# David's Research Methods Tutorial

**(well, not really, it's a collaboration – see Acknowledgements on Slide # 24)**

**By the end of this short tutorial you will be able to:**

- Explain the concepts of reliability, validity, and generalisability
- Explain the key characteristics of three research methods widely used in educational research:
  - Interviews
  - Observation
  - Questionnaires
- Decide whether these are appropriate for your study.
- Know where to get further information about Research Methods.

# What are 'Research Methods'?

'Research Methods' are ways of getting data – such as talking to people or reading information on web sites.  You are likely to use a variety of Research Methods in your study – this collection of methods will typically be the middle part of a research Methodology – earlier parts may be a literature review and later parts data analysis techniques (Note that some prefer to use the term Data Collection Methods for Research Methods).

**Key Text:**

This tutorial is based on Cohen et. al.'s (2011) Research methods in Education, 7th edition – there are several copies in the library – click here to see the library catalogue page for this book.

Alternatively, the sixth edition of this book is available as a e-book – click here to link to the library catalogue entry.

Note there are many books on Research Methods in our library – click here to see books that have Research Methods as key words – perhaps you might find texts such as A gentle guide to research methods by Gordon Rugg (from the catalogue page you can click through to the electronic version of Rugg's text).  You should also search for your modules reading list from the Learning Services home page: www.edgehill.ac.uk/ls

## IMPORTANT

This presentation  will introduce you to some research methods – but it is NOT intended to replace key reading, such as Cohen.  If you intend to use any of these Research Methods in your study you should read a few key texts that cover the method, and perhaps even from different perspectives such as health or social science – and for this you may have to go beyond your modules reading list.

## Reliability, Validity and Generalisability

Before we look in detail at Research Methods there area three issues that we need to be mindful of – issues that should be uppermost in a researcher's mind as they design and conduct their research.

## Reliability

Reliability refers to the quality of the methods used. It is a synonym of dependability, consistency and replicability over time and over groups of respondents. It is concerned with accuracy and precision. For research to be reliable it must demonstrate that if it were to be carried out on a similar group of respondents in a similar context then similar results would be found.  Reliability is a precondition or sine qua non of validity.

## Validity

Validity is about the quality of data. It is important here to remember that high quality data depends on the accuracy or reliability of the methods used. It is very easy to slip into invalidity as it can enter at every stage of the research from design to data gathering rendering the research invalid or heavily biased. The researcher can take steps to ensure that as far as possible invalidity has been minimised in all areas of the research. For instance at the design stage, through  choosing an appropriate timescale and appropriate methodology, and at the stage of data gathering by trying to avoid drop out amongst respondents and minimising reactivity effects (respondents behaving differently when subjected to scrutiny or being placed in new situations).  At the data analysis and data reporting stage one of the main ways of enhancing validity is by avoiding selective use of data.

# Generalisability

As the name suggests the generalisability of our research refers to how generalised the claims we can make about what our research explores or uncovers.  If, for example, our research highlights the importance of reward as a motivator in ensuring good classroom discipline, then to what extent can that claim be applied in general to all classrooms?  For the researcher it often means enhancing the potential for generalisation by maximising the range of a sample's characteristics in exploring a particular issue or phenomenon, i.e. to ensure that as many different cases as possible are included in our research.

Note, however, that you don't have to 'achieve' generalisability in your study – what you DO have to do is be aware of and explain is how generalisable your results might be.  Perhaps what you find may be applicable to others in your school or context, but perhaps not at a different age range or a different part of the world.

## Interviews

An interview is NOT an ordinary, every day conversation. It is a flexible tool for collecting data harnessing multisensory channels including verbal, non verbal, spoken, and heard.

**Purposes of the interview OR when is an interview appropriate:**

An interview is just ONE albeit a very important way of data collection. It can comprise:

- 1-2-1 interviews
- group interviews
- non-face to face interviews and conversations such as
    - Telephone,
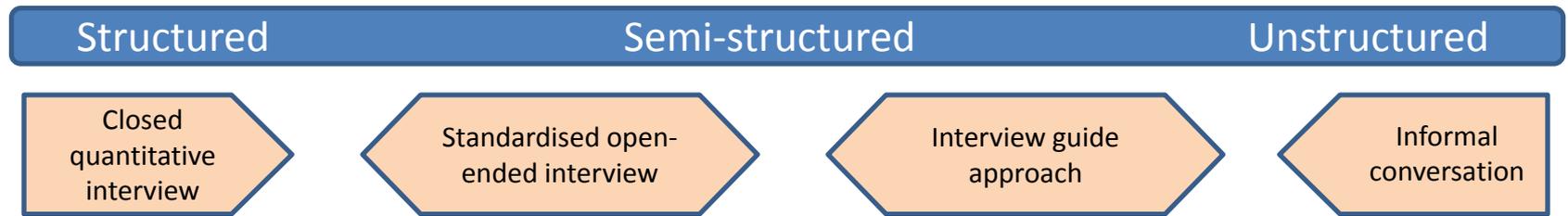    - Text and
    - Web based (e.g., Skype) interviews.

## Categories of interviews

Cohen (ibid:413) identifies four categories of interviews:

1. **Informal conversational:** this is where questions emerge from the immediate context and are simply asked, conversation style, in the natural course of conversation.  There are no planned questions.  A typical opening question could be "Tell us about your experience of …"

2. **Interview guide approach:** The subjects to be covered are specified in advance and the interviewer decides on the questions and their order during the interview process.

3. **Standardised open-ended interview:** The wording and the sequence is pre-determined in advance of the interview.  Further, all interviewees are asked the same question in the same order.

4. **Closed quantitative interview:** Where questions AND responses are determined in advance – responses are fixed and respondents simply choose the closest response to their experience.

## Cohen's categories:

| Structured | Semi-structured | Unstructured |
|---|---|---|

| Closed quantitative interview | Standardised open-ended interview | Interview guide approach | Informal conversation |
|---|---|---|---|

Cohen's categories range from a structured quantitative approach through to qualitative open ended questions.

An advantage of the open ended informal approach is that the respondent, without the constraints of particular questions and responses being posed, is encouraged to give rich and detailed answers, often ambling off on a complete tangent.  On other other hand, inconsistencies may arise between respondents that make data collection in any systematic order very difficult.

An advantage of the highly structured single response type of interview is its ease of use, leading in turn to ease of analysis.  A disadvantage, however,  is in its limitation: limited questions leading to limited responses leading to limited analysis.

In reality, most researchers adopt a mixed approach that includes some elements of a structured and formalised approach with elements of unstructured and perhaps informal questions.  Often the first few questions of an interview are quantitative such as age, sex, years in employment etc., moving through to qualitative and informal conversational questions such as 'What do you think about the KS3 strategy'. These later questions garner the 'quality' material that produces the rich data that is the basis for much study at level 6 and 7.

# Planning the interview

In this section we outline the whole interview process from concept to reporting.  Kvale (1996) sets out seven stages of an interview investigation:

| Stage | Description |
| --- | --- |
| Thematising | Determining the general goals and specific objectives of the interview. |
| Designing | Designing the themes, topics and questions for the interview and organising an interview schedule. |
| Interviewing | Conducting the interviews |
| Transcribing | The means of collecting data through listening, audio and/or video recording, writing, including recording non-verbal communication. |
| Analysing | Analysing the data collected, often by some form of coding or scoring. |
| Verifying | This refers to the issues of validity, reliability and generalisability. |
| Reporting | Decision making about the nature and extent, type and form of public report that the interviewer intends to publish. |

We suggest you spend a considerable time 'Thematising': discuss this with your supervisor, peers, colleagues and friends.  Question if you are allowing your respondents enough opportunity to fully express themselves. Unfocussed goals and objectives are likely to result in similarly unfocussed data that will undermine your study. Transcription is another critical stage because there is a potential to lose, ignore, distort or reduce the data to produce knowledge that has been reduced to fit a convenient model.

# Group Interviewing

Simply put, where you interview more than one person at the same time.

**Key advantages:**

- Has the potential for discussion to develop, hence yielding a range of responses.
- Can be 'cost effective' i.e., gathering many perspectives in a relatively short space of time.
- Reliability of the data may increase due to respondents being able to correct each other (Krueger & Casey 2000).

**Some disadvantages:**

- Tendency for one person to dominate.
- Tendency for that groups 'norms' to be stated rather than individuals positions.
- Not suitable for controversial or highly personal issues (Kaplowitz, 2000)

Groups interviews are also useful as a pre-cursor for subsequent individual interviews and give the interviewer an insight into the usefulness of particular questions.

Group interviews are a good technique when interviewing children – for the researcher, it is important to understand the world of children through their own eyes rather than through the lens of the adult.  Group interviewing with children enables them to challenge each other and participate in a way that may not happen so readily in a 1-2-1 and also encourages the children's language to dominate rather than the adults.

# Interviewing minority and marginalized people

An increasing area of education concern, in interviewing marginalized groups, the interview needs to consider greater use of informal and open-ended questions.  A number of challenges might present to the researcher: communicative, cognitive, cultural to name just a few.

In this case the researcher may have to use new and imaginative ways of interviewing such as using pictures and other visual aids.  It may also be pertinent to consider the length of an interview and consider breaking it down into a series of shorter interviews. At the heart of conducting research with marginalised groups should be the desire that the research should aim to help such groups and in no way marginalise them further.

# Focus groups

A form of 'Group Interview' where the reliance is on the interaction within the group to discus a topic supplied by the researcher.

It is from the interaction of the group that the data emerges.

Such data can be used to generate questions for a smaller group interview or individual interviews.

## Telephone interviewing

Telephone interviewing has many advantages, such as:

- Sometimes cheaper and quicker
- Travel costs omitted
- Interviewer effects are reduced

Telephone interviews are not always appropriate for sensitive topics and tend to limit the depth and richness that a respondent is likely to provide.  If you really want a rich qualitative data the more personal you can make it the better – consider going to see the interviewee in their own context – but please bear in mind issues of your own personal safety.

Some interviews can be conducted via email – in an 'asynchronous' manner.

Using email negates the need for transcription.  Further, using a chat tool (such as MSN) synchronous text based 'interviews' can be conducted that can be recorded and thus need no transcription.

**Some limits of telephone, email and text interviews.**

All these techniques reduce the ability to collect non-verbal communication – perhaps the most restrictive being asynchronous email where interviewees have the opportunity to ponder their responses rather than react immediately to the question being posed.
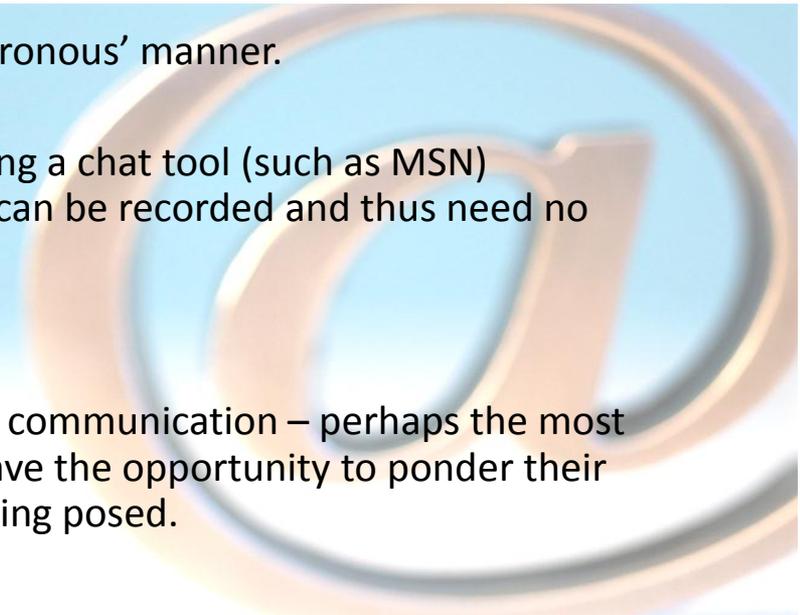
## Ethical Issues in Interviewing:

Interviews have an ethical dimension, such a dimension generates a number of questions. For example, on the issue of informed consent who should give the informed consent and for whom and what? What is legitimate private and public knowledge? How might the research help or harm the interviewees?

It is difficult to lay down hard and fast ethical rules, as so often ethical matters are contestable. Nevertheless, it is essential that ethical questions and answers are raised and agreed upon before an interview commences.

A favourite reference of mine when introducing students to research ethics is Dicicco-Bloom and Crabtree (2006) (click on the Get PDF link on the linked page). I really like the way they unpacked possible detriment from p319 onwards. Note that this is a medical journal, but the ethical notions discussed are universal; as they state:

1.  reducing the risk of unanticipated harm;
2.  protecting the interviewee's information;
3.  effectively informing interviewees about the nature of the study, and
4.  reducing the risk of exploitation.

(ibid:p319)

# Observation

Observation is more than just looking at; it is looking at **systematically** and has the distinctive feature of **collecting 'live' data as it is occurring**.

Gathering data by observation has several advantages; two of the most important are:

1. It removes the effects of others interpretations of data – such as that which arises from interviews.
2. Since what people do often differs from what they say they do, it provides for a built in 'reality check'.

Two significant disadvantages:

1. In general, it is time consuming and
2. prone to observer bias. For instance, these include selective attention of the interviewer, reactivity whereby the observed change their behaviour under observation, attention deficit. Hence, caution and reflexivity are necessary for this form of data collection.

There are many different kinds of observation:

- Quantitative or qualitative
- Time bound or open ended
- Short term or long term
- Observing self or others, to just observing others.

Many researchers choose an observational method that comprises some or all of these approaches, hence taking a mixed observational stance.  Indeed, observation is sometimes combined with other research methods such as interviewing and diary keeping.

# Structured observation

A very systematic method that enables the researcher to generate numerical data from observations. In turn this data enables comparisons to be made between, for instance, settings, patterns and trends.

There are five main ways of entering data onto a structured observation schedule:

- **Event sampling:** this requires a tally mark to be entered against each statement each time it is observed

- **Instantaneous sampling:** if it is important to know the chronology of events this form of sampling is used. It requires the observer to note what is happening at given intervals, e.g. every five minutes or every 50 seconds.

- **Interval recording:** instead of, as above, charting what has happened on the instant, interval recording charts the preceding interval.

- **Rating scales:** in this method the researcher makes some judgement, normally on a scale, about events being observed.

- **Duration recording:** a record kept of the duration of an event.

# Naturalistic and participant observation

Here the intention is to observe participants in their natural setting, their everyday situation and as such their everyday behaviour within it.

Observations are recorded in field notes, from the quick jottings to the more lengthy and descriptive and detailed observation written fully out.  Very often, a researcher will use diagrams to assist in placing 'actors'  or participants in an order that they participated.

**Data analysis for less structured observation.**

Here the tools of qualitative analysis can be used – coding and categorising, comparison, narrative accounts of individuals, behaviours, events, for instance.  Also, computer based software for analysing data such as Nvivo can be used.

# Questionnaires

Questionnaires are popular as a research method across many disciplines.  They present a very easy to use, accessible, and quantifiable method of collecting large amounts of data in a consistent format that is straightforward to analyse.  Technical innovations such as web based questionnaires (e.g., SurveyMonkey) have further simplified these processes.

However, it is easy to create a poor questionnaire, as Gillham warns:

> "The great popularity with questionnaires is they provide a quick fix for research methodology. No single method has been so abused"
>
> (Gillham 2000:123)

A major concern with questionnaires is that they may not get the 'whole story' from participants – thus we suggest that even before you start to think about the design for your questionnaires, consider having a 'catch all' question towards the end, something like " … is there anything else you'd like to tell us?".

# Planning the questionnaire

At the preliminary stage it can sometimes be useful to use a flowchart to plan the sequence of questions.  It helps to focus on:

1. What are the objectives/purpose of the questionnaire
2. Decide the population and the sample
3. Generate the topics/issues to be addressed
4. Decide the kinds of questions or responses needed
5. Write the questionnaire
6. Check that each issue in point 3  has been addressed
7. Pilot and refine the questionnaire
8. Administer the final questionnaire

When planning it is essential that the researcher is mindful of the eventual data analysis.

**Piloting**

Testing your questionnaire before releasing to your research cohort will reveal questions that can be misinterpreted and therefore give you the opportunity to change to a more suitable wording.  You could pilot the questionnaire amongst a small representative sample of your research cohort, or perhaps just run through it with peers, colleagues or friends.

# Types of questionnaire items.

There are several kinds of question and answer modes in questionnaires, such as:
- multiple choice
- rating scales
- dichotomous questions requiring a yes/no response only
- open ended questions etc.

> When selecting the type of question, we suggest a simple rule of thumb: the larger the size of the sample, the more structured, closed and numerical the questionnaire may have to be; and the smaller the size of the sample, the less structured, more open and word based the questionnaire may be.

**Thought needs to be given to:**

- **Scales of data** - how much and how should it be gathered using for instance, nominal, ordinal, ratio.

- **Dichotomous questions** - are they useful to my research and will they be enough or should I convert them into multiple choice or word based responses?

- **Multiple choice questions** - again are they useful, maybe pilot to see how useful.

- **Rank ordering** – this enables respondents to give a priority to certain responses over others.

- **Rating scales** - combine the opportunity for a flexible response with the ability to determine frequencies, correlations and other forms of quantitative analysis. Like rank ordering, however, one person's 'quite agree' might be another's 'strongly disagree'.

# Making questionnaires work

The golden rule is to keep the questions as short and simple as possible, avoiding ambiguity and assumption.

**Some general guidance to produce good questionnaires:**

- Avoid leading questions (watch out for adjectives in your question).
- Avoid highbrow questions that are designed for a specialist audience when your sample is the general adult population. In general, people want to help and thus don't want to be put off by feeling unable to interpret the questions.
- Similarly, avoid complex questions.
- Don't ask two questions at once.
- Avoid irritating questions or instructions.
- Avoid extremes in rating scales e.g. not at all, never… unless there is a compelling reason to include them.

**Suggestion:**
If you are using questionnaires, use the above as a checklist – how does your questionnaire measure up?

# Using technology with questionnaires

**Data collection:**

There are some free web-based questionnaire services (e.g., SurveyMonkey) that you could use to ease the distribution, completion and collection and collation of responses. Be mindful of how you present your questionnaire if you use such a service – sending an email out asking for completion may produce a poor response rate. If your cohort were not too large you may be able to contact them each personally – if they congregate at some points perhaps ask for permission to address them (e.g., during a school's morning briefing).

**Data analysis:**

There are a number of excellent computer packages that you may want to consider using if you have a significant amount of quantitative data. One example that has been used as Edge Hill is SPSS. These packages help you to determine the reliability of any hypotheses you make from the data.

# Other methods

This tutorial has address three popular research methods in educational research.  There are many more.  Cohen (ibid) identifies these additional methods:

- Documentary research
- Accounts
- Tests
- Personal Constructs
- Role Playing
- Visual Media

# References

Cohen, L., Manion, L., Morrison, K. (2011) *Research Methods in Education (7th edition).* Abingdon: Routledge.

Gillham B. *Developing a questionnaire (real world research).* London: Continuum, 2000.

Krueger, A. & Casey, M. (2000) *Focus Group Interviews: A Practical Guide for Applied Research.*

Thousand Oaks: Sage Publications.

Kvale, S. (1996) *InterViews: An Introduction to Qualitative Research Interviewing.*  Thousand Oaks: Sage.