

# 'How to' guides collection

**How to...**



**Plan your research**  
Meet your objectives

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**How to...**



**Run action research**  
Do it yourself

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**How to...**



**Run qualitative and quantitative research**  
From definitions through to analysis

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This is a collection of these five 'How to' guides



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# How to...



## Plan your research

Meet your objectives

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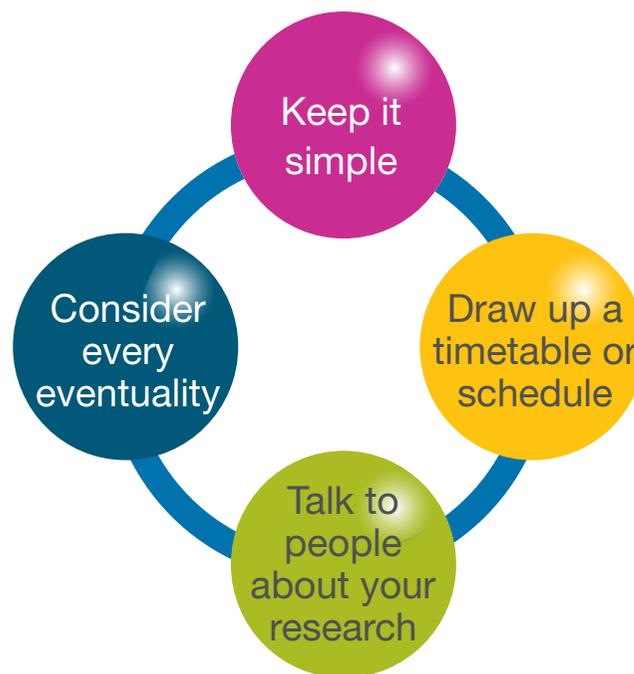


**Support:** Have you considered what support you may need? This can include training in how to use certain methods or software, but it can also be emotional support from friends and families. Some research projects (as part of academic studies) may require more specialist support from expert mentors or supervisors.

**Ethical considerations:** You need to consider the ethics of your research from the outset and throughout your project

**Consider keeping a record of your research project:** Keep detailed notes about what you have done, ideas, contacts and decisions you have made. These can be helpful later on when you come to write up your research. Some people find it useful to keep a more reflective research diary in which you write down your thoughts and feelings about the project. This may increase the time commitment involved in your research though, but can help you identify any underlying assumptions which you might not have been aware of up to that point.

## Remember



## Other useful resources

We hope that this short guide to planning your research has whetted your appetite for carrying out your own research. NFER has published a series of 'How to' guides for practitioners who want to carry out their own research, helping you put your ideas into practice. NFER have books and training days available, as well as free guidance on topics to research and methods of research. Why not get recognition for your achievements in research in your school, college or early years setting by applying for the NFER Research Mark? Visit [www.nfer.ac.uk/ris](http://www.nfer.ac.uk/ris) for more information.

# How to...



## Run action research

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## What are the challenges?

As with any research, action research is not without its challenges. However, these are surmountable. We outline some of the issues that education practitioners have told us about below, along with some solutions.

- **Finding time to do the research.** Be realistic about how much time you can give when you decide the scope of your research. It is better to do a small project well, than an over-ambitious one badly. Think about ways to incorporate collecting data into your lessons to streamline the process; for example, you could use test data as evidence or ask your learners to interview each other as part of a lesson. Also, try to involve other colleagues in your research, to share the load (and the benefits).



- **Getting senior leaders on board.** Action research involves trying new things and taking some (small) risks. Make sure that your Senior Leadership Team (SLT) supports this. Developing a mini proposal for the research can help. This could set out:
  - your research questions
  - how the project will benefit your school
  - a (realistic) timetable
  - the amount of staff time and any other resources you will need
  - how you will make sure the project is ethical
  - a risk assessment
  - You could also point your SLT towards NFER literature ([www.nfer.ac.uk/ris](http://www.nfer.ac.uk/ris)) on the value of being a research-engaged school, to help to make your case.
- **Getting to grips with research methods.** As a practitioner, you use research skills every day: asking questions; reflecting on data and writing reports. NFER's Methods of Research web pages ([www.nfer.ac.uk/ris](http://www.nfer.ac.uk/ris)) will help you to build on what you already know about research methods and processes.
- **Being objective.** It can be hard to stand back from the research when you collect and analyse the data, especially when this takes place within your own classroom or school. Actively looking for evidence

that goes against your own view is good practice and will help you to avoid biasing your results. This is also where having colleagues to help you with your research may help provide a different perspective.

- **Handling negative results.** Some practitioners are disappointed when their research suggests that a new approach has not worked. However, a negative finding does *not* mean that your research has failed! In fact, this learning is really valuable, as it prevents you and your colleagues from wasting resources on an unsuccessful approach.
- **Handling positive results.** Even if your research shows that a new approach has had a positive effect, some practitioners may be reluctant to 'unlearn' their current practice. Engaging colleagues in the action research from the start (or in a future cycle) can help them to see the value of the research and of acting on its findings.





## How do I do action research?

Looking at each step in the action research cycle in turn (plan, act, observe, reflect), we outline the key activities you will need to carry out. You can find out more detail about these steps in our other guides for practitioners ([www.nfer.ac.uk/ris](http://www.nfer.ac.uk/ris)).

### 1. Plan (the most crucial step!)

...your research	...the change you want to investigate
<ul style="list-style-type: none"> <li>Decide your research question. Good starting points include: known issues/weaknesses, consultation with colleagues/learners/parents/carers, and review of Management Information data.</li> <li>Design your research and choose your methods based on the nature of your research question.</li> <li>Decide how you will ensure your project is ethical. Check your school's data policies and identify whose consent you need to go ahead with the research. This may include senior leaders, colleagues, learners and parents/carers.</li> <li>Ask a colleague to act as a critical friend, reviewing your research as you go along.</li> </ul>	<ul style="list-style-type: none"> <li>For some research questions, you will need to plan the change you want to make – this might be a change to your practice, a different approach to part of your role, or using a different set of resources. Talking to colleagues and reading existing practice or research literature can help you to identify promising approaches to test out in your own school.</li> </ul>
<p><b>...and don't forget to</b></p> <ul style="list-style-type: none"> <li>Get colleagues on board – tell them what you plan to do and why. Their engagement is key.</li> <li>Make a project plan, setting out when you will trial the intervention and collect, analyse and report on the data.</li> <li>Make sure your project is manageable within the amount of time you have!</li> </ul>	

### 2. Act:

- Put your plan into action!

### 3. Observe:

- Collect your data – collecting data from different sources is good practice (e.g. colleagues' views, learners' views and test data)
- Get participants' consent.

### 4. Reflect:

- Sort and analyse your data
- Be objective
- Reflect on what the data means and test your interpretation out on your critical friend and/or the people who participated in your research project.

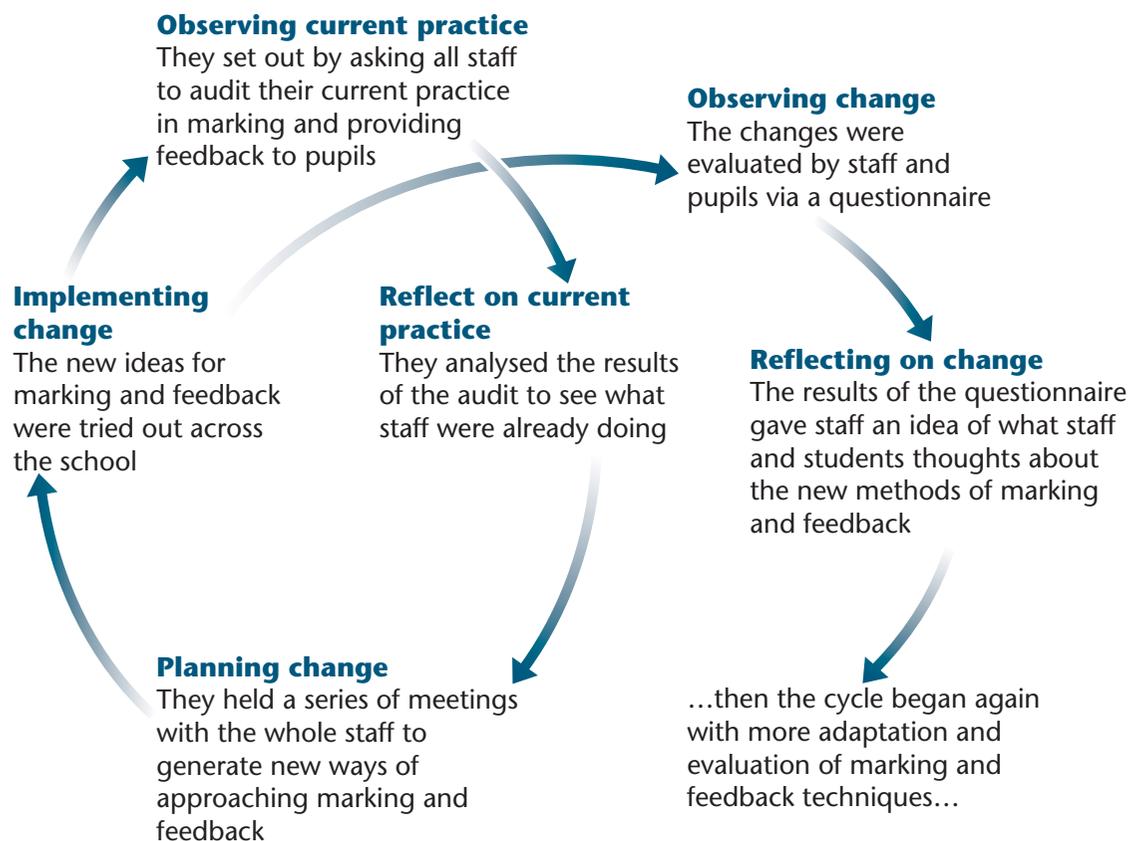
**...and then repeat steps 1 to 4 again.**



## Case study: using action research to investigate ways to improve learners' writing

The diagram below describes how teachers from two merged primary schools investigated how different ways of marking and feedback could impact on learners' writing.

### Action research cycle at a school



### Research ideas

The list of topics you could research is almost endless. Here are some research questions that other action researchers in schools have investigated.

- What type of essay feedback is most useful to students?
- What are the benefits of working outside the traditional classroom for very young children?
- Do rewards contracts motivate A-level students?
- Does using interactive whiteboards help learners' writing?
- How can your school engage 'hard to reach' parents/ carers?
- What are the benefits and challenges of supporting young people to do their own research?





## Sharing your research

Sharing your research is also an important element of action research.

This diagram highlights some of the reasons why this is the case.



- You**  
Forces you to reflect on your findings, helping your interpretation of the data
- Participants**  
Thank people for their time and contribution to your research
- Your school**  
Provides learning for colleagues  
Supports school improvement
- Education community**  
Offers lessons to the wider education community, who can avoid what your research showed did not work well, and try out what worked well

## Other useful resources

We hope that this short guide to action research has whetted your appetite for carrying out your own research. NFER has published a series of 'How to' guides for practitioners who want to carry out their own research, helping you put your ideas into practice. NFER have a book on action research, *Action research: making a difference in education*. Other books and training days are also available as well as free guidance on topics to research and methods of research. Why not get recognition for your achievements in research in your school, college or early years setting by applying for the NFER Research Mark? Visit [www.nfer.ac.uk/ris](http://www.nfer.ac.uk/ris) for more information.

The NFER 'How to... Write up Your Research' guide has lots of ideas on how to present your findings in interesting ways and share it with others – [www.nfer.ac.uk/ris](http://www.nfer.ac.uk/ris)

The material in this guide has been re-purposed from Riggall, A. (2009). 'Action research: what is it, who does it and why?' In: Lawson, A. (Ed) *Action Research: Making a Difference in Education* (Volume 1). Slough: NFER.

# How to...



## Run qualitative and quantitative research

From definitions through to analysis

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This *How to guide* provides an introduction to qualitative and quantitative research. The guide is intended for senior leaders, teachers and other school staff who are interested in carrying out research.

## 1 What is qualitative and quantitative research?

Researchers have long debated how to define 'qualitative' and 'quantitative' research. We are not going to go into that debate here, but instead provide a definition of each which we feel best describes each approach (see Figure 1 below).

**Figure 1 Definitions of qualitative and quantitative research**

Qualitative research is 'interested in understanding the meaning people have constructed, that is, how people make sense of their world and the experiences they have in the world.'

(Merriam, 2009, p.13)

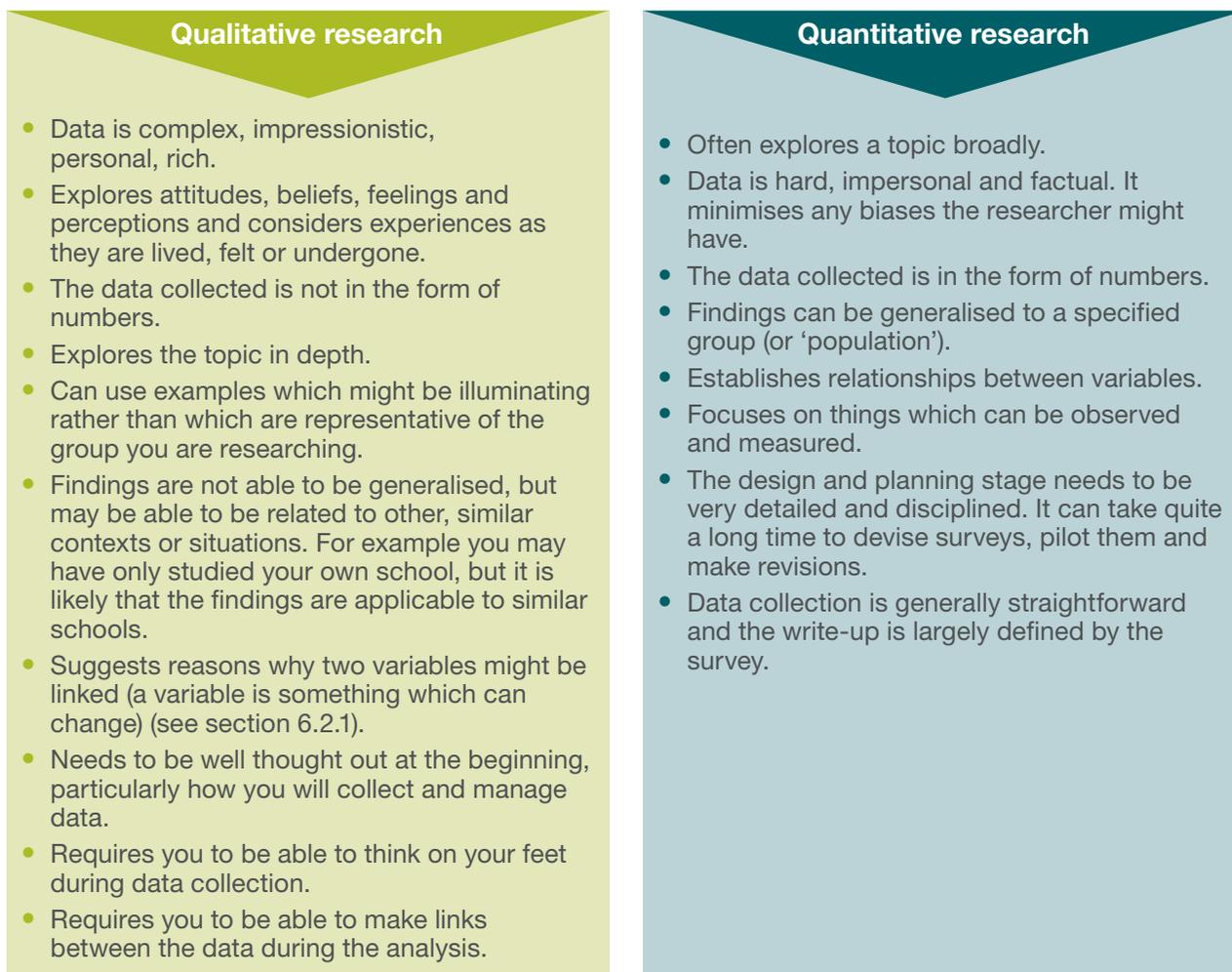
Quantitative research is 'explaining phenomena by collecting numerical data that are analysed using mathematically based methods (in particular statistics).'

(Aliaga and Gunderson, 200)

Indeed, some people think of qualitative research as researching **words** and quantitative research being about **numbers**.

The figure opposite shows some general characteristics of qualitative and quantitative research.

**Figure 2 Characteristics of qualitative and quantitative research**









## 2.4 Surveys

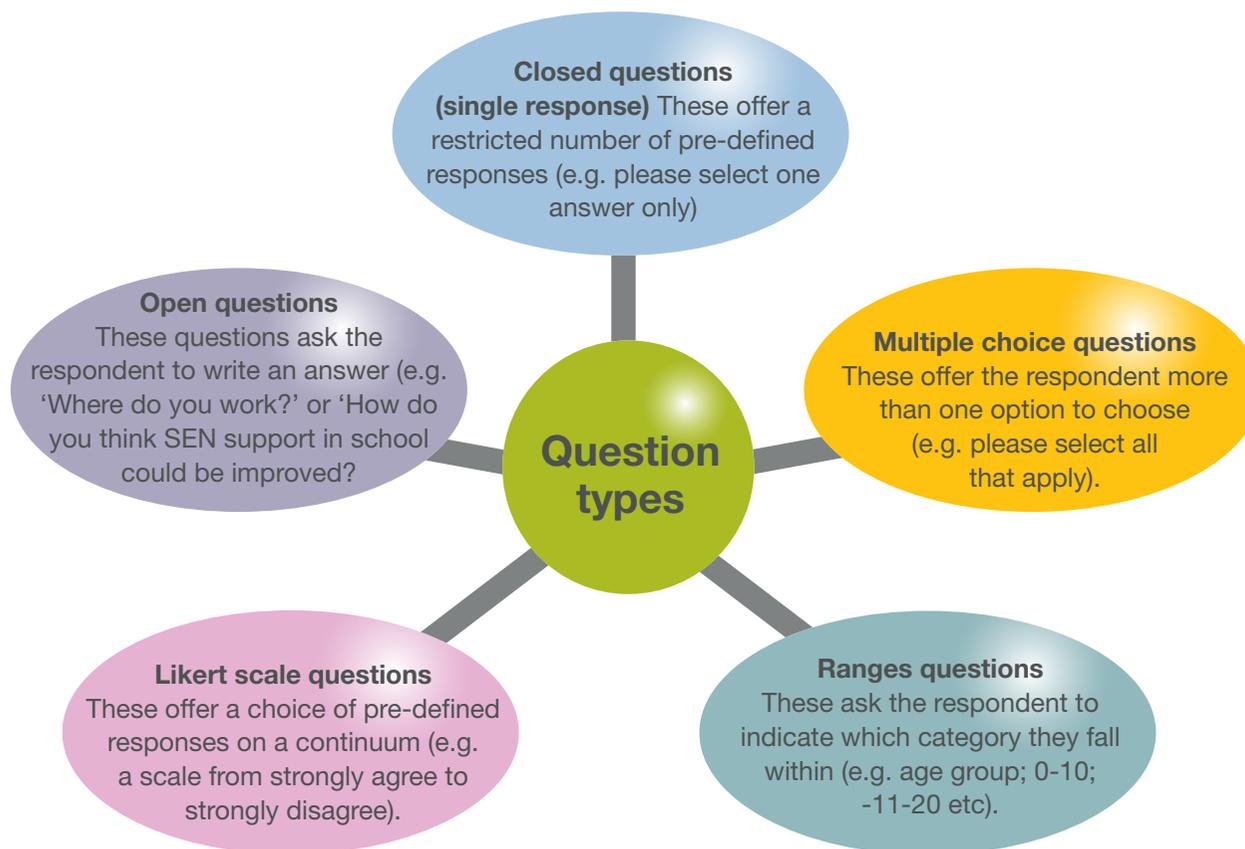
Often the terms 'survey' and 'questionnaire' are used inter-changeably. Surveys are a systematic way of collecting information from individuals and groups, whereas a questionnaire is a set of questions that you ask respondents. Surveys can be self-completed (i.e. the respondent completes the questionnaire individually) or an interviewer can ask respondents the questions. In the latter example, the questions should be asked in exactly the same order and way for all respondents.

Surveys can include questionnaires, face-to-face interviews and can also include observations of people and events (for example how learners use the dining facilities or a library). Surveys are the main method used in quantitative research. They provide an efficient way of collecting views and information from a wide range and large number of people.

Questionnaires can be paper-based or administered via online survey software programmes, such as NFER School Surveys ([www.nfer.ac.uk/pps](http://www.nfer.ac.uk/pps)) or Survey Monkey. Using online survey software offers several advantages over paper surveys. These include having no postage costs and the researcher not needing to invest time entering the data manually. Online survey software can also do some of the analysis for you, creating tables of data, for example.

Surveys can include questions of different types and formats. These are presented in Figure 4.

Figure 4 Different types of survey questions













approach is adopted, the findings can sometimes be generalised to the whole population.

**Quota sampling:** This approach ensures that the sample includes a certain proportion of respondents from particular group/s, even if that proportion does not reflect their prevalence in the population as a whole. For example, you may be particularly interested in a particular ethnic group and stipulate that the sample should contain a certain percentage of participants from specific ethnic groups.

**Stratified sampling:** With this approach, the population is split into groups (or strata). For example, schools might be stratified based on their proportion of learners who are eligible for free school meals. Within each group you will randomly select a sample.

**Cluster sampling:** Here the whole population is divided into smaller groups and then a number of those groups are chosen. Within each group, the population is randomly sampled. For example, ten schools (or classes) might be invited to participate in the research but you would administer the survey to a random sample of students within each of those schools or classes.

## 5 The technical bit

When undertaking research, there are a few other terms you will need to be aware of and, if possible, consider in relation to your project. We briefly introduce each concept in the figure below.

### Figure 5 Common research terms

#### Validity

This tests whether you are actually measuring what you say you are measuring. This is generally applicable to quantitative research but can be applied to qualitative research too.

#### Reliability

This is an assessment of whether you would get the same results if you (or someone else) repeated the research with the same group of respondents in the future.

#### Bias

There is always an element of bias in social research, but researchers must try to be objective. As far as possible you should acknowledge your underlying views and assumptions and try to mitigate against these - for example, by looking for evidence that disproves your own view.

#### Triangulation

Triangulation involves collecting and analysing data from different sources (be these stakeholder groups, test scores or other information) and seeing the extent to which they match. The more the views coincide, the greater the confidence you can have in what you are being told or what appears to be happening. It is also informative when data sources do not coincide, as this can lead to new understandings.









## 6.2.2. Entering your data

Once you have collected your data, you will need to enter it into some sort of spreadsheet or statistical package. To enter your data, follow this process.

- Give each respondent a unique identifying number (UIN); if you are carrying out your research in several classes or schools, you may want to give each class or school its own UIN as well.
- If the data is continuous, just enter the value, for example a test score of 66 per cent.
- If the data is categorical, you will need to code it. This means that you will assign a number to a particular response option and enter the number into your spreadsheet ready for analysis. For example, if you have asked what subject the respondent teaches, you would assign a number to each possible response (i.e. chemistry=1; biology=2 etc.). This makes analysis easier.

Once all the data has been entered, you can use basic statistical techniques to analyse it.

## References

Aliaga, M., and Gunderson, B. (2000). *Interactive Statistics*. Saddle River, NJ: Prentice Hall. Cited in: Muijs, D. (2011). *Doing Quantitative Research in Education with SPSS*. Second edn. London: Sage.

Merriam, S. (2009). *Qualitative Research: a Guide to Design and Implementation*. San Francisco, CA: Jossey-Bass.

Muijs, D. (2011). *Doing Quantitative Research in Education with SPSS*. Second edn. London: Sage.

## Useful resources

We hope that this short guide to running qualitative and quantitative research has whetted your appetite for carrying out your own research. NFER has published a series of 'How to' guides for practitioners who want to carry out their own research, helping you put your ideas into practice. NFER have research books and training days available as well as free guidance on topics to research and methods of research. Why not get recognition for your achievements in research in your school, college or early years setting by applying for the NFER Research Mark? Visit [www.nfer.ac.uk/ris](http://www.nfer.ac.uk/ris) for more information.



**Table 1 Summary of research methods' strengths and weaknesses**

This table summarises the strengths and weaknesses of each method.

Research method	Strengths and advantages	Weaknesses and disadvantages	Points to consider
<p><b>Interviews</b></p> <p>Mainly used in qualitative research.</p>	<ul style="list-style-type: none"> <li>• Interviews can explore issues in depth.</li> <li>• Questions can be modified during the interview to allow the interviewer to respond to the direction of the discussion and follow up any ambiguous responses.</li> <li>• These may be suitable for exploring sensitive topics.</li> <li>• Interviews gather data using the respondent's voice and language.</li> </ul>	<ul style="list-style-type: none"> <li>• Interviews can be time consuming to conduct and to transcribe and analyse the data.</li> <li>• Interviews are carried out with small samples.</li> <li>• It can be easy for researcher bias to creep in.</li> <li>• There is a need to ensure that the questions are unambiguous and do not lead the respondent. For example, saying 'The CPD on offer in this school is the best I have ever known; don't you agree?' may prompt the respondent to agree with you rather than tell you his/her own view.</li> </ul>	<ul style="list-style-type: none"> <li>• How are you going to conduct the interviews (e.g. by phone, face-to-face, video-calling/webcam)?</li> <li>• Where are you going to conduct the interviews? You will need a quiet place without interruptions.</li> <li>• How will you record your data, e.g. will you audio-record; what sort of notes will you type up? Full transcriptions take time; it can take up to six times as long to type the notes as to conduct the interview. For most research, you can type less detailed notes, supported by transcriptions of quotations or examples.</li> <li>• How will you abide by the legal requirements of protecting your participants' data (i.e. anonymity and confidentiality)?</li> </ul>
<p><b>Focus groups</b></p> <p>Mainly used in qualitative research.</p>	<ul style="list-style-type: none"> <li>• Focus groups can offer an efficient way of collecting a range of opinions from groups of people.</li> <li>• Group dynamics can quickly highlight areas where there are consistent or opposing views; and which areas are important to the respondents.</li> <li>• It helps to arrange focus groups if you can tap into pre-existing groups or committees. For example, you could ask the school council to stay for an hour after their meeting to attend your focus group.</li> </ul>	<ul style="list-style-type: none"> <li>• The number of questions you can ask will be limited.</li> <li>• The facilitator needs to manage the discussion so that all voices are heard.</li> <li>• Power struggles can arise between participants.</li> <li>• There may be resource and logistical implications if you need a facilitator and a note-taker.</li> <li>• Focus groups usually last for longer than interviews and between one-and-a-half and two hours (depending on the topic area and age of participants).</li> <li>• You will need to find a large enough room to accommodate your participants.</li> <li>• You may need to provide drinks and snacks.</li> <li>• Transcription and analysis can be complex and time consuming.</li> </ul>	<ul style="list-style-type: none"> <li>• You must ensure confidentiality and anonymity in a group situation. It is useful to set ground rules at the start of the focus group by asking the participants to sign up to a statement of confidentiality whereby everything said within the room will remain confidential to only those participants present.</li> </ul> <p>See the NFER 'How to... Run focus groups: Get the most from them' available from <a href="http://www.nfer.ac.uk/ris">www.nfer.ac.uk/ris</a></p>



Research method	Strengths and advantages	Weaknesses and disadvantages	Points to consider
<p><b>Observations</b></p> <p>Mainly used in qualitative research.</p>	<ul style="list-style-type: none"> <li>• Observations are very useful for finding out what is going on in a situation, such as a classroom, dining hall or playground.</li> <li>• They are useful for accessing non-verbal data.</li> <li>• They can provide an opportunity to record events or the frequency of specific incidents.</li> </ul>	<ul style="list-style-type: none"> <li>• Observations can be time consuming to arrange, conduct, write up and analyse.</li> <li>• There is a need to mitigate researcher bias, particularly in the case of participant observation.</li> <li>• Be aware that the presence of another person in the setting can alter the way that people behave.</li> </ul>	<ul style="list-style-type: none"> <li>• How are you going to record the observation?</li> <li>• What will your role be; will you be a participant or non-participant? How will you record the data if you are a participant?</li> </ul>
<p><b>Surveys</b></p> <p>Mainly used in quantitative research, but can sometimes be used qualitatively.</p>	<ul style="list-style-type: none"> <li>• Surveys are useful for gathering views from a large and broad range of respondents.</li> <li>• Surveys can be anonymous.</li> <li>• Data between individuals and groups is easy to compare.</li> <li>• Surveys collect specific information that can be counted and statistically analysed.</li> </ul>	<ul style="list-style-type: none"> <li>• Data entry can be time consuming for paper-based questionnaires.</li> <li>• Response rates can be low; typically between 20 and 40 per cent for postal and online surveys, so you may need a large sample to get your desired number of participants. With parents, response rates can be as low as 10 to 20 per cent.</li> <li>• There is no chance for following-up or exploring ambiguous responses, or probing the reason behind a specific response.</li> <li>• Questions can be misinterpreted by the participant (piloting can help mitigate this).</li> </ul>	<ul style="list-style-type: none"> <li>• Where and when (if at all) will you pilot the questionnaire?</li> <li>• How will the survey be administered – by post, in person, online, by text message?</li> <li>• How will you remind participants who have not responded to complete the survey by your specified date?</li> <li>• How will you decide on the sample to be surveyed?</li> <li>• How will you obtain the contact details for postal/online surveys?</li> </ul>
<p><b>Quasi-experimental</b></p>	<ul style="list-style-type: none"> <li>• Quasi-experimental research is useful for gathering information on whether something is having an effect (or impact) as it collects data from comparable control and experimental groups.</li> <li>• It can provide robust evidence.</li> </ul>	<ul style="list-style-type: none"> <li>• It can be difficult to obtain comparable groups</li> </ul>	<ul style="list-style-type: none"> <li>• How are you going to assign the control and experimental groups?</li> <li>• There are a number of ethical considerations; if the intervention has a positive effect then is the control group at a disadvantage? How will you mitigate this?</li> </ul>



# How to...



## Use focus groups

Get the most from them

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## What do focus groups involve?

Focus groups involve five main steps: developing the questions you want to ask; identifying the sample (your participants); conducting the group; drawing together and analysing the data; and reporting the findings.

As early as possible in this process, you should decide how you will ensure your project is ethical. (See [www.nfer.ac.uk/ris](http://www.nfer.ac.uk/ris) for further information on ethics).

Figure 1 sets out the five steps in planning and implementing focus groups.

## Steps in conducting focus groups

Looking at each of the main steps in turn, we outline the key activities you will need to carry out. We also include some aspects for you to consider at each step.



## Step 1: Develop your questions

### The questions should:

- be preceded by a short introduction which outlines who you are, the purpose of the focus group, and how the data will be used (e.g. to inform a new policy or improve practice)
- start off with an ‘ice-breaker’, e.g. ‘tell us one thing about your school which you enjoy’, or, ‘please introduce yourself, telling us what school you are from and what year group you teach’
- be more general at first, and then become more specific, ending in a ‘review’ question which summarises the main points discussed (e.g. ‘what are the most important points we have discussed today?’, or ‘what have you found out about [the topic] today?’)
- be clear, concise and logically ordered.
- be no more than five to 10 in number for a focus group lasting one to one and a half hours. Within a school setting, you are unlikely to want to carry out focus groups with children and young people for longer than one hour.
- elicit a detailed response and not one word answers. You should ask ‘open’ questions (e.g. what, how, why and where questions) rather than ‘closed’ questions which will gain a short, ‘yes’ or ‘no’ answer. Possible examples are: ‘What do you like about the gardening club?’ rather than ‘Do you like the gardening club?’.

Figure 1







## Step 3: Conducting your group

### Considerations:

#### Managing your focus group:

- You will need an impartial and experienced person (known as the ‘moderator’) to lead the group. The moderator should explain the purpose of the group, ask the questions, keep the participants on track and on time, invite all participants to contribute and summarise the discussion at key points.
- Ideally, the moderator should be supported by someone else (the ‘assistant’). The assistant helps the group to run smoothly by welcoming participants, taking notes (including noting down who is speaking), offering refreshments, helping with time keeping, and supporting the moderator.
- As people become more experienced at running focus groups, it is possible to moderate alone. In these circumstances, it is advisable to audio record the discussion (only with all participants’ permission).

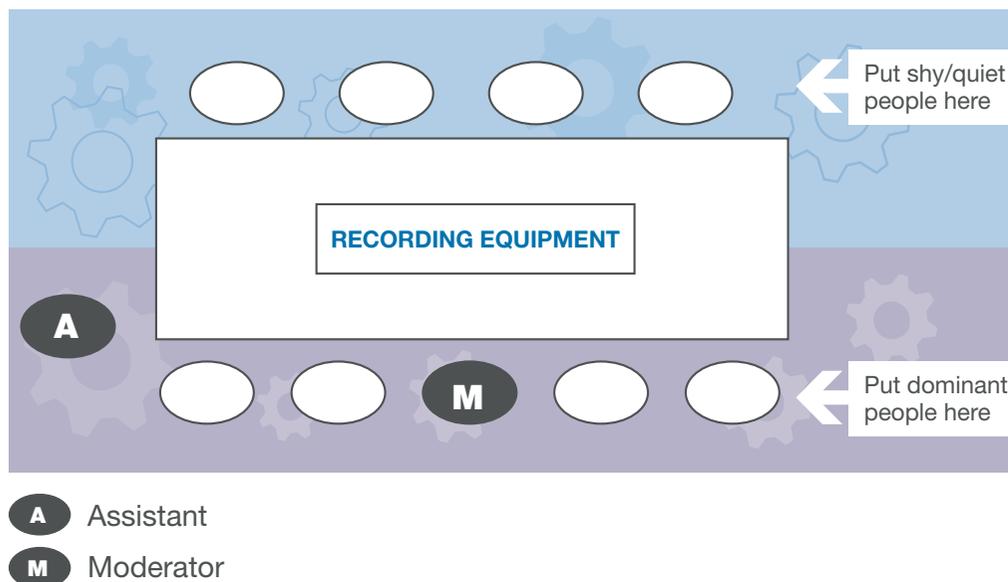
#### The venue and participants:

- The venue should be neutral, convenient for participants and comfortable. *Before* participants arrive make seating arrangements accordingly, as shown in Figure 2.
- Try to make participants feel at ease. Welcome them

upon arrival and provide refreshments where possible. Use this time to chat informally and use this interaction to check whether they are likely to be shy or dominant.

- Make name cards or name badges for each participant. Ask them to write their name on them and place them on the desk in front of them. This will not only help the moderator but also the other participants, especially if they do not know one another.

**Figure 2: Focus group seating plan**







## Resource considerations

**While focus groups enable researchers to collect information from a range of people in one sitting, there are some resource implications. These include:**

- The time it can take to identify possible participants and to contact (and re-contact) them.
- The time it can take to type up your focus group notes (this can take up to ten times as long as the focus group meeting for a full transcription, although it is usually less).
- You need to consider whether you will have a moderator and assistant for each focus group. Bear in mind that if you do not have an assistant, and your participants do not want you to record your focus group, the quality of your notes are likely to be of poorer quality.
- The equipment you will need includes a quiet room of suitable size, chairs and possibly a table, audio recording equipment and refreshments (optional).

## Sharing your research

**You could share your research in the following ways:**

- giving presentations to pupils, teachers, governors and parents
- writing an article for the school newsletter and/or colleagues in other schools

- writing for a practitioner journal or trade press
- send your report to your focus group participants (it is good practice to do so)
- writing an entry for an online publication, e.g. a blog or website.

Further information is available from NFER's 'How to' guides at [www.nfer.ac.uk/ris](http://www.nfer.ac.uk/ris).

## Research ideas

**Here are some ideas for how you could use focus groups in the school setting.**

- Generating ideas for how the school can become more eco-friendly in future.
- Gathering governor, staff, parent/carer and/or learner opinions on how well a new policy (e.g. admissions, inclusion) is working.
- Getting feedback on what the community wants from a new school e.g. buildings; outreach; courses; leisure facilities; access to wider support services.
- Identifying what issues affect the transition from primary to secondary school and how the school (and its feeder schools) can address them.
- Generating solutions to promote communication between the school and home environments.

- Exploring the accessibility of new classroom materials for learners with special educational needs (SEN) and additional learning needs (ALN).

## Other useful resources

We hope that this short guide to using focus groups has whetted your appetite for carrying out your own research. NFER has published a series of 'How to' guides for practitioners who want to carry out their own research, helping you put your ideas into practice. NFER have research books and training days available as well as free guidance on topics to research and methods of research. Why not get recognition for your achievements in research in your school, college or early years setting by applying for the NFER Research Mark? Visit [www.nfer.ac.uk/ris](http://www.nfer.ac.uk/ris) for more information.

# How to...



## Write up your research

Some tips to get you started

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## 3 Writing up your data (your research findings)

How you write up your data will depend on what data you have collected. We offer some suggestions and tips for writing up qualitative and quantitative findings.

### 3.1 Qualitative data

If you have collected *qualitative data* (data which is not based on numbers) then you will probably have analysed the data using codes and sub-codes,<sup>2</sup> pulled together under broader themes (see 'How to run qualitative and quantitative research'). Having these broad themes and sub-themes helps to provide a logical way to write up your data. Each broad theme can form a section heading and sub-codes (or sub themes) can become sub-sections (see example below).

Example

<b>Theme 2.</b>	<b>What worked well about the intervention?</b>
Sub theme 1	2.1 Parental engagement
Sub theme 2	2.2 Timing of the intervention
Sub theme 3	2.3 Support and training given to staff

Alternatives to splitting your data by theme, are to divide it by stakeholder, location or setting. For example, if you did your research in two different schools, you may want to write about each separately, pulling together areas of commonality or difference at the end of your report. Alternatively, if you asked a number of stakeholder groups about the same topic, you may want to present what governors told you in one section, what teachers said in another and what learners contributed in a third section.

Your research may lend itself to a *case study* approach. For example, if you have carried out an observation of different classes within your school, you may want to write a summary of each case (or class) in a different section.

However you decide to write up the data, if you have collected interview data, you will probably want to include *quotes*. These help to break up the report and to 'bring it alive'. Short quotes can also help to illustrate a key point well. Make sure you include some indication of who has said it (e.g. was it a teacher or parent?). Remember that the person and the location should be anonymised (unless you have participants' agreement to name them).

### Example of anonymising your data

A science teacher explained:

*I only let the pupils undertake practical work in my lessons when I have the support of the classroom assistant.*

If you feel the term 'science teacher' may identify the participant, just use the term 'teacher'.

If you have collected data from observations then you may want to include vignettes.

2

A 'code' is similar to a theme; it allows data to be grouped into manageable chunks about the same topic area (or code). An example might be 'training needs of classroom assistants'. A sub-code further breaks down the code (or theme) into even more manageable groups; for example; sub-codes of 'training needs' may be 'in-house training'; 'external training' or 'peer mentoring'



**Tables:** These are used when you want to present numerical data so that you can easily see the number or percentage of people giving a certain response. The numbers in the tables can either be given as percentages or as a frequency (the actual numbers of people responding). If you are using frequencies then somewhere you should also include the total number of people who responded.

When designing a table you need to think about how you set out your data, in particular which is the easiest way for people to read the data? In the example below it made more sense to put the questions down the side and the response categories across the top.

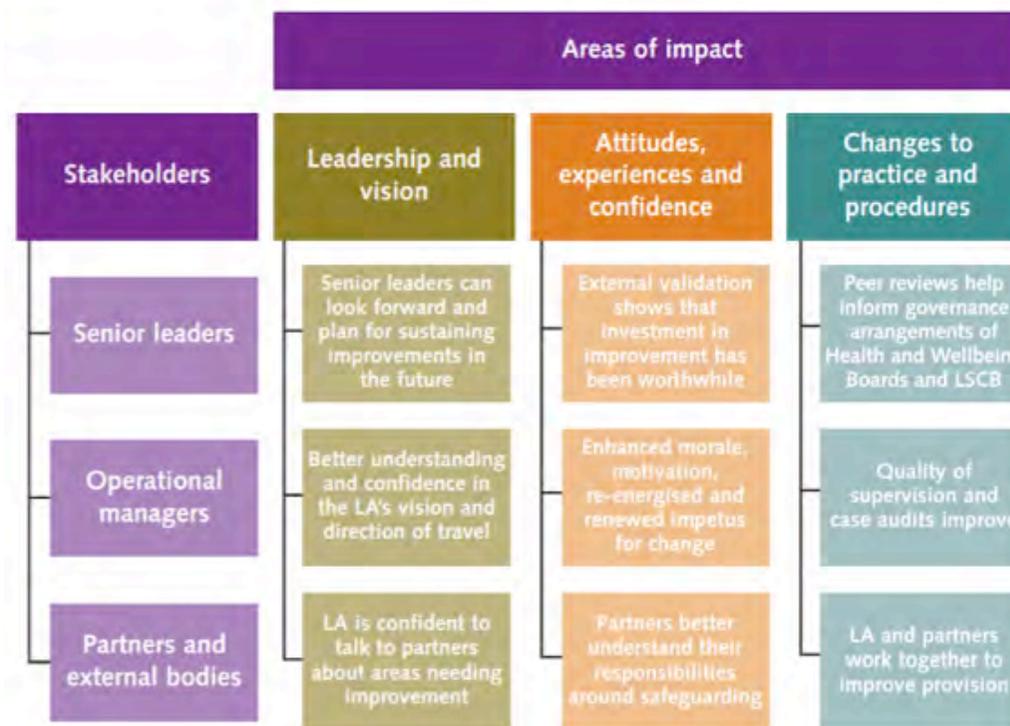
**Table 1. Number of students intending to study AS or A level mathematics and science subjects prior to attending the careers workshop.**

Before attending the careers workshop to what extent do you agree that you were intending to...	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Total
study biology at AS or A-level?	23	14	7	5	0	49
study chemistry at AS or A-level?	17	14	9	9	0	49
study physics at AS or A-level?	26	15	5	3	0	49
study mathematics at AS or A-level?	16	14	6	13	0	49

A total of 49 respondents  
Source: School survey 2013

Tables are useful if you want make comparisons or include lists. Diagrams can help to illustrate processes and show how different ideas and aspects link together (see example opposite).

**Example: Summary of key messages by stakeholder group**



Source: Easton, C., Martin, K. and Walker, F. (2012). The Impact of Safeguarding Children Peer Reviews (LGA Research Report). Slough: NFER. Available online: <http://www.nfer.ac.uk/nfer/publications/LGIS01/LGIS01.pdf> [Accessed: 15th September, 2013]



### 3.2 Quantitative data

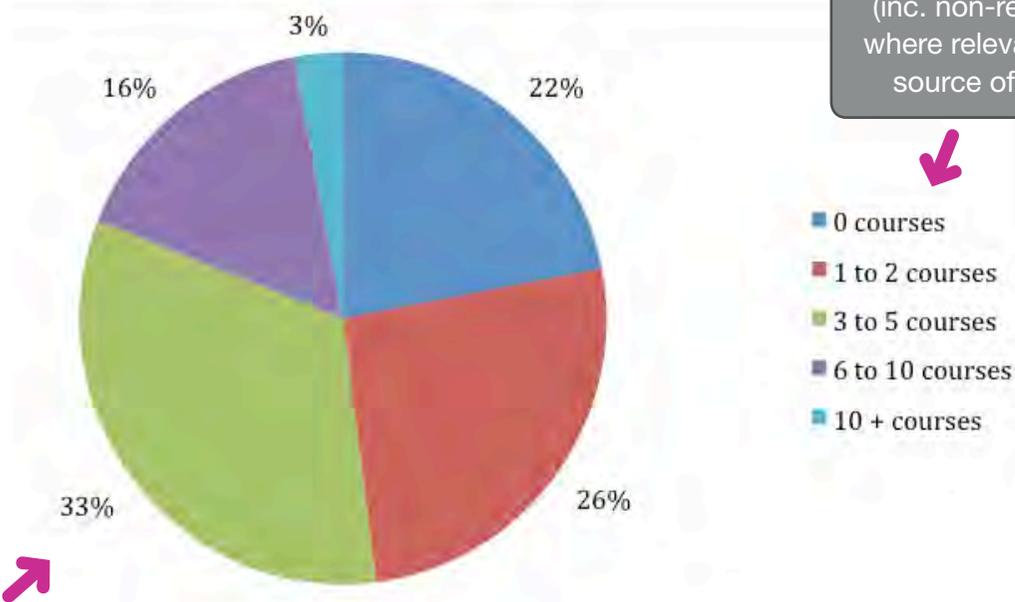
Writing up **quantitative data** (data which uses numbers) can be more straightforward than writing up more narrative, qualitative data. As well as text you can use a variety of charts, diagrams, tables and graphs to make the data easier to understand. Software, such as spreadsheets, will produce these for you at the click of a mouse. Make sure that what you use is appropriate to the data though; charts or grids can sometimes lead readers to misinterpret data through their layout, rather than aiding understanding.

When using charts, diagrams, tables and graphs ensure that they all have a title and display the axes (or key) and numbers of respondents.

Some examples of charts and graphs are shown here.

**Pie charts:** These can show the proportion of respondents in each category.

**Figure 1.1** Number of courses attended by percentage of staff at School A in 2013



Provide information about the number of respondents (inc. non-respondents where relevant) and the source of the data.

Provide information about the scale so your reader can interpret the data.

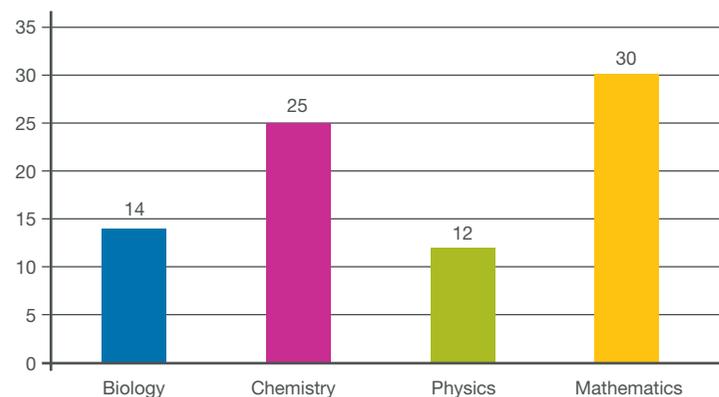
Number of staff responding N = 120  
Source: School A staff survey 2013

When using a pie chart, it is useful to quote the proportions to help the reader interpret the data.



**Bar charts:** These can be used to show the number of responses in each category. They can also be used to illustrate the range of responses, for example in a ‘Likert-scale question’ or to show how responses from different groups of respondents compare.

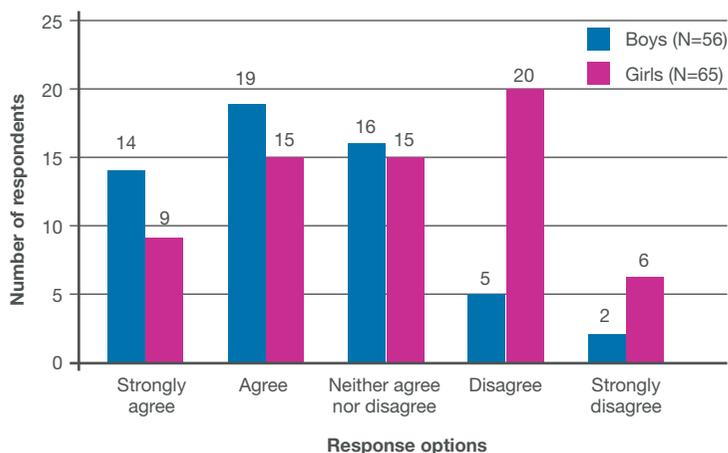
**Figure 1.2** Number of students in Year 12 studying AS Levels in science or mathematics



N=81

Source: School survey 2013

**Figure 1.3** I feel confident in using graphs in my science lessons



N=121

Source: NFER online student survey 2013

**Likert scales and Likert type questions:**

These are questions which are designed to measure attitudes and opinions by asking people to respond to a series of statements about a topic, in terms of the extent to which they agree or disagree with them. The bar chart in figure 1.3 shows boys’ and girls’ responses to the Likert-scale question: *How much do you agree with this statement: I feel confident in using graphs in my science lessons?*

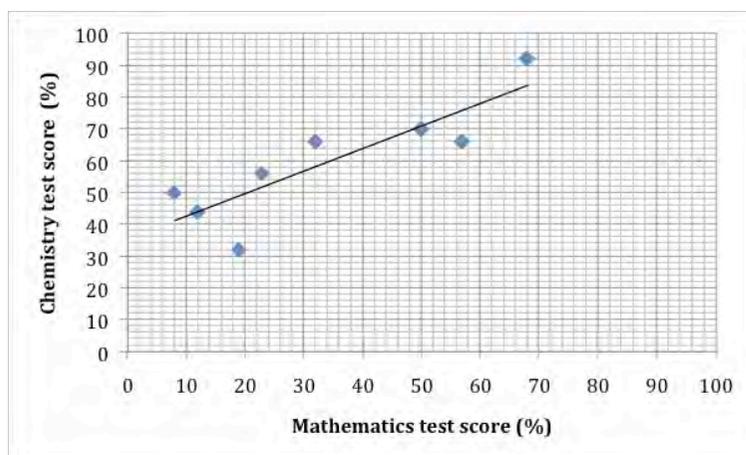




**Histograms:** You can also present your data using histograms or line graphs. Histograms are used to represent the distribution of continuous data (i.e. data that can take any value and is measured rather than counted; such as age or height). Histograms look like bar charts, except that in bar charts the bars are spaced, whereas in histograms they touch.

**Line graphs:** These should only be used when you are displaying continuous data on *both* the *x* and *y* axes. In the example below, the line charts shows how learners' mathematics scores relate to their test scores in chemistry (see Figure 1.4 below).

**Figure 1.4 Mathematics test score against chemistry test score**



Source: School survey 2013

## 4 Writing tips

Many people, including experienced researchers, can find starting to write quite daunting. Writing style is personal and, as with anything, develops the more you do it. Some people plan in detail before they write, others find that their ideas flow better if they sit down and just write. Below are a few ideas and tips that people have found helpful.

- Put aside a period of time each day or week for writing (and stick to it!).
- Use a spider diagram to capture your thoughts and the main themes coming out of your analysis, before you begin writing.
- Read! Looking at other people's research reports can give you ideas for your own. There are many to choose from on the NFER website ([www.nfer.ac.uk](http://www.nfer.ac.uk)).
- In the early drafts, do not worry if you cannot think of the appropriate word to use, just put something similar. You can highlight these places and return to them later. What is important is that you keep the flow of what you are trying to say going.
- Be aware that some days you feel able to tackle the difficult sections and other days you can only cope with straightforward tasks; do what suits you.
- When you get a mental block, stop writing. Come back to it later when you feel more able.

- Talk to friends, family, colleagues about your writing. In trying to explain the findings to them you will often clarify your own thoughts.

## Other useful resources

We hope that this short guide to writing up your research has whetted your appetite for carrying out your own research. NFER has published a series of 'How to' guides for practitioners who want to carry out their own research, helping you put your ideas into practice. NFER have research books and training days available, as well as free guidance on topics to research and methods of research. Why not get recognition for your achievements in research in your school, college or early years setting by applying for the NFER Research Mark? Visit [www.nfer.ac.uk/ris](http://www.nfer.ac.uk/ris) for more information.

# 'How to' guides collection – This is a collection of these five 'How to' guides

'How to' Guides

The NFER 'How to' guides are a quick and easy way to digest different aspects of research.

Written by NFER researchers, these guides help practitioners run research projects in education. From definitions and benefits, through to potential pitfalls, they ensure the research is based on professional guidance.



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**National Foundation for Educational Research**

The Mere, Upton Park, Slough, Berks, SL1 2DQ

T +44 (0)1753 637007

F +44 (0)1753 790114

E [products@nfer.ac.uk](mailto:products@nfer.ac.uk)

[www.nfer.ac.uk](http://www.nfer.ac.uk)

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