Data Analysis

The purpose of analysis

- To identify patterns and themes

- To find support for / refute research questions

- To provide evidence for explanations

Forms of data

- Quantitative: numerical

- Qualitative: textual (language, visual)

Analysis of quantitative (numerical) data

- **Descriptive statistics** (often percentages, fractions or means) : the result of collecting, classifying and summarising data: e.g. '75% of students in the study reported that that……'

- Use of Excell spreadsheets in Microsoft Word etc

- **Inferential statistics**: the use mathematical formulae to make inferences about some aspect of the **research population** by statistically testing the data from the sample. For example, the use of test to see how strong the difference between two data sets is.

- Use of SPSS etc

Analysing quantitative data: a summary

- **Code** raw data according to the frameworks that you have designed for that purpose

- **Reduce** data to useful summaries

- **Display** data summaries meaningfully and accessibly: charts, graphs, bullet points.

Strengths and limitations of quantitative data

- Straightforward to code and analyse – is a mathematical exercise once coding frame is agreed

- Easy to make comparisons between numbers

- Can draw conclusions about large numbers – generalisability

- Can provide compelling statistic evidence for the support/rejection of a hypothesis

- Limitations: detail and individual voice is absent

Analysis of Qualitative (textual) data

- By hand
- Computer analysis (NU*Dist, Nvivo etc code and classify data using key word searches in the text)
- Top down: start with theory and look for evidence of it (hypothesis based coding)
- Bottom up: start with data and sift until themes and categories emerge (e.g. thematic analysis) leading you to formulate a theory (e.g. grounded theory)

How to use qualitative data to provide a summary or sense of findings

- Can be used illustratively: the pulling out dominant themes, the use of quotes

- Case studies can be presented as a 'story' part of which is the researcher's commentary

- Data summary can have numerical format e.g. 'one quarter or 25% of interviewees attributed their success to the tutor's skill'

Strengths and limitations of qualitative data

- Coding can be very complex process: in-depth detail can be overwhelming: how to select categories? Assign data to categories?
- Difficult to compare non-numerical data
- Difficult to make generalisations although dominant themes can be explored
- Strengths: provides rich detail that can be used to 'colour in' quantitative data
- Absolutely essential not to reduce ethnographic work to numbers alone

Uses of all data

- Draw conclusions
- Weigh-up the case for/against research questions
- Able to make a response to/answer previous work/literature
- Should advance the field by providing digestible new knowledge that is supported by evidence
- Should add transparency not promote an obscuring of knowledge: know your audience