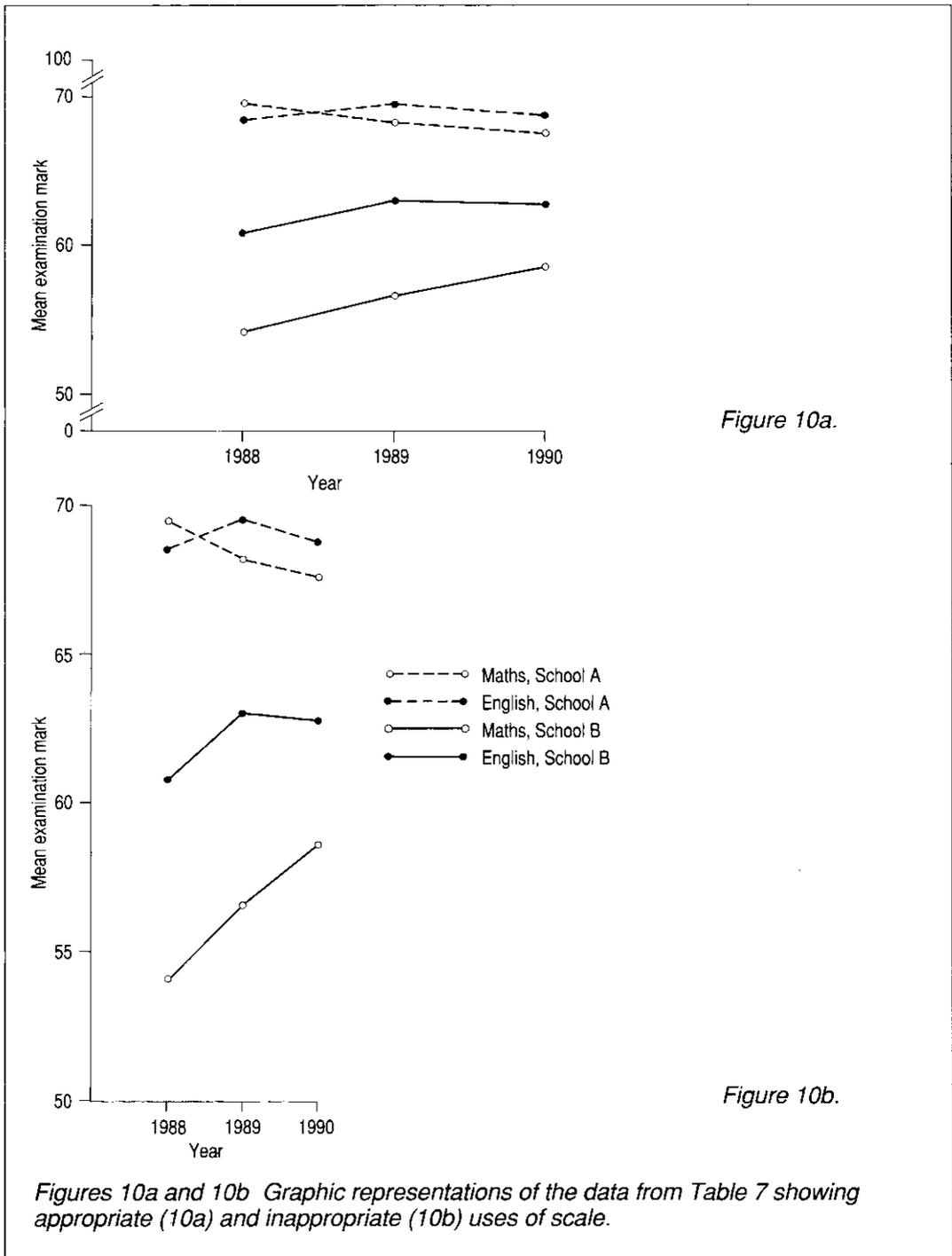

Figure 9   Mean pre- and post-test gains in drawing scores as a function of age and experimental condition.

Example 5.9   Plotting graphs

Table 7   Mean end-of-year examination marks (out of 100) in maths and English for two hypothetical schools over a three-year period.

	1988	1989	1990
School A			
Maths	69.6	68.5	67.4
English	68.0	69.5	69.8
School B			
Maths	53.4	56.7	58.9
English	61.7	63.2	62.8

Figure 10a.

Figure 10b.

Figures 10a and 10b   Graphic representations of the data from Table 7 showing appropriate (10a) and inappropriate (10b) uses of scale.

5.7   CONCLUSION

This section has described how to analyse and interpret qualitative and quantitative data. Throughout I have tried to illustrate the kind of reasoning processes you must engage in when you begin to analyse your data. As I mentioned at the outset, analysing and writing about qualitative data is very much a question of personal style, and you will have to develop methods and techniques you feel comfortable with. When it comes to analysing quantitative data, there is less scope for individuality. Certain conventions have to be observed. Discrete category data must be treated in a different way from data obtained from the measurement of continuous variables. Nevertheless, even here people develop different styles of presenting their data. I personally find it easier to interpret data when I can draw a picture of them, and I therefore prefer graphs

to tables. I hope this section will encourage you to develop your own style of analysis and presentation.

FURTHER READING

BRYMAN, A. and BURGESS, R. G. (eds) *Analysing Qualitative Data*, London, Routledge.

>   This is a comprehensive, state-of-the-art reader for students.

COOLICAN, H. (1990) *Research Methods and Statistics in Psychology*, London, Hodder and Stoughton.

>   This book gives good advice on analysing both qualitative and quantitative data. It is easy to read and contains exercises which can be worked through. It is written for the novice researcher.

NORTHEDGE, A. (1990) *The Good Study Guide*, Milton Keynes, The Open University.

>   This book gives advice on study skills in general, and includes a useful chapter on how to handle numbers and interpret statistical data. It also contains two chapters on writing techniques. It has been specifically written for adults studying part-time and for people returning to study after a long break.

ROBSON, C. (1996) *Real World Research: a resource for social scientists and practitioner researchers*, Oxford, Blackwell.

>   Part V of this highly accessible text discusses how to report research enquiries and presents several different report writing formats for research reports.

ROWNTREE, D. (1981) *Statistics Without Tears: a primer for non-mathematicians*, New York, Charles Scribner and Sons.

>   This is another user-friendly text about how to use statistics. It introduces the main concepts and terminology of statistics but without allowing the reader to get bogged down in formulae and calculations.

WOLCOTT, H.F. (1990) *Writing up Qualitative Research*, Qualitative Research Methods Vol. 20, Thousand Oaks, California, Sage.

>   This book is a very readable introduction to analysing and writing up qualitative data. It gives good advice on how to approach report writing, and recognizes that, for the beginner, this is not an easy task.

WOODS, P. (1999) *Successful Writing for Qualitative Researchers*, London, Routledge.

>   This book discusses all aspects of the writing process and like Wolcott helps with the difficult bits. It is an excellent, accessible source.

REFERENCES

ARMSTRONG, M. (1980) *Closely Observed Children: the diary of a primary classroom,* London, Writers and Readers in association with Chameleon.

BASSEY, M. (1990) 'On the nature of research in education (part 1)', *Research Intelligence*, BERA Newsletter no. 36, Summer, pp. 35–8.

BROWNE, N. and FRANCE, P. (1986) *Untying the Apron Strings: anti-sexist provision for the under-fives*, Buckingham, Open University Press.

BURGESS, R. (1984) 'Keeping a research diary' in BELL, J., BUSH, T., FOX, A., GOODEY, J. and GOULDING, S. (eds) *Conducting Small-scale Investigations in Education Management,* London, Harper and Row/The Open University.

CENTRAL ADVISORY COUNCIL FOR EDUCATION (ENGLAND) (1967) *Children and their Primary Schools,* London, HMSO (the Plowden Report).

CENTRE FOR LANGUAGE IN PRIMARY EDUCATION (CLPE) (1990) *Patterns of Learning,* London, CLPE.

CINAMON, D. (1986) 'Reading in context', *Issues in Race and Education*, no. 47, Spring, pp. 5–7.

CLARKE, S. (1984) 'Language and comprehension in the fifth year' in BARNES, D.L. and BARNES, D.R. with CLARKE, S., *Versions of English*, London, Heinemann Educational Books.

COOLICAN, H. (1990) *Research Methods and Statistics in Psychology,* London, Hodder and Stoughton.

DELAMONT, S. (1983) *Interaction in the Classroom*, London, Methuen.

DEPARTMENT OF EDUCATION AND SCIENCE (DES) (1982) *Mathematics Counts*, London, HMSO (the Cockroft Report).

DEPARTMENT OF EDUCATION AND SCIENCE (DES) (1989) *Science in the National Curriculum,* London, HMSO.

DEPARTMENT OF EDUCATION AND SCIENCE (DES) (1990) *Statistics of Education: Schools, January 1989*, London, HMSO.

DOWNS, S., FLETCHER, A. and FLETCHER, L. (1987) 'Ben' in BOOTH, T. and SWANN, W. (eds) *Including Pupils with Disabilities,* Milton Keynes, Open University Press/The Open University.

ELLIOT, J. (1981) *Action research: framework for self evaluation in schools. TIQL working paper no. 1,* Cambridge, University of Cambridge Institute of Education, mimeo.

ENRIGHT, L. (1981) 'The diary of a classroom' in NIXON, J. (ed.) *A Teacher's Guide to Action Research*, London, Grant Macintyre.

GATES, P. (1989) ' Developing consciousness and pedagogical knowledge through mutual observation' in WOODS, P. (ed.) *Working for Teacher Development,* Dereham (Norfolk), Peter Francis Publishers.

GLASER, B. and STRAUSS, A. (1967) *The Discovery of Grounded Theory*, Chicago, Aldine.

GOVERNMENT STATISTICAL SERVICE (1990) *Educational Statistics for the United Kingdom 1989*, London, HMSO.

GRAHAM, A. (1990) *Investigating Statistics: a beginner's guide*, London, Hodder and Stoughton.

HARRIS, J., HORNER, S. and TUNNARD, L. (1986) *All in a Week's Work: a report on the first stage of the Sheffield Writing in Transition Project*, London, SCDC Publications.

HOPKINS, D. (1985) *A Teacher's Guide to Classroom Research,* Milton Keynes, Open University Press.

HUTCHINSON, S. (1988) 'Education and grounded theory' in SHERMAN, R.R. and WEBB, R.B. (eds) (1988) *Qualitative Research in Education: focus and methods,* Lewes, Falmer Press.

INNER LONDON EDUCATION AUTHORITY AND CENTRE FOR LANGUAGE IN PRIMARY EDUCATION (ILEA/CLPE) (1988) *The Primary Language Record: a handbook for teachers,* London, ILEA/CLPE.

INNER LONDON EDUCATION AUTHORITY RESEARCH AND STATISTICS BRANCH (1985a) *Equal Opportunities in the Curriculum in Single-sex Schools*, RS 973/85, London, ILEA.

INNER LONDON EDUCATION AUTHORITY RESEARCH AND STATISTICS BRANCH (1985b) *ILEA Induction Scheme: five years on*, RS 10051/85, London, ILEA.

INNER LONDON EDUCATION AUTHORITY RESEARCH AND STATISTICS BRANCH (1988) *The Hackney Literacy Study*, RS 1175/88, London, ILEA.

INNER LONDON EDUCATION AUTHORITY RESEARCH AND STATISTICS BRANCH (1990) *Developing Evaluation in the LEA*, RS 1284/90, London, ILEA.

KAYE, G. (1985) *Comfort Herself,* London, Deutsch.

KEMMIS, S. and MCTAGGART, R. (1981) *The Action Research Planner*, Victoria (Australia), Deakin University Press.

MEEK, M. J. (1989) 'One child's development' in NATIONAL WRITING PROJECT (1989) *Becoming a Writer*, Walton-on-Thames, Nelson.

MINNS, H. (1990) *Read It to Me Now! Learning at home and at school,* London, Virago Press.

MORRIS, C. (1991) 'Opening doors: learning history through talk' in BOOTH, T., SWANN, W., MASTERTON, M. and POTTS, P. (eds) *Curricula for Diversity in Education*, London, Routledge/The Open University.

MULFORD, W., WATSON, H. J. and VALLEE, J. (1980) *Structured Experiences and Group Development,* Canberra, Canberra Curriculum Development Centre.

MYERS, K. (1987) *Genderwatch! Self-assessment schedules for use in schools*, London, SCDC Publications.

NIAS, J. (1988) 'Introduction' in NIAS, J. and GROUNDWATER-SMITH, S. (eds) *The Enquiring Teacher: supporting and sustaining teacher research,* Lewes, Falmer Press.

NIXON, J. (ed) (1981) *A Teacher's Guide to Action Research,* London, Grant McIntyre.

OLIVER, E. and SCOTT, K. (1989) 'Developing arguments: yes, but how?', *Talk*, no. 2, Autumn, pp. 6–8.

THE OPEN UNIVERSITY (1976) E203 *Curriculum Design and Development,* Unit 28 *Innovation at the Classroom Level: a case study of the Ford Teaching Project,* Milton Keynes, Open University Press.

THE OPEN UNIVERSITY (1991) P535 *Talk and Learning 5–16*, Milton Keynes, The Open University.

PHILLIPS, T. (1988) 'On a related matter: why "successful" small-group talk depends on not keeping to the point' in MACLURE, M., PHILLIPS, T. and WILKINSON, A. (eds) *Oracy Matters*, Milton Keynes, Open University Press.

RENFROW, M. (1983) 'Accurate drawing as a function of training of gifted children in copying and perception', *Education Research Quarterly,* vol. 8, no. 31, pp. 27–32.

ROBSON, S. (1986) 'Group discussions' in RITCHIE, J. and SYKES, W. (eds) *Advanced Workshop in Applied Qualitative Research*, LONDON, SOCIAL AND COMMUNITY PLANNING RESEARCH.

SHERMAN, R.R. and WEBB, R.B. (eds) (1988) *Qualitative Research in Education: Focus and Methods,* Lewes, The Falmer Press.

STACEY, M. (1989) 'Looking forward', *About Writing,* vol. 11, Autumn 1989.

STATHAM, J. and MACKINNON, D. with CATHCART, H. and HALES, M. (1991) (second edition), *The Education Fact File*, London, Hodder and Stoughton/The Open University.

STENHOUSE, L. (1975) *An Introduction to Curriculum Research and Development,* London, Heinemann.

STENHOUSE, L. (1978) *Curriculum Research and Development in Action,* London, Heinemann.

THOMAS, G. (1986) ' "Hallo, Miss Scatterbrain. Hallo, Mr Strong" ': assessing nursery attitudes and behaviour' in BROWNE, N. and FRANCE, P. (eds) *Untying the Apron Strings: anti-sexist provision for the under-fives,* Milton Keynes, Open University Press.

TYNDALL, C. (1988) 'No comfort here', *Issues in Race and Education*, no. 55, Autumn, pp. 14–16.

WALKER, R. (1989) *Doing Research: a handbook for teachers,* London, Routledge.

WEBB, R. (ed.) (1990) *Practitioner Research in the Primary School,* Basingstoke, Falmer Press.

WINTER, V. (1990) 'A process approach to science' in R. WEBB (ed.), *Practitioner Research in the Primary School,* Basingstoke, Falmer Press.

WOLCOTT, H.F. (1990) *Writing up Qualitative Research,* Qualitative Research Methods Series 20, Newbury Park, California, Sage Publications.

WOODS, P. (1988) 'Educational ethnography in Britain' in SHERMAN, R.R. and WEBB, R.B. (eds) (1988) *Qualitative Research in Education: focus and methods,* Lewes, The Falmer Press.

WRIGHT, S.(1990) 'Language counts in the teaching of mathematics' in WEBB, R. (ed.) *Practioner Research in the Primary School,* Basingstoke, Falmer Press.

YARD, L. (1991) 'Why talk in art' in THE OPEN UNIVERSITY, P535 *Talk and Learning 5–16*, Milton Keynes, The Open University.