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Evaluating & Researching University Participation Interventions

Using Quantitative Data

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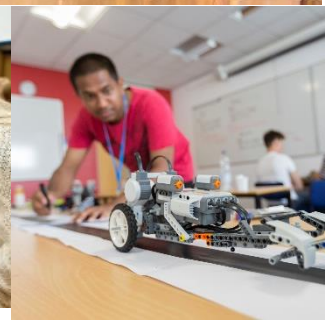

Straw Poll

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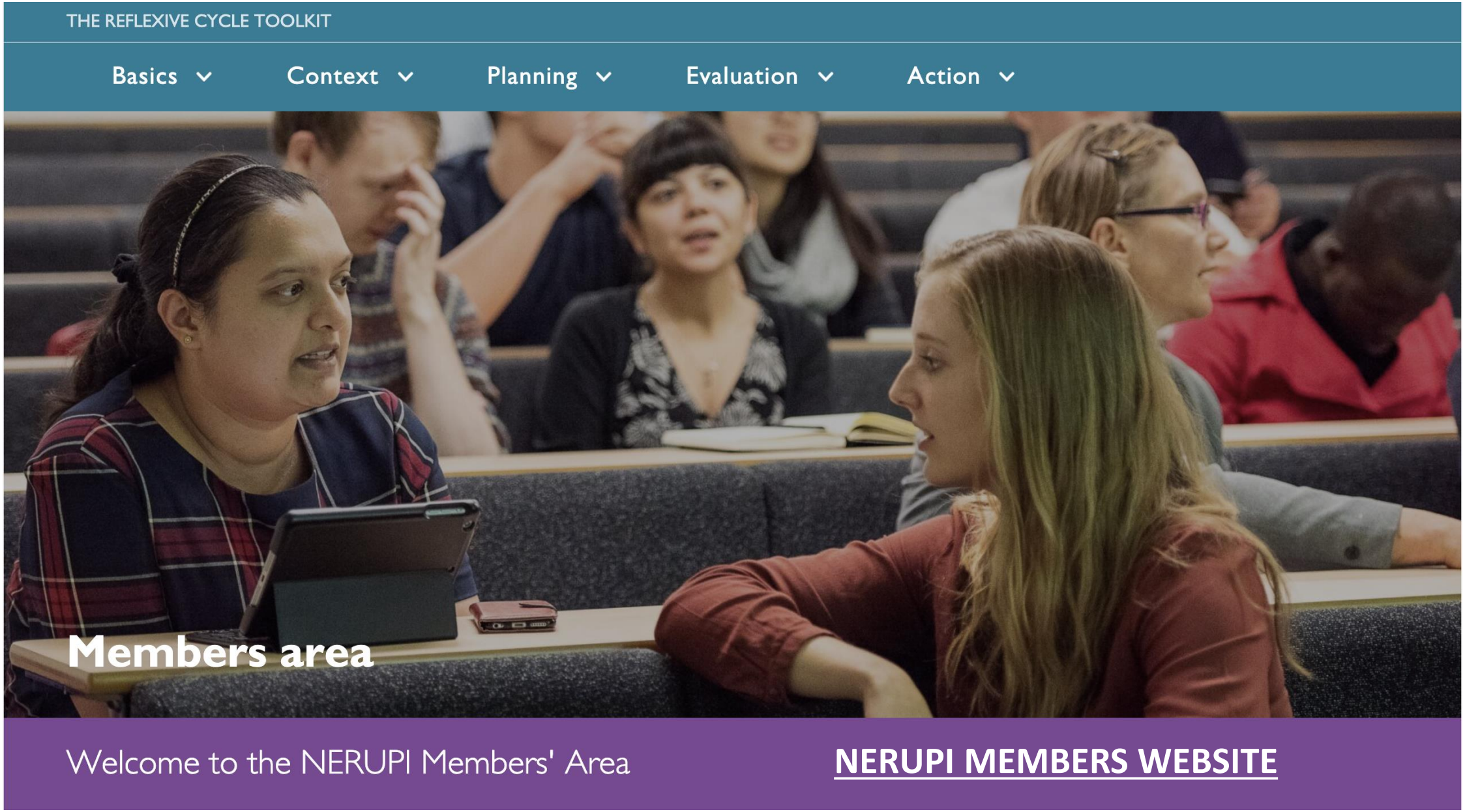
Which of these best describes you:

1. Tend to avoid data analysis
2. Confident using numbers to tell a story
3. Some understanding of statistical techniques
4. Stats wizard

NERUPI Members' website



NERUPI Evaluation

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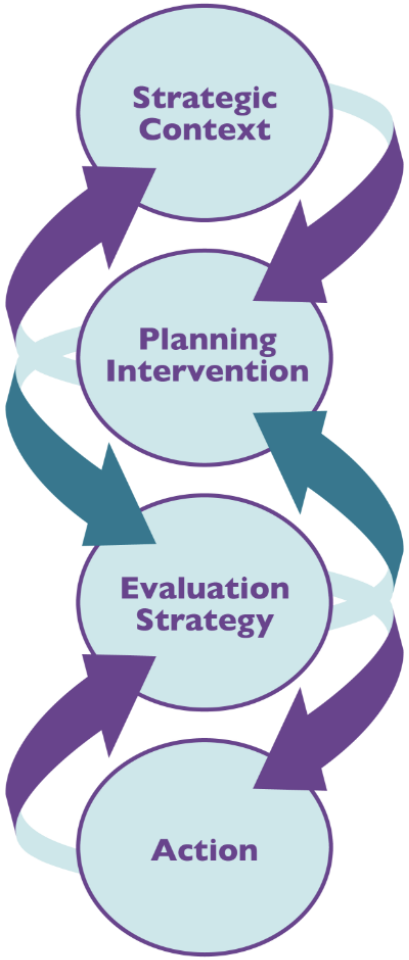

moves away from the **medical model**

diagnose
treatment

Focus on **inequalities** not individual needs

EVALUATION

Quantitative methods pros and cons

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1. Used to test hypotheses
2. Different variables can be studied in detail
3. Used to assess cause-and-effect relationships whilst controlling for other variables
4. Following agreed procedures allows for reliability and validity
5. Easier to replicate to test the results or do other research
6. Can make it possible to generalise the results to other situations
7. Can allow quantitative predictions to be made
8. Methods can be quick and relatively low cost (e.g. surveys). Useful for collecting data from large numbers
9. Results are relatively independent of the researcher
10. Data analysis software facilitates analysis and reporting

1. Unable convey the richness and depth of detail as other methodologies.
2. Unable to answer questions of why things happened and the meaning
3. Not able to look at how individuals react or respond differently to situations and each other
4. Analysing relationships between variables might lead to formulated and static view of life
5. The researcher's categories may not reflect people's understandings
6. Phenomena may be missed because the focus is on testing the exiting theory (confirmation bias).
7. Knowledge produced may be too abstract and hard to apply to practice

Adapted from Gratton and Jones (2004) and Burke et al (2004)

Considerations for quantitative research

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Issue	Considerations
Access to Data	Data sharing, Admin Data (e.g. applications), Tracking, Data collection, Standardised tools, Questionnaires/Surveys/Polls
Measurement	Categorical, interval or ordinal data, Quantifiable characteristics, Rating scales/Likert scales, Validated scales Reliability, Validity, Cognitive testing
Numbers	Population size, Sampling Methods, Purposeful sampling
Ethical issues	Informed consent, Data protection, Confidentiality

Issue	Considerations
Counterfactual	Subjective/Objective, Pre-intervention data, Control/Comparison group data, Random allocation v quasi-experimental design
Data analysis	Trends/Patterns, Benchmarking, Relationships/ Correlation, Prediction/ modelling
Skills & software	Tables, Graphs, Figures (descriptive statistics), Statistical modelling (inferential statistics)
Other	

What makes a good measure

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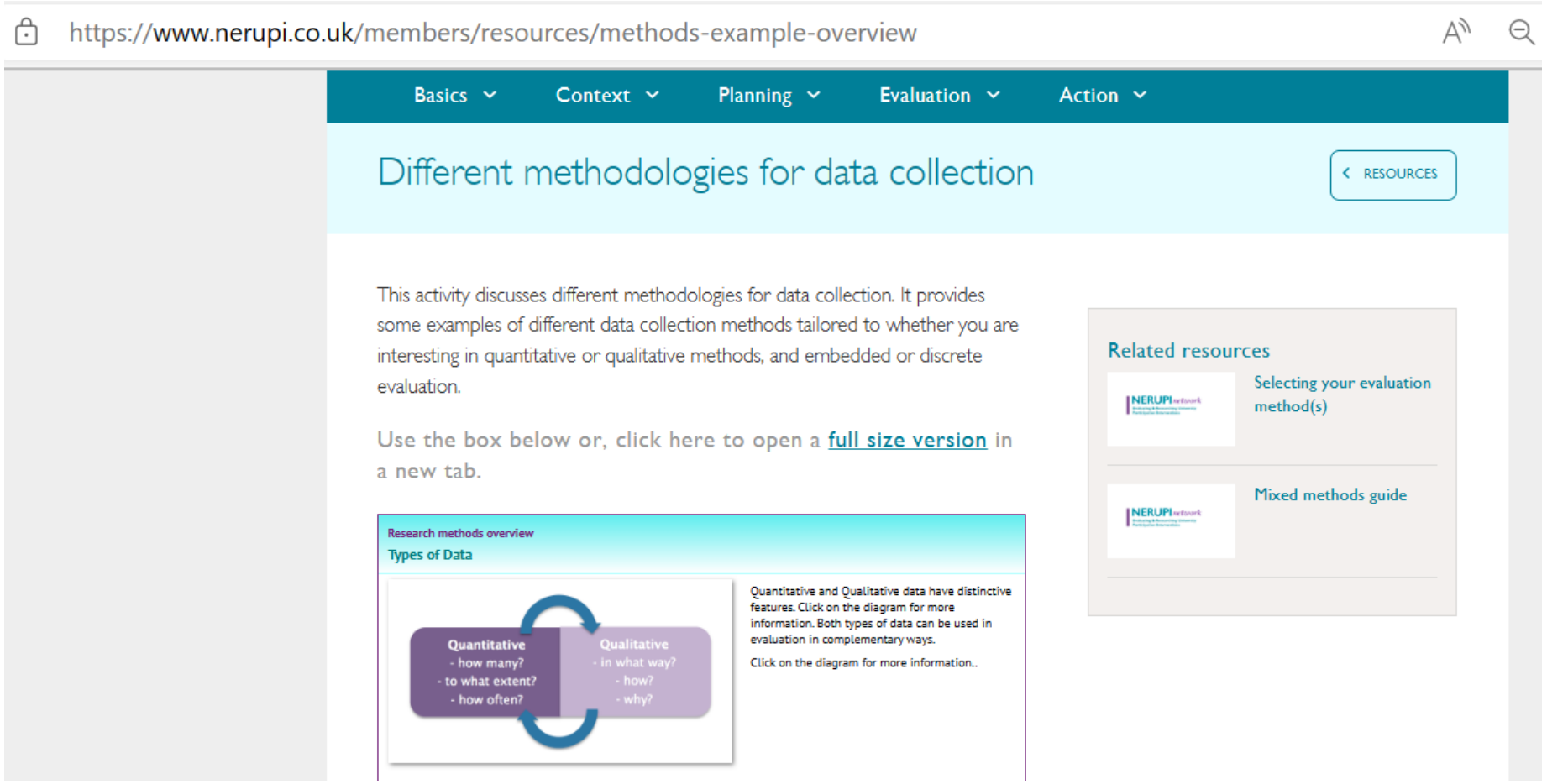
- Quantifiable – objective rather than subjective
- Understandable – the 10 seconds test?
- Actionable – measures that you can actually impact
- Repeatable – ideally capture trends
- Timely – within scope
- Feasible – within time/resources etc

Member resources



Methods Guides available on:
Using symbols; Interviews; Focus groups; Feedback from stakeholders and interested parties; Creative expression; Reflective accounts; Evaluation wheel; Photo elicitation; Questionnaire surveys; Structured observation; Tracking; Voting; Use of Validated tools; Experimental and Quasi-experimental methods; Case studies; Comparative case study analysis; Process tracing; Qualitative Comparative Analysis; Contribution Analysis.

Different types of questions

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Question Types
- Exploratory
- Predictive
- Evaluative (pre- and post-)
- Process

Exploratory: Learn more about a topic, probe on the main factors involved	How does participation in our activity affect students' attitudes?	E.g. Do you feel that x (e.g. the summer school) has positively or negatively affected you and if so how?	Open ended questions in surveys, Interviews and focus groups, Creative methods, Photo elicitation, Observational research
Predictive: Thinking about the potential future outcome of taking part in an activity	What difference does our intervention make to intention to progress in education?	E.g. As a result of x (e.g. the summer school) are you more likely to y (e.g. apply to university). What do you feel you achieved by taking part in this activity?	Post activity questionnaires and surveys, tests of knowledge and understanding
Evaluative (pre/post): Documenting impact against a measure	Does attendance at our activity increase students' HE confidence a measurable way?	E.g. How confident do you feel… (e.g. in your ability to progress to university) - repeated before and after participation in an activity	Pre and post questions, tests or surveys or other methods which use rating scales to quantify pre and post intervention changes (e.g. evaluation wheel)
Process: Understand the mechanisms at play in successful programmes	What are we doing that is working?	E.g. What's the best thing about this activity? How would you rate x,y,z?	Feedback forms, post activity surveys, interviews, focus groups

Data collection methods overview

Research methods

Interviews | Voting | Surveys | Photo elicitation | Evaluation wheel | Observation | Stakeholder feedback | Focus groups

Surveys

Questionnaire surveys use a structured format and they are applied in a systematic way. They can have targeted questions or they can be more general in their content. Either open or closed question formats can be used. Structured questionnaire surveys designed for quantitative analysis usually have a closed format (e.g. checkbox, multiple choice, rating scale, agreement scales) to aid quantitative analysis (as a general guide, only 10% of the questions on surveys tend to be open-ended).

Find out more

Look at a practice example

Quantifying qualitative data

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	Quantitative	Qualitative
Using symbols	✓	✓
Interviews	✓	✓
Focus groups		✓
Feedback from stakeholders and interested parties	✓	✓
Creative expression		✓
Reflective accounts	✓	✓
Evaluation wheel	✓	
Photo elicitation		✓
Questionnaire surveys	✓	✓
Structured observation	✓	✓
Tracking	✓	
Voting	✓	
Use of Validated tools	✓	
Experimental and Quasi-experimental methods	✓	
Case studies	✓	✓

- Triangulation of sources
- Mixed methods approaches

TASO Validated Scales

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EXAMPLE -

TASO Transforming Access and Student Outcomes in Higher Education

Intermediate outcome: academic self-efficacy (prospective)

This is a scale for use with learners in schools, sixth-forms, or colleges, or young people not in education.

Prompt

The following statements relate to how you feel about studying in higher education from an academic perspective. Please consider each statement and indicate the extent to which you agree or disagree.

Items

1. I am confident that I can get the grades required to progress to university.
2. I have the academic ability to do well at university.
3. I could manage with the level of study required at university.

Response options, with coding

Strongly disagree (1) – Disagree (2) – Neither agree nor disagree (3) – Agree (4) – Strongly agree (5)

Approaches to impact evaluation (The OfS Standards of Evidence)

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	Description	Evidence used	Claims you can make
Type 1: Narrative	The evaluation provides a narrative and a coherent theory of change to motivate its selection of outreach activities in the context of a coherent outreach strategy	Evidence of impact elsewhere and/or in the research literature on outreach effectiveness or from your existing evaluation results	We have a coherent explanation of what we do and why Our claims are research-based
Type 2: Empirical Research	The evaluation collects data on outcomes and impact and reports evidence that those receiving an intervention have better results, though this does not establish any direct causal effect	Quantitative and/or qualitative evidence of a pre/post treatment change or a treatment/non-treatment difference	We can demonstrate that our interventions are associated with beneficial results.
Type 3: Causality	The evaluation methodology provides evidence of a causal effect of an intervention	Quantitative and/or qualitative evidence of a pre/post treatment change on a treated group relative to an appropriate control or comparison group using an appropriate and robust research design	We believe our intervention causes improvement and can demonstrate the difference using a control or comparison group

Approaches to impact evaluation (The OfS Standards of Evidence)

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- One-Shot - data following an activity or programme
- Retrospective Pre-test - recall of perception/behaviour and change
- One-Group Pre- and Post- Design – before and after data
- Time Series Design –data before, during and after
- Pre- and Post- Control-Group Design – data from activity group and control/comparison group before and after the activity
- Post- Control-Group Design – data from the activity group and a control/comparison group following the activity
- Case Study Design – in-depth, qualitative data

Questions to explore in groups

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Which Example are you looking at:

Which Design Is It?

What would this evaluation tell you about your activity?

What wouldn't you know from the data?

What are the potential limitations and how would you address these?

Any practical or operational problems or issues anticipated and how would you address these?

Debrief:

What did you discuss?

Did any designs seem better/worse than others?

How could you compensate for weaknesses?

How would you decide which design to use for your own evaluation?

Data Analysis

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- Descriptive Statistics - Tables, Graphs, Figures, Trends/Patterns
- Inferential Statistics - Relationships/Correlation, Prediction/modelling
- Data analysis skills
- Software

Statistical significance and statistical power levels (conventionally 95% and 80%)

Free Tools for sample size calculating:

SAS:https://support.sas.com/documentation/cdl/en/statug/63347/HTML/default/viewer.htm#statug_clientpss_sect002.htm

PASS: http://www.ncss.com/software/pass/

3ie: https://www.3ieimpact.org/evidence-hub/publications/working-papers/power-calculation-causal-inference-social-science-sample

Optimal Design: https://sites.google.com/site/optimaldesignsoftware/home

Signposting

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- Using standards of evidence to evaluate outreach, University of Exeter, February 2019 https://www.officeforstudents.org.uk/publications/standards-of-evidence-and-evaluating-impact-of-outreach/
- The Evaluation of the Impact of Outreach: Proposed Standards of Evaluation Practice and Associated Guidance, Dr Claire Crawford, Dr Siobhan Dytham and Professor Robin Naylor, June 2017 https://www.nerupi.co.uk/members/resources/test-3333
- Innovation Growth Lab: A guide to RCts https://innovationgrowthlab.org/guide-randomised-controlled-trials