Research Methods
Qualitative Research Methods

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Overview

1. What is research about?
2. Types of Qualitative Research
   - Case studies
   - Contextual Inquiry
   - Ethnography
   - Grounded Theory
   - **Action Research**
3. Quality

15/2/09   RM: Qualitative   2

Qualitative Research

Research: an activity that contributes to our understanding

Research methods are the means by which a discipline acquires and constructs knowledge.

Different philosophical assumptions about what constitutes relevant knowledge
  - → results in different strategies of inquiry and methods
  - → qualitative research, quantitative research and combinations (mixed methods research)

15/2/09   RM: Qualitative   3

Ontology, Epistemology and Methodology   I

Ontological beliefs: beliefs regarding reality

Epistemological assumptions: assumptions regarding how we come to know about the world

Methodological choices are the means we choose in attempting to achieve desired ends.

Particular ontological beliefs → particular epistemological assumptions.

Particular epistemological assumptions → certain methodologies

15/2/09   RM: Qualitative   4

Ontology, Epistemology and Methodology   II

Your knowledge claims informs your strategies of inquiry and your choice of methods:
  - What is the researcher's underlying ontology (fundamental worldview) and epistemology (theory of knowledge)?
  - What strategies of inquiry governs our choice and use of methods?
  - What methods of data collection and analysis do we propose to use?

15/2/09   RM: Qualitative   5

Four fundamental approaches

Positivist research
  - A search for truth
  - Popper: a scientific statement can be falsified

Interpretivist research → see later

Critical research
  - Focuses on a critical understanding of the situation or practice in order to plan for transformative action. Emphasizes social change.

Design research
  - Help designers to investigate people, form, and process
  - or the IS term for Experimental Computer Science …

15/2/09   RM: Qualitative   6

Interpretivist Research — Metaphysical Assumptions

The Observer's Perspective is a Factor:
- in the selection and formulation of Theory
- in the formulation of Hypotheses
- in choices made in the Research Design process
- in the selectiveness of observation
- in the process of observation

Interpretivist Research — Data Assumptions

Objectivity, in the sense in which it is used in Scientific Research, is meaningless, because:
- it presumes the existence of a unitary Truth
- it presumes that Truth to be accessible by humans
- it overlooks the fact that entities within the domain think they can exercise free will

An Alternative Interpretation:
- Try to identify Researcher Biases
- Try to avoid or allow for Researcher Biases
- Enable evaluators to assess Researcher Biases

Types of Qualitative Research

1. Case studies
2. Contextual Inquiry
3. Ethnography
4. Ethnomethodology
5. Conversation Analysis
6. Grounded Theory
7. Action Research

Case Studies   I

Focuses on the characteristics, circumstances, and complexity of a small number of cases
- Often uses multiple methods.
- Not really a specific method, but a class of studies.

Findings can raise awareness of general issues, but the aim is not to generalise the findings to other cases.

Case studies primarily use qualitative research techniques, but can exploit quantitative methods.

Case Studies   II

Studies a phenomenon in its real-life context (as opposed to experiments, simulations, or surveys or historical analyses)

Can be positivist, interpretive or critical.

Various types, e.g.
- single case,
- multiple cases,
- critical case,
- exemplary case.

Exploratory (develop propositions for further use) *versus* descriptive (study incidence and prevalence).

Contextual Inquiry/Design

Not a research method as such

A design-oriented approach aimed at getting a grip on 'context', what it is, how it interferes.
- Practical way to gather information relevant for design, used in HCI, CSCW,

Apprentice / Master relationship is fundamental for the investigation
- No explicit teaching, just watching the work, detecting what matters, seeing details.
- Requires humility, inquisitiveness, attention.
- Ask questions.

Principles of Contextual Inquiry: context

Go to where the work is;
Summaries versus ongoing experience
Abstract versus concrete data

Cultural probes consisted of:
1 *Disposable camera*
2 *CD ROM*
3 *Morning task*
4 *Pencil, pen and felt tips*
5 *Easter eggs*
6 *Workbooks*
7 *Diary*
8 *Images for collages*
9 *Stickers*
10 *Images, scissors, glue*
11 *Information sheet*

13

Principles of Contextual Inquiry: partnership

Help customers articulate their work experience, alternate between watching and probing,

Teach customer how to see work by probing work structure.

Avoid relationship models other than Apprentice / Master. Not:

- Interviewer/interviewee: you are not there to get a list of questions answered.
- Expert/novice: you aren't there to answer questions either.
- Guest/host: it is a goal to be nosy.

15/2/09   RM: Qualitative   14

Principles of Contextual Inquiry: interpretation

Design ideas are the end product of a chain of reasoning.

Sharing interpretations with customers won't bias the data, but teaches customers to see structure in work, and let them fine-tune interpretations.

Materials for generative session:
1 *Play dough*
2 *Skewers*
3 *Liquorice*
4 *Sticky tape*
5 *Stickers*
6 *Post-it notes*
7 *Pipe cleaners*
8 *Balloons*
9 *Various tinkering materials*
10 *Scissors*
11 *Felt tips*
12 *Glue (not shown)*

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Principles of Contextual Inquiry: focus

Clear focus steers the conversation, focus reveal detail, but conceals the unexpected (look for surprises and contradictions).

Commit to challenging your assumptions and validating them.

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Ethnography

From social and cultural anthropology.

- Rich descriptions based on extended fieldwork of people in their natural environment.

Aim: understanding how people perceive and organise their world.

- Cultural and conceptual phenomena
- Behavioural patterns and material conditions.

Important principle: Immersion – researcher should spend a significant amount of time in the field. Participant observation is the basic resource.

Popular in HCI (especially CSCW)

- aim to inform design.

15/2/09   RM: Qualitative   17

Ethnomethodology

Ethnomethodology = the study of people's methods.

Study people's everyday ways to produce orderly social interaction:

- How do people give sense to and accomplish their daily actions (communicating, making decisions, reasoning)?
- Skills and practices that people use understand each other and social situations.

Focus on common-sense practices.

- Observable and reportable (speech and face-to-face behaviour).

Technique: disrupt what is taken for granted.

Answers how-questions rather than what-questions.

15/2/09   RM: Qualitative   18

Conversation Analysis

A central method for ethnomethodologists.

Coherent communication is produced according to rules, the aim:
- to discover these rules, and
- describe the conversational structures they generate.
- goes beyond grammatical analysis of statements.

Relies on detailed transcripts of conversation (naturally occurring or interviews).

Conversation Analysis Example: Turn taking

General rule regulating turn taking: at least one and not more than one at a time

Utterances or turns as basic unit of analysis.

Conversation openings.

Adjacency pairs (e.g. greeting-greeting, question-answer, complain-apology/justification).

Where do interruptions occur?

Insertion sequences, side sequences.

Conversation Analysis Example: Topic

Topic (newsworthiness).

Topic change, how does it occur?

Topic conflict

Story prefaces or floor seekers

How repairs are done (to clear up misunderstandings).

The role of silences.

Grounded Theory

Barney Glaser and Anselm Strauss (1967) criticised "the overemphasis in current sociology on the verification of theory and a resulting de-emphasis on the prior step of discovering what concepts and hypotheses are relevant for the area one wishes to research".

Argued that any theory that is developed should be grounded in data, not be imposed from above.

Aim of Grounded Theory

to understand the phenomena in its own way,

to generate theory from data not the other way round.

(Inductive approach where no pre-conceived theoretical models are applied)

Grounded theory

Grounded theory as theory is:

"inductively derived from the phenomenon it represents. That is, it is discovered, developed and provisionally verified through systematic data collection and analysis of data pertaining to that phenomenon. Therefore data collection, analysis and theory stand in reciprocal relationship with each other. One does not begin with a theory, then prove it. Rather one begins with an area of study and what is relevant to that areas is allowed to emerge." (Strauss and Corbin, 1990)

Theory should 'fit': the categories must be readily (not forcibly) applicable to the data

Theory should 'work': be meaningfully relevant and have explanatory power

Action Research: Overview

Originated in social sciences after World War 2
  ("a therapy for social illnesses")
Aims:
- contributing to practical concerns (e.g., an organisation in need of change) *and to*
- generate new knowledge simultaneously

Collaboration of researcher and participants
Active involvement and interventions,
- the researchers have a change agenda, a vision of how reality should be.

Phased and iterative (cyclic):
  Diagnosing, planning intervention, conducting intervention, evaluating, new diagnosis, etc.

15/2/09   RM: Qualitative   25

Action Research   I

Motivations
- To make academic research relevant, researchers should try out their theories with practitioners in real situations and real organizations
- The emphasis is more on what practitioners do than on what they say they do

Key Assumptions
- Social settings cannot be reduced for study, and
- Actions brings understanding

26

15/2/09   RM: Qualitative   26

Action Research   II

Action research has been typified as a way to build
- theory,
- knowledge, and
- practical action
  - by engagement with the world in the context of practice itself

27

15/2/09   RM: Qualitative   27

Action Research   III

Is a research approach, which has the dual aims of action and research
- action to bring about change in some community or organisation or program;
- research to increase understanding on the part of the researcher or the client, or both

28

15/2/09   RM: Qualitative   28

Action Research   IV

Action research aims to contribute both to the practical concerns of people in an immediate problematic situation and to the goals of science by joint collaboration within a mutually acceptable ethical framework

29

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Essence of Action Research

Diagnostic Stage
- Analysis of the social situation by the research and the subject of the research
- Theories are formulated concerning the nature of the research domain

Action Stage
- Involves collaborative change experiment
- Changes are introduced and the effects are studied

30

15/2/09   RM: Qualitative   30

Phases of Action Research — I

The most prevalent description of action research details a five phase, cyclical process which can be described as an 'ideal' exemplar of the original formulation of action research

31

15/2/09   RM: Qualitative   31

Phases of Action Research — II

This ideal approach first requires the establishment of a 'client-system infrastructure' or research environment

Then, five identifiable phases are iterative:
- (1) diagnosis,
- (2) action planning,
- (3) action taking,
- (4) evaluating, and
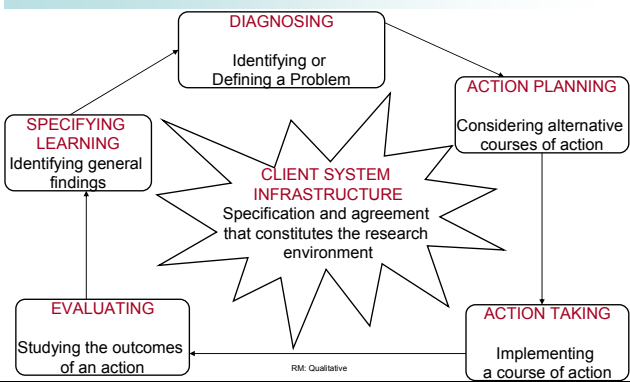- (5) specifying learning

32

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Phases of Action Research: Diagram

DIAGNOSING
Identifying or Defining a Problem

ACTION PLANNING
Considering alternative courses of action

SPECIFYING LEARNING
Identifying general findings

CLIENT SYSTEM INFRASTRUCTURE
Specification and agreement that constitutes the research environment

EVALUATING
Studying the outcomes of an action

ACTION TAKING
Implementing a course of action

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Action Research Cycle

facilitating change in community through facilitating action

cyclical software development process: participatory design + prototype evaluation.

Diagnosing →
planning → implementing plan → observing results → reflecting on the results

15/2/09   RM: Qualitative   34

Balancing Action and Research

Organize the actions into small units which can be completed in short time

Take field notes on every action
- Actions includes: fieldwork entrance letters, fixing computers items, meetings and workshops
  - ▶ Anything that consumes our time in the field is part of the action

Use some known data analysis techniques
- Align our field notes empirical material in those techniques

Think and make sense of the actions and results
- Some time is needed away from the field

35

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Field notes

Field notes should be written as soon as possible after leaving the field site, immediately if possible

Plan to leave a block of time for writing just after leaving the research context

36

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Data Collection Methods

Semi-structured interviews
- Participant observations
- Analysis of documents
- Use of checklists: data registers, analysis tools, and health workers
- Software prototyping process
- Group discussions and Training workshops
- Video/still pictures
- Analysis of press media reports

37

15/2/09 RM: Qualitative 37

Data Analysis and Presentation

Interviews, Observations, Questionnaires, and site documents work together to support the research claims.
Empirical materials are presented in
- Descriptive statistics (quantitative data)
  - Model and measurement instrument for evaluating user satisfaction (7-point scale)
- Qualitative excerpts of encoded user reactions
- Software evaluation via criteria such as reliability and usability
- Screen shots of programs
Secondary Sources of Data
- Documents from the field
- Photos and videos

38

15/2/09 RM: Qualitative 38

What About Quality?

How can Qualitative Research be Good?
- What is good research?
  - Trustworthy?
  - Replicability?
    - Validity
    - Reliability
- Can Qualitative Research be Replicable?

15/2/09 RM: Qualitative 39

Qualitative Quality

Triangulation
- Different and complementary views of reality from different methods
Recoverability — Checkland & Holwell
- Transparency
  - *Documentation*
  - *Argumentation*
Respondent Validation
- In the case of software this amounts to: check with your users!
- Acid test: do they use the software?
- Does it make a difference?

15/2/09 RM: Qualitative 40

Call to Action: Bridging the "Digital Divide"

Digital Divide = growing gap of access to Information Society
- due to cultural bias in the applications and contents
- gaps in education (for example, illiteracy)
- personal handicap
- poor digital infrastructure
- lack of appropriate computer equipment.
Global vs Local Digital Divide
Bridging ≠ "bringing the underdeveloped up to speed"
- Developed world agenda
Community-centred approach build new artefacts as bridges
- social dynamics as well as
- technological tools that support social interaction.

15/2/09 RM: Qualitative 41

Some Web Resources

Not a lot on qualitative research in CS, but there is plenty for IS. Lots of activity in Australia and New Zealand.
Qualitative Research in Information Systems: Michael D. Myers. www.qual.auckland.ac.nz/
Information Systems and Qualitative Research. www.people.vcu.edu/~aslee/ifipwg82.pdf
Action Research Resources. www.scu.edu.au/schools/gcm/ar/arhome.html
Action research: Communications of the ACM **42**, 1 94–97 (Jan 1999). doi.acm.org/10.1145/291469.291479
Action Research: Its Nature and Validity. Checkland and Howell. Systemic Practice and Action Research, Vol. 11, No. 1, 1998. dx.doi.org/10.1023/A:1022908820784

15/2/09 RM: Qualitative 42