



University
of Glasgow

LEADS CPD Series: Scholarship of Teaching and Learning

Comparative Approaches to Enquiry

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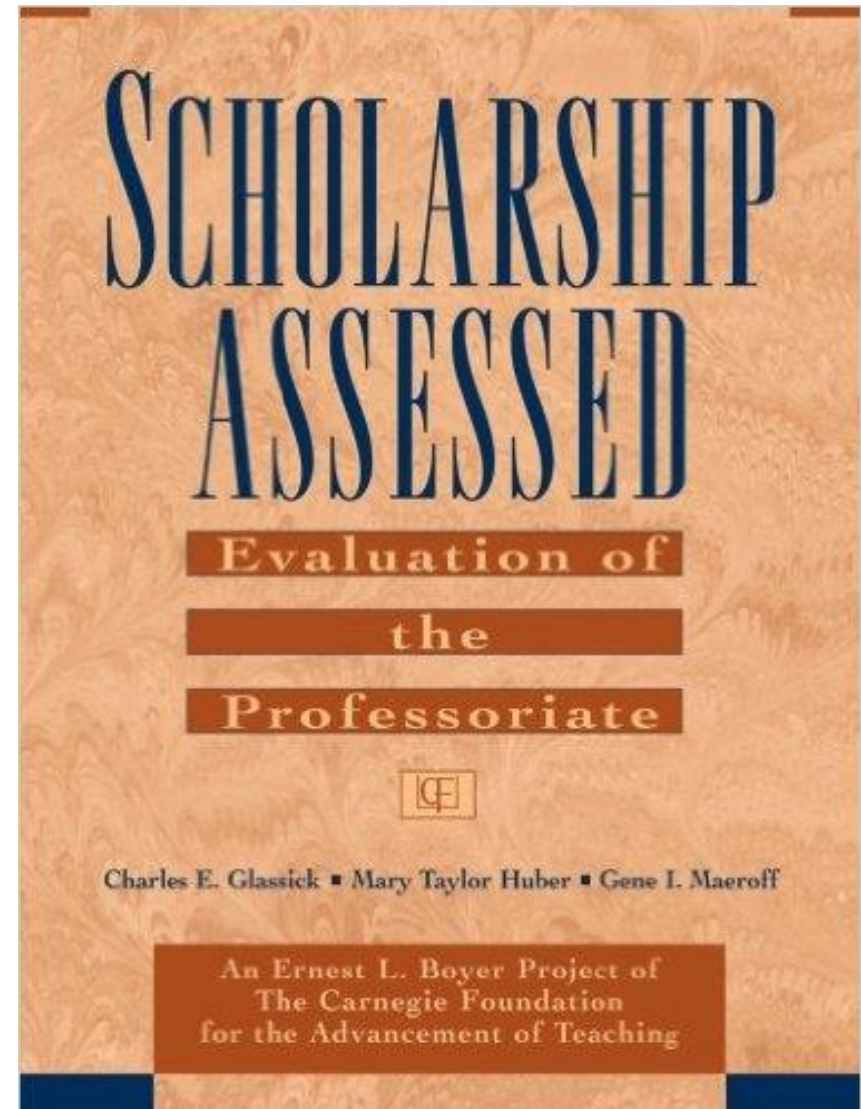
This session explores educational enquiry that focuses on comparing different settings.

- Types of comparative research (*ex post facto* and *experimental designs*).

Glassick's Framework:

1. Clear goals
2. Adequate preparation
3. Appropriate methods
4. *Significant results*
5. *Reflective critique*
6. Effective dissemination

Designing any project
starts with your question.
Methods always follow
from that!



Why do you want to compare anyway?

How are you comparing?

Comparative research aims to compare two or more 'things', often attempting to attribute causal or associative links to 'differences' between the 'things'.

Often more quantitative in nature.

Goals:

1. to what extent do differences exist? [Significance]
2. why do differences exist? [Causality and association]

Sometimes 'differences' exist and you wonder why...

Whatever you are looking
for has already
happened: '*after the fact*'



Ex post facto ('*after the fact*') research allows you to retrospectively compare by examining existing data for any 'differences' and looking back in time for possible factors.

Instead of taking groups and subjecting each group to different treatments you begin with groups that already differ in some way and look for possible causal factors in bringing about those differences.

Have you ever wondered why students who watch lots of TV don't get as good grades?

Or if you cannot
manipulate the subjects
into the two groups you
require

Often quite useful when
you cannot ethically
justify two groups.

Or if an experimental
design simply isn't ethical
(or practically possible)

What is the relationship between students' time spent watching TV and their performance on your courses?

1. Collect/measure TV watching
2. Measure performance

TV watching → performance on your courses

Performance on your courses → TV watching

A lurking variable → TV watching and performance

One group; one collection of data; explorative outcomes.

NB no control!

What factors contribute to good student performance on your courses? To what extent is TV watching time a factor?

Criterion: what is good performance?

Factors: what factors are present in the 'good' group compares to the 'not good' group?

Two groups ('good' and 'not good'); explanatory outcomes.

NB: no control!

Pragmatic where an experimental design might not be possible

Further Reading: Cohen, Manion & Morrison (2002). *Research methods in education*. Routledge. Chapter 12.

Lack of control

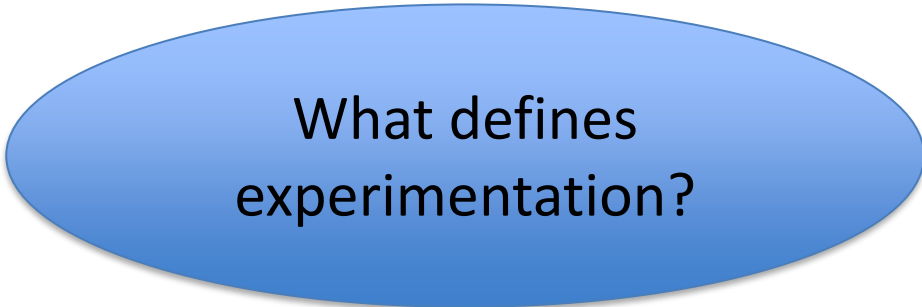
Valuable as an exploratory tool

Exact nature of causation cannot be determined

Can provide a source of future hypotheses

*The *real* causative factor may not have been included*

If ex post facto research is experimentation in reverse, then what is experimentation?



What defines
experimentation?

If ex post facto research is experimentation in reverse, then what is experimentation?

Seeks to reject a null hypothesis

Retains control of key variables

Aims to discover the effect of certain variables

Involves *randomisation*

The *treatment* is the only distinction between groups



Is experimental design even possible?



Controlled Experiment: in a lab, highly controlled, two or more groups, very repeatable.

Very unlikely in your SoTL projects!

Quasi-experiment: in a natural (e.g. field experiment) setting, but variables are controlled and manipulated.

Hmmm... not very likely, but plausible in your SoTL projects.

Natural experiment: not possible to control or isolate variables.

Most likely of the three...

**There are always limitations in
any research design, even 'gold
standard' designs**

1. Pre-test-post-test, with control and treatment groups:

Contains elements of randomisation between the groups and isolates the variables. Causation can be implied.

2. Matched pairs:

Each member of the control group is matched to a member in the treatment group by matching the main independent variables. Randomisation at pair level, not group.

Participant factors: control and treatment groups may differ anyway

Intervention factors: the intervention may not be the same for each participant

Situational factors: the conditions may differ for each participant

1. Factorial design:

Multiple independent variables with multiple levels of presence (e.g. absent or present). E.g. age (mature or not) and motivation (high, medium or low) on 'engagement'.

2. Parametric:

Members are assigned to experimental groups based on fixed parameters (e.g. all mature students are grouped, all highly motivated students are grouped) and they receive the experimental treatment in those groups.

Experimental designs do have their place...

- **but conclusions need to be appropriately hedged; and**
- **It's vitally important to recognise the limitations of your design.**

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- Green, N. (2016) 'Formulating and refining a research question', in: Gilbert, N. (ed.) *Researching social life*, 4th ed. London: SAGE, pp.43-60.
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