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LISH Laboratory for Innovation Science at Harvard

EFI

IGL2019 Global Conference

Randomised controlled trials in innovation, entrepreneurship and economic growth: A Masterclass

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Overall purpose

The masterclass aims to deliver facilitated discussions on:

- The basics of randomised controlled trials (RCTs)
- Intervention readiness for experimental testing
- The feasibility assessment of the RCT design

1. What is an RCT?

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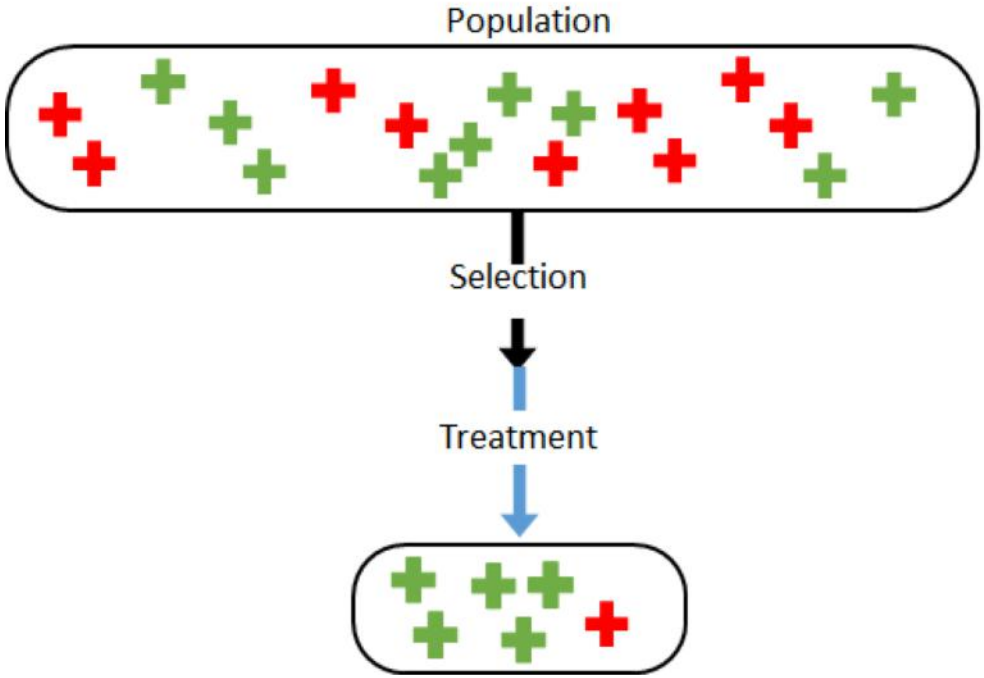
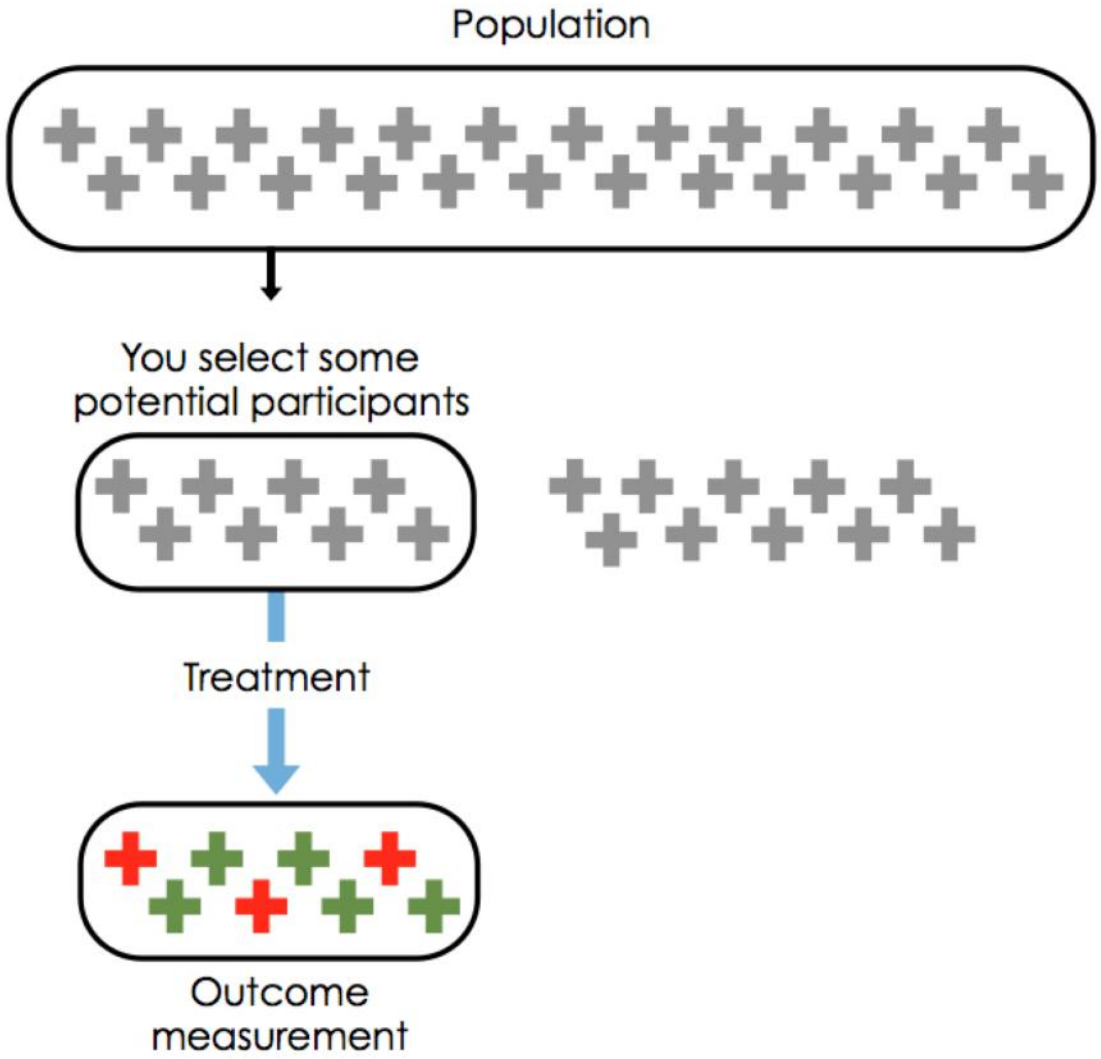
Starting point: a **mentoring** programme for small businesses

Selection or treatment?



2. What's so special about randomisation?

Before and after



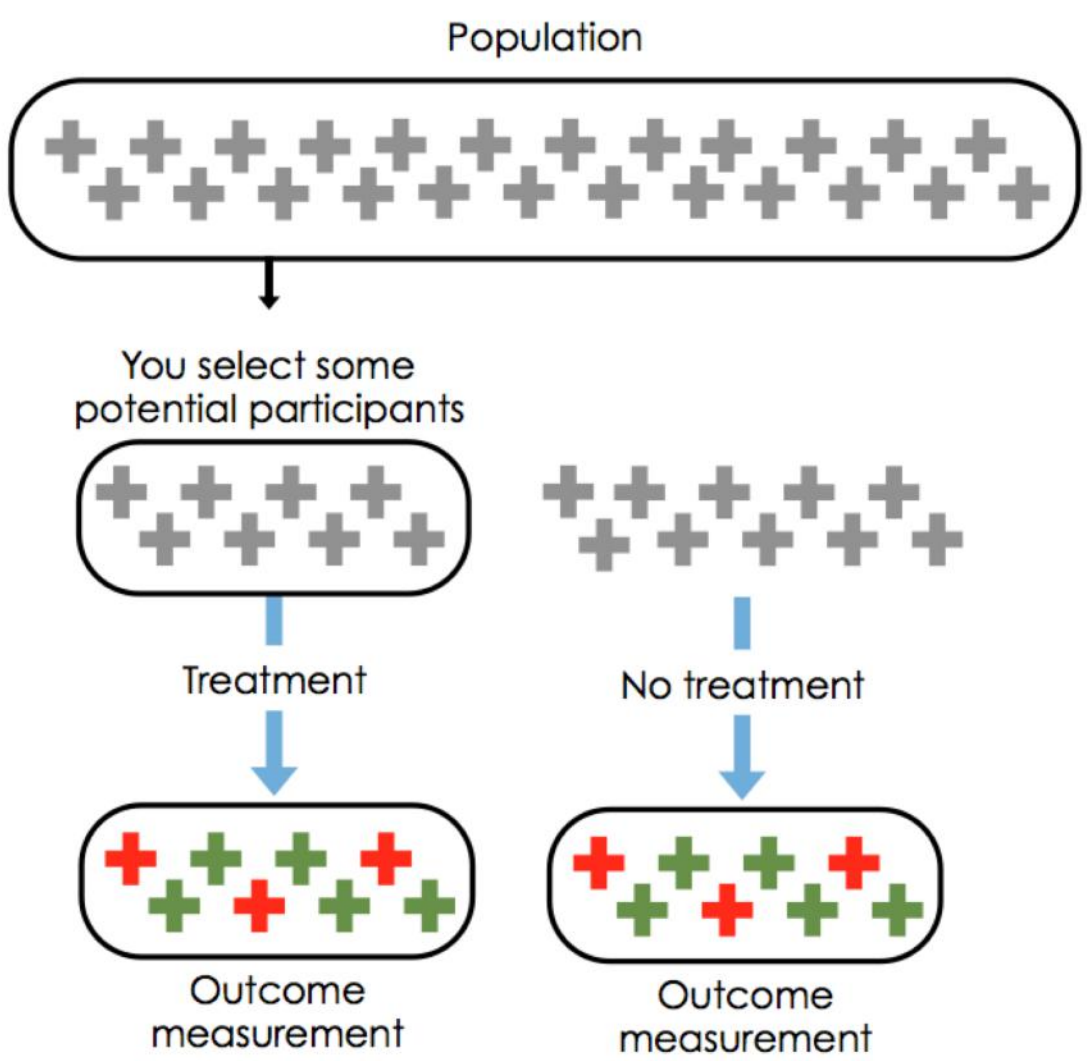
Observable:

Firm age
Sales, profit
Self reported
…

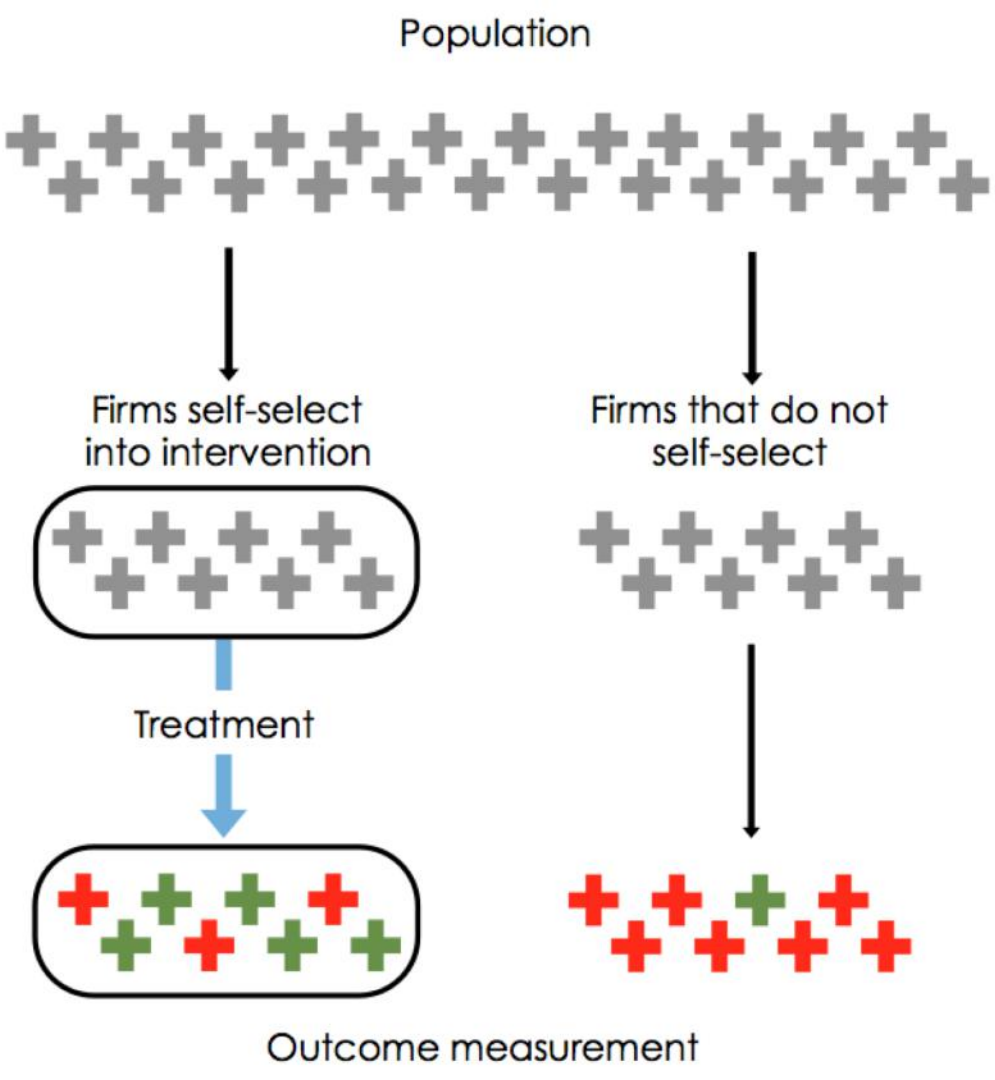
Unobservable

Motivation
Character
?

Before and after



Control group



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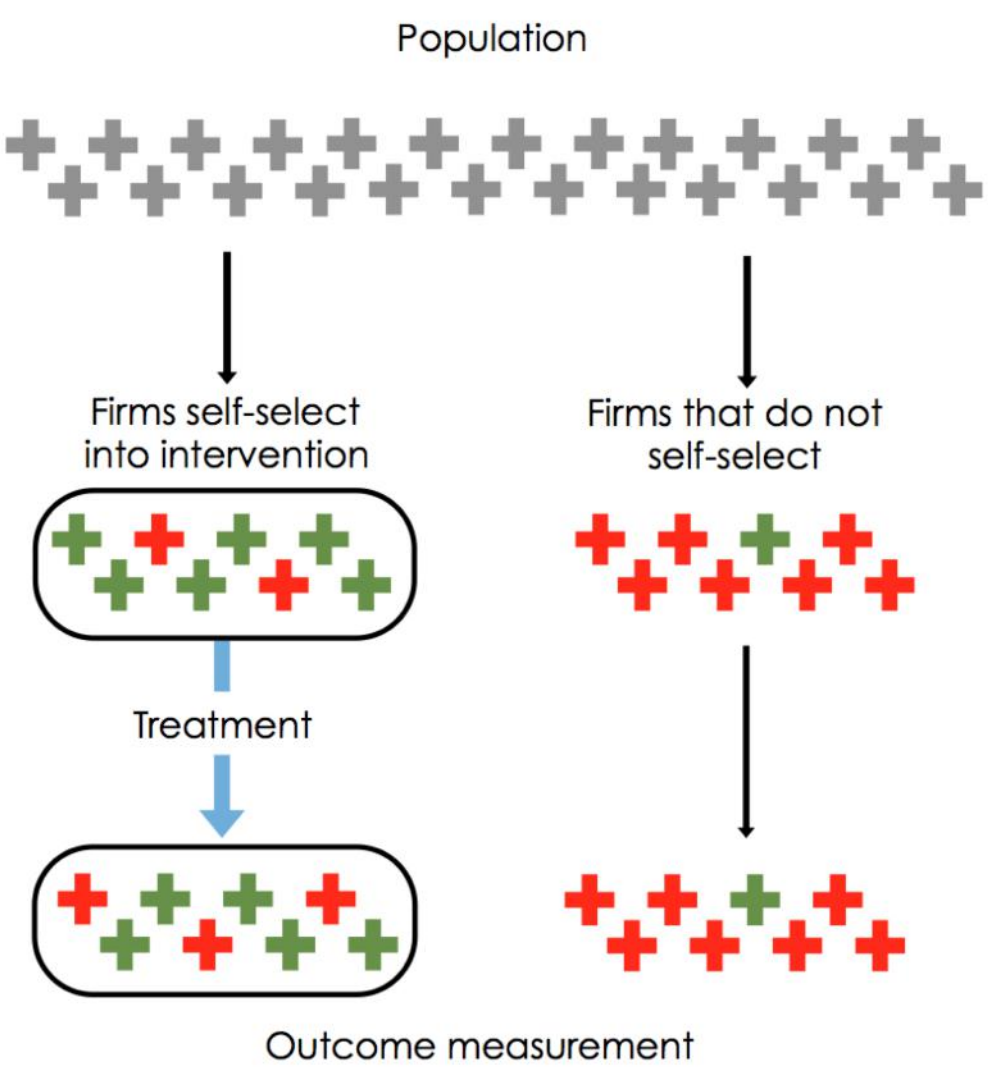
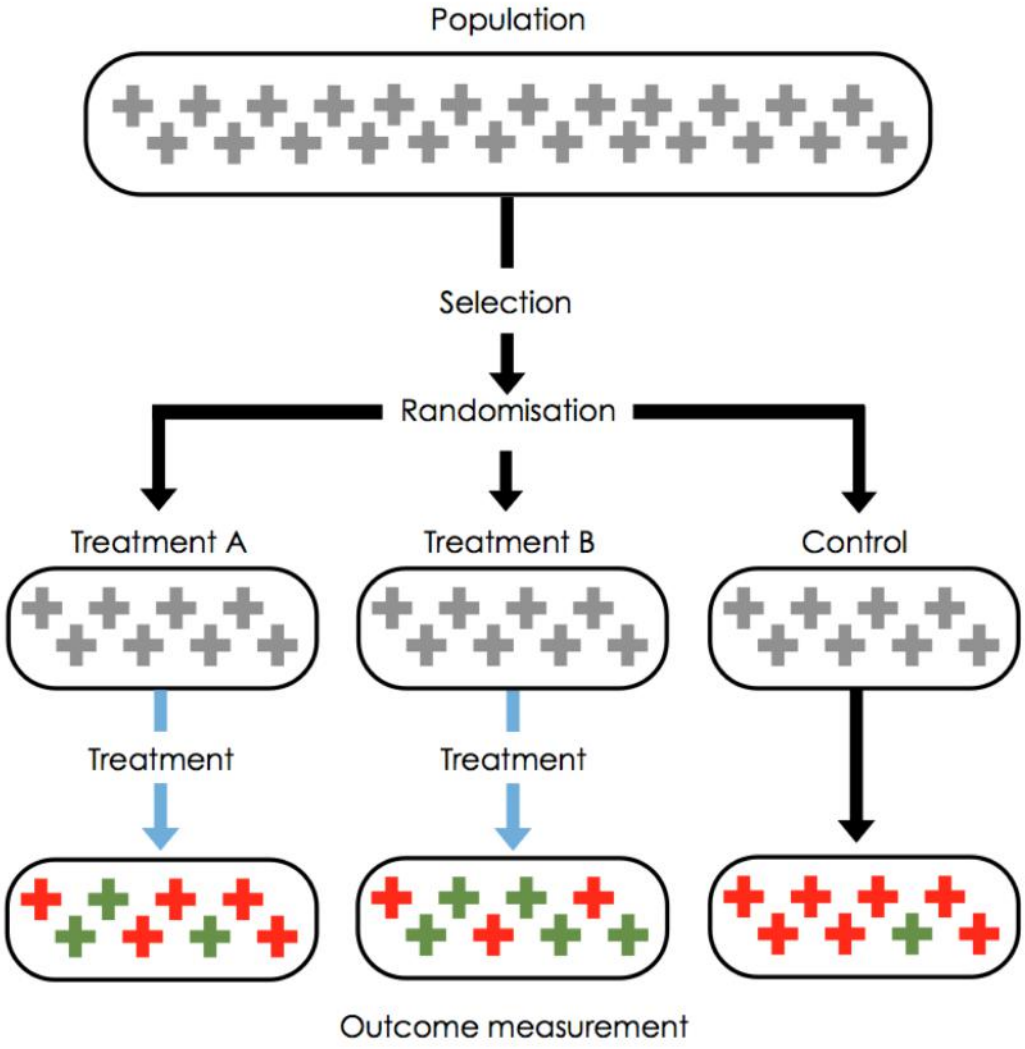


RCT


Population
Selection
Randomisation
Treatment A
Treatment B
Control
Treatment
Treatment
Outcome measurement

Selection bias:

Selection bias occurs when the selected groups are not similar to begin with, which may lead any benefits of the new intervention being either exaggerated or underestimated due to external factors

By allocating the participants randomly, the characteristics of the participants are likely to be similar across groups at the start of the comparison

Benefits of RCTs

- Offer a robust methodology that allows you to make causal conclusions. well-designed and executed
- Avoid potentially misleading results from non-experimental work, which has inadequately controlled for selection bias.
- Provide a concise and clear-cut conclusion of intervention effectiveness that avoids lengthy caveats.

Exercise 1

You have 8 minutes to go through the scenarios as a group

Task:

For each scenario, determine whether the participants were randomly allocated to participate in the programme or not

Scenario	Random allocation? Yes/No

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2. Each mentor will choose the young firms they will work with from a pre-selected list of 10 firms in their region.	No
3. 100 young firms in each region are randomly assigned into either treatment or control group in each region.	

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4. The first 200 SMEs that sign up (group A) are offered mentoring. The remaining 250 SMEs who signed up too late form the comparison group (group B).	

Is my programme ready to be tested?

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3. Is the programme ready to be tested?

- Is the programme well specified?
  - who they are trying to reach
  - what they are trying to achieve
  - what they actually consist of (i.e. what is delivered)
  - the rationale underpinning the intervention (e.g. theory of change)
- Is there any evidence of promise?
- Is the programme scalable?

Exercise 2

Scenario 1: Entrepreneurship Summer Programme

Your Minister of Business & Skills is keen on increasing the number of people who become entrepreneurs in the second biggest city in your country.

University students have been identified as one of the target populations: there are many prestigious universities in the city but the number of graduates going into entrepreneurship is lower than the national average.

A group of academics have developed a promising 2-week mentoring programme for entrepreneurship students.

Scenario 2: SME Mentorship Programme

It is well know that SMEs in your region have, on average, lower levels of productivity compared to the rest of the country. Looking through micro-data, you conclude that it's mainly due to the middle and lower end performers in your region; the top performers have similar levels to the national average.

You decide to launch a mentorship programme for manufacturing SMEs promoting the most advanced management practices, and run the programme in collaboration with leading software firms, so that SMEs can immediately connect with them and start using cutting-edge technologies.

Is the programme ready to be tested? (15 min)

Task:

Discuss in a group the scenario given and address the following questions:

- Is the programme well specified? (who, what, when, how)
- Is there evidence of promise that it will 'work'?
- Is the programme scalable?

4. What is it that you want to find out?

RCT can answer questions about:

- Impact: did the intervention work? For whom? Compared to what?
- Which components of the intervention were most crucial for achieving impact?
- Which version of alternative interventions produces the highest impact?
- Are the results achieved in one context replicable in another context?
- What are the underlying processes for achieving (or not achieving) impact?

Exercise 3

Deciding on a research question

What questions would you like to answer for each scenario?

In groups: spend about 6 minutes listing the questions that you would want to answer and decide on the primary question

The questions could tap onto:

- Overall impact?
- Subgroup effects?
- Did you make the right choices about its design?
- Did you select the right name?

From ‘what works’ to ‘how and why’ interventions work

We need to know what it means to say that a given intervention ‘works’, understand how it works, and determine, “why various programs do or do not work, for whom and under what conditions they work, what is needed to scale up certain proven programs, and what policy supports are needed to scale them up without losing their effectiveness” (Slavin, 2012, p xv)

Slavin, R. E. (2012). Foreword. In B. Kelly & D. F. Perkins (Eds.), *Handbook of implementation science for psychology in education* (p. xv). Cambridge: Cambridge University Press

Implementation and process evaluation (IPE)

The generation and analysis of data to examine how an intervention is put into practice, how it operates to achieve its intended outcomes, and the factors that influence these processes (Humprey, 2016)

Humprey, N. et al. (2016). *Implementation and process evaluation (IPE) for interventions in education settings: An introductory handbook*. Education Endowment Foundation.

The features of the programme to be tested and the research questions of interests determine the design of RCT

5. Is an RCT feasible?

Feasibility

1. Is randomisation **feasible**?
2. What is the necessary **sample size** to answer the question?
3. Is the programme **acceptable** to participants?

Key take-aways

Make sure that:

- The programme is ready to be tested
- The questions you want to ask require a trial
- The trial is feasible

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THANK YOU