

COMP6049

Quantitative and Qualitative methods

Week 1 – methods and methodologies
Dr Su White, Learning Societies Lab, ECS

Some thoughts for this lecture

- What do we mean by methods and methodologies?
- What do we understand about the differences between disciplines?
- How do disciplinary differences affect research practices?



...or

Its time I found out about methodologies, methods,
and...

- Theory
- Ontology
- Epistemology
- Positivism; interpretivism; constructionism; critical approaches

Modus operandi

- I may skip over some slides
- I expect all of us to think, reflect, learn
- I expect you to go away and do some more reading
- I hope you can link what you learn in this class with other parts of the Web Science masters
- I rely on you playing an active part in the class

What is research



Mission Statement

The University of Southampton is a research-led institution in which teaching and learning take place in an active research environment. We are committed to:

- **The advancement of knowledge**
through critical and independent scholarship and research of international significance
- **The communication of knowledge**
in an active learning environment involving staff at the forefront of their disciplines
- **The application of knowledge**
for the benefit of society, both directly and by collaboration with other organisations

How do we do research?

- What do you think?



Back to the question...

What is research?

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Method and Methodology

Method

- the **tools, techniques and instruments** of (scientific) investigation



Methodology

- the **principles** that determine how such tools are deployed and interpreted.
- A body of practices, procedures, assumptions and rules used by those who work in a discipline or engage in an inquiry;
- an acknowledged, defined or recognised set of working methods



Quick check...

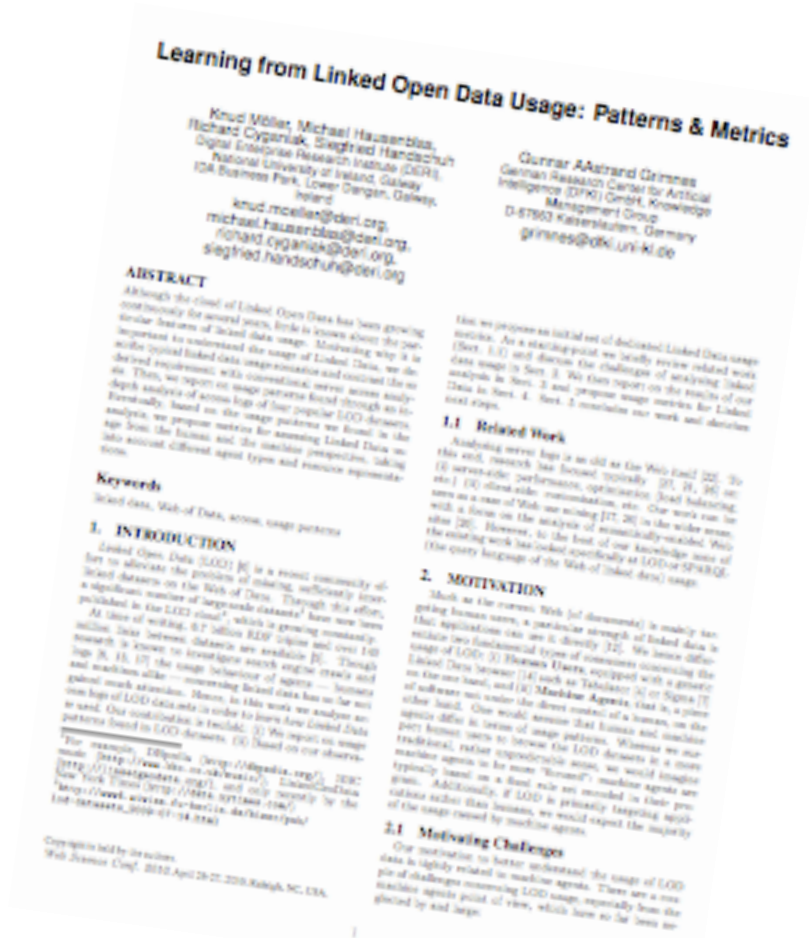
- What research methods can you name?

How many of them can you describe?

Exercise: research abstracts

Skim read the abstract you have been given and briefly discuss with the person next to you the following

- What kind of science is this ?
- What methods were used ?
- Did you like this paper and want to read more?



Theory: defining our terms

- Structures how we look at the world (to understand, explain or predict)
- Research is theory dependent
(but sometimes this is not acknowledged)
 - *macro* (large scale) – frames questions about the way the world is and how people/phenomena behave e.g. *Big bang theory* in astronomy or *Marxism* in social and political science
 - *middle range* – links empirical research to theoretical concepts to generate hypotheses/questions e.g. *Theory of Planned Behaviour* (e.g. my intention to stop smoking (a behaviour) is a function of my attitudes (positive or negative) towards that behaviour, my subjective norms (what I think others think about it) and my perception of control (how easy it is for me to quit)?
 - *micro* (small scale) – how people make sense of everyday interactions e.g. stigma (people's reaction 'spoils' normal identity)

What is the difference between theory and theoretical approach?

approaches

measure

observe

experiment

model

investigate

theorise

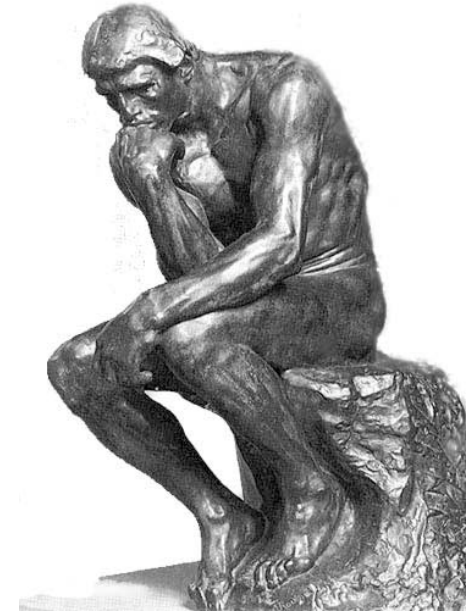
test

Some research methods

Ethnographic study	Interview	Survey
Case study	Meta analysis	Mixed methods
Action research	Focus group	Nominal group
Network analysis	Simulation	Observation

Quick reflection...

Is all research the same?



- How would you describe the approach to research in the subject specialism of your first degree?
- Do you think all people experience the same approaches?

Introducing the classic abstract*

- This is the way the world is
- This is what is wrong with the world
- Here is my startling/interesting idea
- This is what I found

*Ala OOPSLA

(and we will return to discuss that)

This is the way the world is

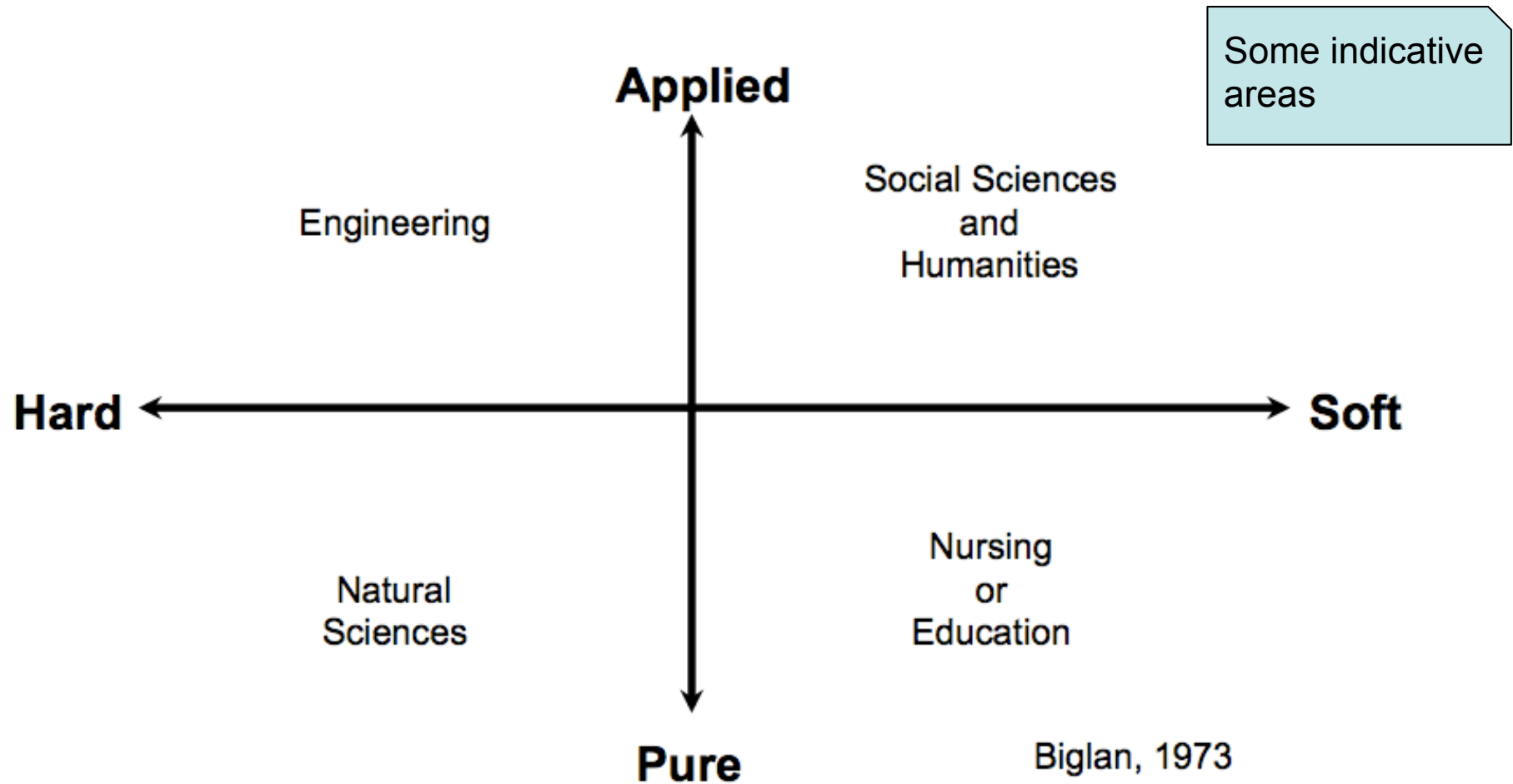
But...

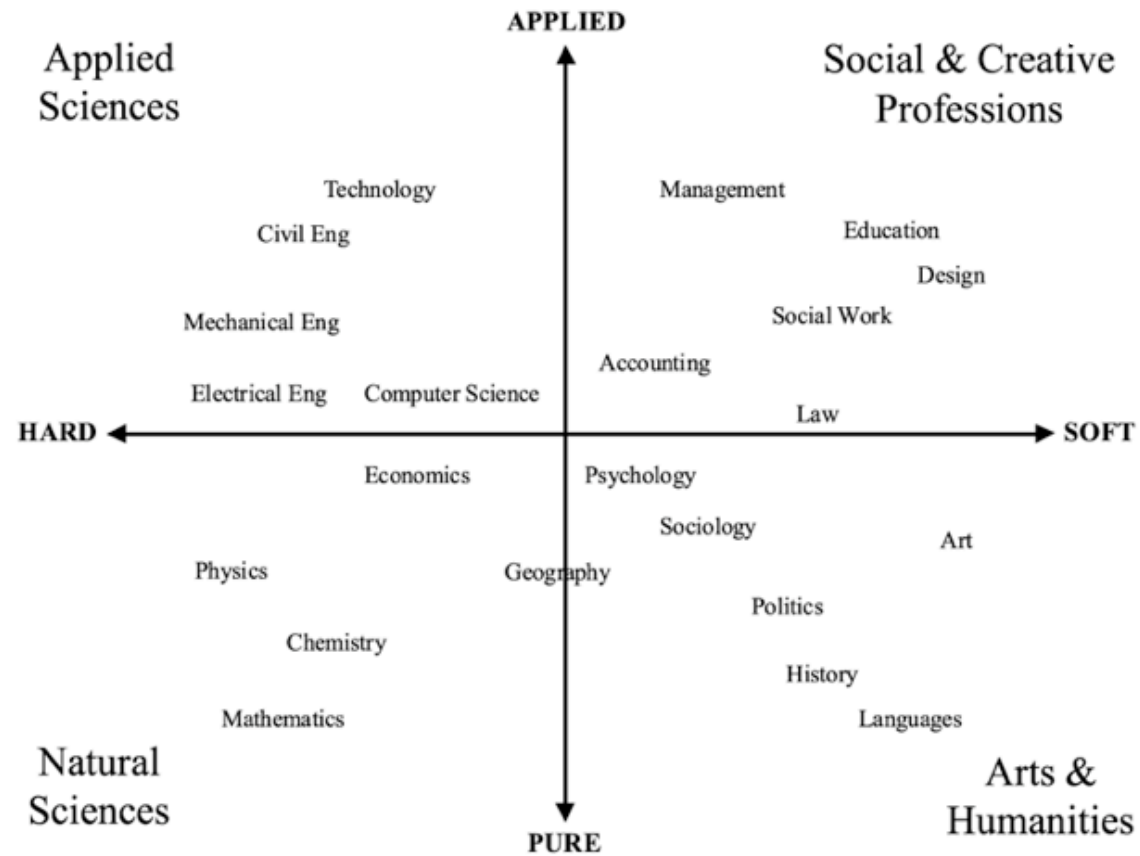
How do we know the way the world is?

How do we explore our assertions?

How do we communicate this?

Enter disciplinary differences





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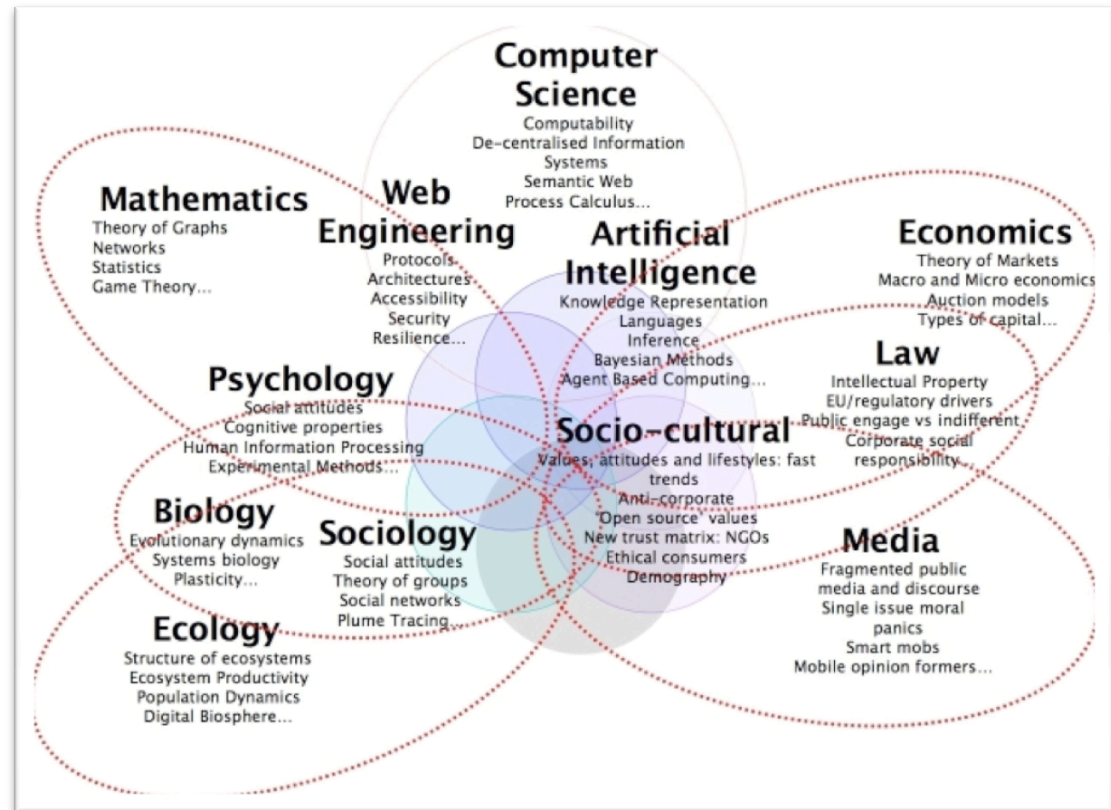
Different disciplines and world views

Biglan's (1973) Classification of Disciplines and their Subject-Matter Characteristics

Disciplines	Disciplinary groups	Subject-matter characteristics
Hard: Pure	Exact and natural sciences	Cumulative, atomistic (crystalline/tree-like), concerned with universals, quantities, simplification, resulting in discovery/explanation.
Soft: Pure	Humanities and social sciences	Reiterative, holistic, organic, concerned with particulars, qualities, complication, resulting in understanding/interpretation.
Hard: Applied	Science based professions	Pragmatic (know-how via hard knowledge), concerned with mastery of physical environment, resulting in products/techniques.
Soft: Applied	Social science based professions	Functional, utilitarian (know-how via soft knowledge), concerned with enhancement of professional practice, resulting in protocols/procedures.

Disciplines implicated in web science

- Computer science
- Sociology
- Economics
- Psychology
- Law
- Criminology
- Politics
- ++



Epistemology

- branch of philosophy concerning theories of knowledge - how we know the world and how we can produce valid (trustworthy) knowledge about it
- many of the arguments about methodology and methods derive from epistemological differences (contests about what kind of knowledge we aim to produce and what evidence is adequate for this)

Research traditions*

- Positivism
- Interpretivism
- Social Constructionism
- Critical approaches

*Are these paradigms? (c.f. Thomas Kuhn
1962)

Considering the definitions which are you most familiar
with or most comfortable with?

Do you recognise them from the abstracts?

Positivism

- *Realist* (assumes that there is a stable reality 'out there' independent of what we think about it)
- *Empiricist* (we know by observing)
- *Objective* (value-free inquiry, rational and neutral, free from bias)
- 'mature' sciences will all share the same scientific methods which seek to establish cause and effect, generate laws etc

Interpretivism

- Human beings are not like the objects of study in other 'sciences'; they have views which they can tell us about and they can change behaviours 'at will'

therefore

- we need to understand people's interpretations of the world, understand the meaning and significance of the world for people who live in it.

Social constructionism

- Questions the very idea of a pre existing reality (*relativist*) and argues that 'reality' is socially constructed
- this leads to questions about how this 'construction' happens; who 'makes and sustains' particular versions of reality?

Critical approaches

- Science is a social process so cannot be separated from the social world (it can never be objective)
- Research/science is political (it should not be value-free)
- Methodology should strive to expose power; e.g. feminist methodology
- Science should be moved away from a small elite and used to liberate/emancipates (e.g. participatory/action research)

How can we study the world?

- Experiment – identify causal relationships by comparing measures from an experimental and a control group before and after an intervention.
- Naturalism – study people/phenomena in their ‘natural’ occurring environment, e.g. people tell their own story, or observe everyday interactions/behaviour

So now...

BACK TO THE ABSTRACT...

This is what is wrong with the world

How do we know the way what's wrong with the world?

How do we explore our assertions?

How do we communicate this?

Here is my startling idea

How do we get our startling idea?

How do we explore our assertions?

How do we communicate this?

This is what I found

How do you find it out?

How do I convince people that I am right?

How do you communicate it?

So take a simple problem

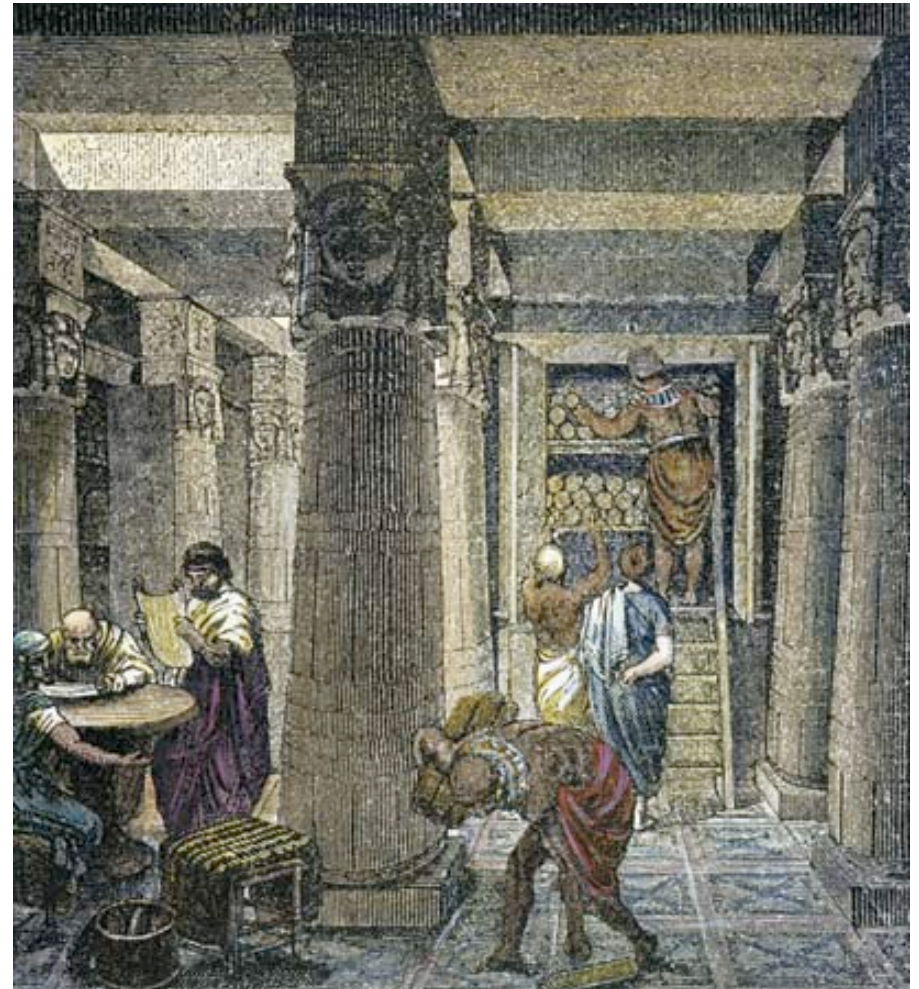
- What is the impact of xxx on society??
- What are your research questions??
- What methodology might you use?

Afterthought....

- What might be the pitfalls?...

References and bibliography

FURTHER READING



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References and general reading

Disciplinary Differences and Academic Cultures

Becher, T. (1994) The Significance of Disciplinary Differences. *Studies In Higher Education*, 19:2, 151.

Becher T and Trowler P (2003) *Academic Tribes and Territories: Intellectual Inquiry and the Culture of Disciplines* 2nd Edition

Biglan, A. (1973a) The Characteristics of Subject Matter in Different Academic Areas. *Journal of Applied Psychology*, 57:3, 195–203.

Biglan, A. (1973b) Relationships between Subject Matter Characteristics and the Structure and Output of University Departments. *Journal of Applied Psychology*, 57:3, 204–213.

Approaches to research

[Interesting paper that discusses different approaches within a field of study](#)

Orlikowski, W.J. and Baroudi, J.J. Studying Information Technology in Organizations: Research Approaches and Assumptions *Information Systems Research*, 2, 1, 1991: 1-28.

Browse the shelves (H62)...



- A few books on methods

These may be useful in the rest of the module parts which I teach. Others are more specialist on quantitative methods.

CRESWELL, J. W. (1998) Qualitative inquiry and research design choosing among five traditions, Thousand Oaks, Sage.

CRESWELL, J. W. (2003) Research design qualitative, quantitative, and mixed methods approaches, Thousand Oaks, Calif. London, Sage Publications.

GLASER & STRAUSS (1999) The discovery of grounded theory strategies for qualitative research, New York, Aldine de Gruyter.

HUBERMAN, A. M. & MILES, M. B. (2002) The qualitative researcher's companion, Thousand Oaks, CA, Sage Publications.

KVALE (1996) Interviews an introduction to qualitative research interviewing, Thousand Oaks, Calif., Sage.

MYERS, M. D. & AVISON, D. E. (2002) Qualitative research in information systems : a reader, London, Sage.