Qualitative Research
What is qualitative research?
Let's First Look at One Example


Abstract

Around the globe, people are increasingly using social media for the provision of online social support. Online social support may be especially relevant for parents who have children diagnosed with rare chronic diseases such as MECP2 Duplication Syndrome, Rett Syndrome, or Rubinstein–Taybi Syndrome. Despite increasing evidence that online social support enhances a person’s psychological well-being, there is little research that seeks to understand how and why various forms of social media facilitate online social support for caregivers. Informed by the literature on psychosocial and media theories, this study develops a theoretical framework that describes the relationship between social media use and online social support. We conclude with implications for health information systems design and research.
Research Design

• A new theoretical framework
  – Concepts, and their relationships
  – Based on existing theories
Research Design

• A new theoretical framework
  – Concepts, and their relationships
• Data collection
  – "a content analysis of messages and content posted on various forms of social media pertaining to MECP2 Duplication Syndrome (MECP2), Rett Syndrome (Rett), and Rubinstein–Taybi Syndrome (RTS)."
• Data analysis: coding (we will discuss later)
"a coding scheme was developed based on the following two major categories: instrumental support and expressive support"
Based on reviews of the social network sites, we determined that based on the multimodal interaction, social networks provided a higher level of online social support than the wikis and blogs. The Facebook threads were more interpersonal and feedback was almost immediate. As a result, social network sites facilitated higher levels of both instrumental and expressive aid.
Conclusion

• Contributions
  – … developed a theoretical framework
  – … found that social mediums that rank higher on information richness and social presence are more effective at facilitating online social support

• Limitations
  – … only explored three chronic diseases
  – … used a qualitative approach to identify subjective evidence of online social support
  – … only explored the functional components of social support

• Implications
  – The study contributes to health information systems design
How can you tell whether a research project is qualitative?
Qualitative Research

• Answer qualitative questions
  • How and why

• Still empirical research
  – Based on qualitative data
Qualitative Research Question
Research Question

• Questions to ask: what and how?

• Outcomes
  – Emerging themes, patterns, concepts, insights, and understandings
  – Outcomes: can be anything!
    • Analytic frameworks – a network of linked concepts and classifications

• Different from quantitative research
What is qualitative data?
Quantitative Data vs. Qualitative Data

• Objective reality vs. subjective experience/interpretation

• Why subjective methods?

• To gain insider's perspectives
  – Construction of individual experience/interpretation
    • Different factors and different trajectories
  – A homogeneous view is very unlikely
  – Better understanding of heterogeneous views requires the consideration of the attributes of environment, personal, action, etc.
Qualitative Data Could Be Very Complex

• Beyond a bunch of numbers

• Sources of qualitative data
  – Interviews, personal narratives, documents, observations, etc.

• Features obtained from qualitative data but not quantitative data?
  – Rich details of human behaviors, social/historical contexts, emotional contents, etc.
Quantitative Data vs. Qualitative Data

• Positivism vs. Interpretivism
  – Instruments
    • Using objective measures and instruments to collect empirical data
    • Researchers as the instrument to collect and interpret data
  – Data
    • Large sample size
    • Case studies (or multiple cases)
Philosophical Difference

• Positivism
  – Reality is objectively given and can be described by measurable properties independent of the observer and instruments

• Interpretivism
  – Access to reality is only through social constructions or the meanings assigned by people
General Approaches in Qualitative Methods

• Non-routinized methods: different ways to design research, collect data, and interpret the results
  – Example: data sampling
  – Quantitative methods: more routinized (e.g., experiments)

• Questions to ask: what and how?
  – Quantitative methods: Also asking how questions, but often starting with a question of “is it true that …”

• Aim: problem generation (problematizing) rather than problem solution

• Data collection and analysis proceed simultaneously
How do you think about the rigorousness of qualitative methods?
Some People May Think..

• Data: anecdotal stories?
• Interpretation: verifiable?
• Conclusion: testable?
The Concerns Are Legitimate, so Need to Pay Attention to Methodology Carefully!
Rigorous Methodology
Should Consider …

• Data collection and analysis
• Reasoning and conclusion
  – Validity issues still hold here, although using different terms.
• Alternative hypotheses and explanations
  – No controlled experiment, so many possible confounding factors
Qualitative Data Collection and Analysis
In General

• Collection: recording data through interviews, field observations, document analyses, etc.
  – As objective as possible
    • Data itself may be subjective statements from participants.

• Analysis: coding and categorizing (summarization, classification, clustering, etc.), developing themes, building theories based on themes
  – This is where subjective interpretation from researchers starts.
Qualitative Data

• Text as the major data source
  – Image or video data are also collected, but often need to be converted into text.

• Data sampling
  – Purposive: selecting participants to serve a specific purpose based on the research question
  – Participants should be representative
Data Collection

• Validity checks
  – Consistency checks: data vs. codes/categories/classifications
    • Crossing coding, usually.
  – Stakeholder checks: data vs. interpretation/explanation/conclusion
    • Participant verification
Where to Collect Data?

- Interview and field observation
  - Preservation of the contextual factors
Data Analysis

• Usually an inductive approach: data speaking for themselves by emergence of conceptual categories and descriptive themes.
  – But often guided by relevant theories (deductive)

• Analysis usually is about identifying relationships and patterns among various factors, visible or hidden.
  – Requiring skills to catch those factors, gain more information about them, and building connections among them
Data Collection and Analysis

• Analyzed data ➔ Possible new understanding of the researched issue ➔ Possible new question

• Questions and observation focuses are continuously revised based on the analysis of previous data
  – Starting with shallow and possible naïve questions
  – Moving to in-depth questions based on gained knowledge.
    • Not acceptable in quantitative methods
Research Outcomes

- Findings: certainly

- Actually help to formulate new questions
  - Based on new understanding of the relationship of concepts
Conclusions in Qualitative Research

• Derived from identified patterns and uncovered conceptual relationships
  – Not statistical results, usually
• Raw data $\rightarrow$ concepts/codes $\rightarrow$ categories $\rightarrow$ patterns $\rightarrow$ themes $\rightarrow$ theory
  – New research questions may emerge from the conclusions
    • Grounded theory: building a systematic theory that is grounded in the observations.
• Using visual representations to present the findings
The Previous Example

• Non-routinized methods
  – Data collection: social forums
    • What forums to use? What data to collect?
  – Data coding: what codes should be used?
  – All decisions made by researchers
    • Different people may choose different approaches

• The framework is the final product
  – Early versions: we don't know. Not important.

• How was the framework constructed?
  – Based on existing theories. (read the paper again!)

• Conclusion
  – Finding: different roles of social media (Table view)
  – Generating more questions
    • Is it true that social networks work better?
Qualitative Metaphors

- Kaleidoscope
  - Disorganized raw data bits
  - Category formation (based on explicit rule), Note the emergence of a pattern (clustering)
  - Refinement
  - Final constellation

- Jigsaw puzzle
Research Methods

Qualitative Research
• Case study
• Ethnography
• Grounded theory
• ...

Quantitative Research
• Survey
• Laboratory experiments
• Formal methods. e.g. econometrics
• Numerical methods, e.g. mathematical modeling
• ...

• Formal methods. e.g. econometrics
• Numerical methods, e.g. mathematical modeling
• …
<table>
<thead>
<tr>
<th>Quantitative Research</th>
<th>Qualitative Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tests hypotheses born from theory</td>
<td>Generates understanding from patterns</td>
</tr>
<tr>
<td>Generalizes from a sample to the population</td>
<td>Applies ideas across contexts</td>
</tr>
<tr>
<td>Focuses on control to establish cause or permit prediction</td>
<td>Focuses on interpreting and understanding a social construction of meaning in a natural setting</td>
</tr>
<tr>
<td>Attends to precise measurements and objective data collection</td>
<td>Attends to accurate description of process via words, texts, etc., and observations</td>
</tr>
<tr>
<td>Favors parsimony and seeks a single truth</td>
<td>Appreciates complexity and multiple realities</td>
</tr>
<tr>
<td>Conducts analysis that yields a significance level</td>
<td>Conducts analysis that seeks insight and metaphor</td>
</tr>
<tr>
<td>Faces statistical complexity</td>
<td>Faces conceptual complexity</td>
</tr>
<tr>
<td>Conducts analysis after data collection</td>
<td>Conducts analysis along with data collection</td>
</tr>
<tr>
<td>Favors the laboratory</td>
<td>Favors fieldwork</td>
</tr>
<tr>
<td>Uses instruments with psychometric properties</td>
<td>Relies on researchers who have become skilled at observing, recording, and coding (researcher as instrument)</td>
</tr>
<tr>
<td>Generates a report that follows a standardized format</td>
<td>Generates a report of findings that includes expressive language and a personal voice</td>
</tr>
<tr>
<td>Uses designs that are fixed prior to data collection</td>
<td>Allows designs to emerge during study</td>
</tr>
<tr>
<td>Often measures a single-criterion outcome (albeit multidimensional)</td>
<td>Offers multiple sources of evidence (triangulation)</td>
</tr>
<tr>
<td>Often uses large sample sizes determined by power analysis or acceptable margins of error</td>
<td>Often studies single cases or small groups that build arguments for the study’s confirmability</td>
</tr>
<tr>
<td>Uses statistical scales as data</td>
<td>Uses text as data</td>
</tr>
<tr>
<td>Favors standardized tests and instruments that measure constructs</td>
<td>Favors interviews, observations, and documents</td>
</tr>
<tr>
<td>Performs data analysis in a prescribed, standardized, linear fashion</td>
<td>Performs data analysis in a creative, iterative, nonlinear, holistic fashion</td>
</tr>
<tr>
<td>Uses reliable and valid data</td>
<td>Uses trustworthy, credible, coherent data</td>
</tr>
</tbody>
</table>
Is Qualitative Research Harder or Easier, Compared with Quantitative Research?
So, it seems that you have fewer constraints in doing qualitative research.

Sounds good?
Many Challenges

• Research question formulation
• Data collection and analysis
• Framework/theme development
Challenges in Research Question Formulation

• Research question: not clearly defined
  – Usually no hypothesis
  – Even having one, consistently changing

• Always work-in-progress
Data Analysis in Qualitative Research

- Collecting raw data
- Organizing and preparing data for analysis
- Reading through all the data
- Coding the data
- Themes/Description
- Interrelating themes/description
- Interpreting the meaning of themes/description
- Validating the accuracy of the information
Data Analysis Starts with Data Collection

• Cannot wait for the completion of all data
  – Undermining your entire project

• Further data collection relies on the understanding of previously collected data
  – Pilot studies in quantitative methods

• Questions ➔ Subjects ➔ Data ➔ Categories/concepts ➔ Themes/Conclusions
  – Iterative process
A Daunting Task

• Data analysis: *an open space to explore*
  – Not statistical methods
  – More a sensemaking process
    • Understanding raw data
    • Conceptualizing raw data
    • Categorizing data
    • Developing patterns
    • Building themes
    • Modifying concepts/categories/patterns/themes
    • etc.
But How?

• Basic approaches:
  – Collect data
  – Reduce data by filtering out less relevant information
  – Identifying key concepts and categories
  – Developing patterns and themes, offering conclusions

Think about this:

Reducing 25,000 words into a few categories
Challenges

• Coding: a process to transform raw data into more organized categories, patterns, and themes
• Open codes: labeling key concepts from raw data
• Axial coding: grouping open codes into related categories
• Selective coding: select a core category for the interpretation of all categories
Example

Challenges in Data Collection

• Multiple sources: triangulation
  – Increase the validity of data
    • e.g., Interview data + archives

• When to stop data collection?
  – Saturation: the point where no further data collection is needed
    • Additional data only confirms an emerging understanding, rather than providing new information.
  – Overextended findings (new info beyond what you are interested in)
Identifying core categories/concepts is just the first step!

Establishing their relationship is the key!

But how?
Challenges in Framework/Theme Building

• Identify the relationship among concepts/categories
  – Requiring in-depth knowledge about data, as well relevant theories.
    • Extending existing theories
    • Contracting existing theories
Relational strategies

• Representing relationships among concepts
  – Hierarchy
  – Topology
  – Networks
  – Tables
  – Concept maps

• Only creativity limits how qualitative data may be analyzed and presented graphically.
Emphasizing the superordinate and subordinate concepts

Table 12.2 Parents’ Attitudes Toward Education Displayed as a Hierarchy

<table>
<thead>
<tr>
<th>Higher Priority</th>
<th>Lower Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic</td>
<td>Tradition</td>
</tr>
<tr>
<td>Tradition</td>
<td>Self-Efficacy</td>
</tr>
<tr>
<td>Economic</td>
<td>Tradition</td>
</tr>
<tr>
<td>Escape</td>
<td>Thrive</td>
</tr>
</tbody>
</table>
Typology

- Taxonomies and possible embedded relationship
Networks

• Focusing the connections among concepts, more flat compared with hierarchy

Figure 1: Network diagram amongst the variables
Tables

- Occurrences of categories

**Table 12.4** Hypothetical Cross Tabulation of Type of Dishonesty and Type of Course

<table>
<thead>
<tr>
<th>Type of Dishonesty</th>
<th>Type of Course</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F2F</td>
</tr>
<tr>
<td>Social</td>
<td>Lower</td>
</tr>
<tr>
<td>Nonsocial</td>
<td>Same</td>
</tr>
</tbody>
</table>
Concept Maps

Software Tools

• Large volumes of text/audio/video data pose challenges for managing, retrieving, and coding data.

• Various tools are available.

• A portal to various software tools

• How to choose
  – https://medanth.wikispaces.com/Choosing+a+Qualitative+Data+Analysis+Software+Program
Something More Serious:

Is The Result Valid?
Reliability and Validity: Trustworthiness in Qualitative Research

- Transferability
- Dependability
- Confirmability
- Credibility
Transferability

• Generalization of findings to other contexts
  – Across different participants, groups, situations, etc.
  – Like the external validity in quantitative methods

• Ways to enhance transferability
  – Detailed description of research design, data analysis for better judgment
  – Analysis on data collected from different levels of subjects
Dependability

• Can the result be repeated?
  – Catch: same people may have different thoughts later on
    • Like the reliability of study of quantitative research

• Ways to enhance dependability
  – Audit trail: transparent description of research steps
  – Rich documentation
  – Triangulation
  – Inter-coder/inter-observer agreement
  – Code-recode consistency
Confirmability

• Objectivity (neutrality) and control of researcher bias
• Ways to enhance confirmability
  – Seeking potentially contradictory evidence
  – Being aware of unexpected information
  – Checking the consistency with findings of similar research
  – Seeking peer-review
Credibility

• Believability of the findings
• Related to construct validity and internal validity
  – Construct validity: are the constructs studied aligned with the phenomena of interest?
  – Internal validity (sort of): how confident is your result?
• Most important factor in judging qualitative research
  – Potential weak links:
    • Coding/Data reduction, Relational Strategy/Data display, Conclusion
• Ways to enhance credibility
  – Triangulation: using multiple sources of data and collection strategies
  – Coding: skills are more important here (compared with quantitative research)
<table>
<thead>
<tr>
<th>Criteria</th>
<th>Qualitative Research</th>
<th>Quantitative Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicability</td>
<td>Transferability</td>
<td>External validity</td>
</tr>
<tr>
<td>Consistency</td>
<td>Dependability</td>
<td>Reliability</td>
</tr>
<tr>
<td>Neutrality</td>
<td>Confirmability</td>
<td>Objectivity</td>
</tr>
<tr>
<td>Truth value</td>
<td>Credibility</td>
<td>Construct/Internal validity (sort of)</td>
</tr>
</tbody>
</table>
Techniques to Increase Trustworthiness of Qualitative Research

- Member checking
- Ensure what was heard or written down is correct
- Disconfirming evidence
- Actively seek accounts from respondents that differ from or are contradictory to the main accounts
- Triangulation
- Gather multiple perspectives to gain a more complete understanding of phenomena
- Thick description
- Detailed and thorough description and audit trail
### Criteria and Techniques

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Techniques to Ensure Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Credibility</strong></td>
<td>• Member checking</td>
</tr>
<tr>
<td></td>
<td>• Triangulation</td>
</tr>
<tr>
<td></td>
<td>• Prolonged engagement in the field and persistent observation</td>
</tr>
<tr>
<td></td>
<td>• ...</td>
</tr>
<tr>
<td><strong>Transferability</strong></td>
<td>• Thick description</td>
</tr>
<tr>
<td></td>
<td>• ...</td>
</tr>
<tr>
<td><strong>Dependability</strong></td>
<td>• Thick description</td>
</tr>
<tr>
<td></td>
<td>• Triangulation</td>
</tr>
<tr>
<td></td>
<td>• Altering research design as new findings emerge during data collection</td>
</tr>
<tr>
<td></td>
<td>• ...</td>
</tr>
<tr>
<td><strong>Confirmability</strong></td>
<td>• Thick description</td>
</tr>
<tr>
<td></td>
<td>• Triangulation</td>
</tr>
<tr>
<td></td>
<td>• Disconfirming evidence</td>
</tr>
<tr>
<td></td>
<td>• ...</td>
</tr>
</tbody>
</table>
Summary of Strategies to Promote Trustworthiness

- Triangulation, or multiple sources of data as evidence
- Member checks, or arranging for those who provided data to evaluate the conclusions
- Saturation, or continuous data collection to the point where more data add little to regularities that have already surfaced
- Peer review, or consultation with experts
- Audit trail, or the detailed record of data collection and rationale for important decisions
- Thick description, or providing rich detail of the context of the study
- Plausible alternatives, or the rationale for ruling out alternative explanations and accounting for discrepant (negative) cases
Types of Qualitative Research
Research Designs

• Different methods in qualitative studies
  – Case study
  – Phenomenology
  – Ethnography
  – Narrative
  – Mixed methods
Case Study

• Intensive study of a single person, group, or unit
  – Representative
    • Jean Piaget: studied his own three children
• May not be widely applicable, depending on the phenomena that is studied
• Case study: useful for explaining presumed causal links between variables too complex for survey or experimental designs
  – Often guided by theoretical ideas
  – Examples: MBA cases
    • A good case can worth million dollars.
    • An example here.
• Ways to enhance case study research
  – Multiple cases
  – Diverse data sources
• Contributions of case studies: may not be about generalization of findings
  – Useful ideas
  – New perspectives to look at old problems
This article presents a study identifying benefits and challenges of a novel hospital-to-hospital information technology (IT) outsourcing partnership (HHP). The partnership is an innovative response to the problem that many smaller, rural hospitals face: to modernize their IT infrastructure in spite of a severe short age of resources. The investigators studied three rural hospitals that outsourced their IT infrastructure, through an HHP, to a larger, more technologically advanced hospital in the region. The study design was based on purposive sampling and interviews of senior managers from the four hospitals. The results highlight the HHP’s benefits and challenges from both the rural hospitals’ and vendor hospital’s perspectives. The HHP was considered a success: a key outcome was that it has improved the rural hospitals’ IT infrastructure at an affordable cost. The investigators discuss key elements for creating a successful HHP and offer preliminary answers to the question of what it takes for an HHP to be successful.
Theoretical Foundations

Information technology outsourcing refers to the transfer of responsibility for providing IT services to an external provider. During the 1980s outsourcing became a widely accepted method for managing IT. Until recently, the most common types of IT arrangements included: (1) buy-in contract, (2) fee-for-service, and (3) strategic alliance. However, more recently, a fourth approach, a partnership arrangement, is gaining more interest. A partnership represents shared goals between the client and vendor, not only for risks/rewards, but also for long-term focus and joint activities. Little empirical research of this approach exists because such arrangements are not yet widespread.

In the health care industry, much of the outsourcing has focused on specialized patient services, such as dialysis and diagnostic imaging as part of the growing trend in telemedicine, as well as for more mundane physician tasks such as transcribing doctor notes. The key impetus for outsourcing in health care is similar to reasons in other domains: lower cost alternatives and access to a larger talent pool. Although limited, prior research on IT outsourcing in hospitals suggests that geographical location (rural vs. urban), hospital size, and physician involvement in IT functions are factors that have influenced outsourcing behavior. Surveys of
# Sample

**Table 1**  | Research Sites

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Size (Number of Beds)</th>
<th>Participation in HHP (Number of Years)</th>
<th>Number of Interviewees</th>
</tr>
</thead>
<tbody>
<tr>
<td>RH</td>
<td>411</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>R1</td>
<td>83</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>R2</td>
<td>25</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>R3</td>
<td>9</td>
<td>5</td>
<td>1</td>
</tr>
</tbody>
</table>

HHP = hospital-to-hospital IT outsourcing program; RH = regional hospital; R1, R2, R3 = rural hospitals 1, 2, 3.
Data Collection and Analysis

We conducted 11 interviews over a 6-month period in 2006–2007. The interviews were digitally recorded, transcribed, and supplemented by researcher field notes. The interview transcripts were systematically studied using open coding to identify and categorize emerging concepts. This analysis\(^\text{16}\) was used throughout the coding process to ensure that the developing concepts and categories were grounded in the data, consistent with the grounded theory approach.\(^\text{17}\)
Table 2 • Benefits of the HHP

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial savings</td>
<td>Economies of scale</td>
</tr>
<tr>
<td></td>
<td>Cost basis</td>
</tr>
<tr>
<td>Shared IT expertise</td>
<td>IT staff experts</td>
</tr>
<tr>
<td></td>
<td>Access to IT staff of 55</td>
</tr>
</tbody>
</table>

Abbreviations as in Table 1.

Table 3 • Challenges to HHP

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer service expectations</td>
<td>In-sourcing hospital in vendor role</td>
</tr>
<tr>
<td></td>
<td>Customer satisfaction feedback</td>
</tr>
<tr>
<td>Complexity of interdependence</td>
<td>Lock-in</td>
</tr>
</tbody>
</table>

- Backed up by the responses from participants

[R1]: “Financially it made sense for us. Being part of a large purchase group provided us with an opportunity to look at a brand new financial and clinical system, with more applications and mature systems.”

[R2]: “[It was the] most technical infrastructure and services we could get for the price. It would be very difficult for us to afford to go out and buy our own software packages on the open market.”
Contribution

In this case study, we examined one innovative approach to meeting the IT needs of rural hospitals through the development of an HHP. In this partnership, the rural hospitals outsourced their IT services to a larger, more technologically intensive regional hospital. Unlike a traditional outsourcing arrangement, the HHP was not designed as a profit-making venture; instead, it was conceived, implemented, and matured over time as an approach to improve the IT capabilities of the rural hospitals so that they could provide better patient care. Furthermore, the larger regional hospital also benefited from the HHP. The results from this study show that hospital-to-hospital partnerships can be successful for all the partners if properly managed.

The challenges and benefits suggest two important lessons: (1) interdependency of relationships is complex and must be carefully managed, and (2) goal congruence is important. These lessons may also have implications for successfully managing health information exchanges.
Phenomenology

- "Lived experience": a person's or group's experience and its meaning
  - Essence of an experience
- Usually involving interviews with multiple subjects
  - To find something common in their individual experiences
    - Themes mirroring other themes found in other research
    - Repeated themes among subjects
Ethnography

• A variation of phenomenological study
• Focusing on culture of a society
• A researcher is immersed in a culture
  – Studying daily life through first-hand observation
  – Taking field notes
  – Triangulating data resources
• A researcher can assume different roles in different situations
  – A strict observer
  – A participant-observer
Narrative

- Life story: people describe their life experience via storytelling
  - Written account of a person's life
Let the Sisters Speak: Understanding Information Technology from the Standpoint of the ‘Other’

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Research Approach
The narratives discussed in this paper come from a larger ethnographic study which focused on 15 African American adults (10 females, 5 males) who participated in two 7-week courses offered at a CTC. The first course, Introduction to Computers, focused on basic computer literacy and was geared for individuals with little or no prior experience with computers. This course included file management, keyboarding, the components of the computer, and word processing. The second course, Computer Applications, covered the World Wide Web and email, and Microsoft PowerPoint and Word.

Data Collection
Data were collected over an eight-month period using unstructured interviews and document analysis. The documents included ten essays written by the women at the conclusion of the course. In these one-page essays, the women wrote about their position on the digital divide. Over 50 informal interviews were conducted, each lasting an average of 20-30 minutes. Interview guides were developed to inform the conversations and to maintain some level of consistency among the interviews. Each interview guide consisted of the list of questions...
Qualitative Research Write-Up
Strategies for Writing up the Qualitative Findings

• Often use the first person form
• Develop description, framework and themes
• Use quotes
• Include some conversation
• Use metaphors and analogies
• Discuss how findings will be related to theories and literature
Reporting Data

• Papers vs. books

• Papers
  – Details are often omitted, and only the final coded results are provided.

• Books
  – May provide original data, if interesting
  – Example: *In the age of the smart machine*
Figure 4.1 Transfer assistant

Figure 4.2 Transfer assistant

"The after picture is only the back of my head because it is a nonperson."

and blank—without a face. Figures 4.1 through 4.16 show a representative sample of these illustrations.

These simple drawings convey feelings that often elude verbal expression. The condition of being "tied to the machine" represents a new kind of confinement, not just the spatial confinement of having to sit in one place for long stretches, but an interior confinement. These clerks, driven into the confines of the laborine box, have seen their

Figure 4.3 Transfer assistant

Figure 4.4 Transfer assistant

"There's a lot of tension now, and that makes people get mean. We had more control before and less confusion. You could get things done. Every once and a
"I used to have someone behind me in case I needed to tell them about this 900 phone call. But now there isn't anybody there. Now she is stiff. She is all by herself. You know."

"No talking, no looking, no walking. I have a cork in my mouth, blinders for my eyes. Chains on my arms. With the radiation I have lost my hair. The only
"Before I was able to get up and hand things to people without having someone say, what are you doing? Now, I feel like I am with my head down, doing my work."

"My supervisor is frowning because we shouldn't be talking. I have on the times of a computer. It feels like a prison in here."

Figure 4.9 Transfer assistant

Figure 4.10 Transfer assistant

Figure 4.11 Benefits analyst

Figure 4.12 Benefits analyst
Summary
Characteristics of Qualitative Research

- Developed in social sciences
- Describe phenomena as they occur naturally
- Use qualitative data
- Focus on “quality” questions
- Concerned with the opinions, experiences and feelings of individuals and their contexts
- Holistic perspective
- Hypothesis generating
- Flexible, evolving, emergent research design
- Small samples purposively selected
- Researcher as primary instrument
- Produce subjective data
- Inductive approach
Characteristics of Quantitative Research

- Developed in natural sciences
- Predict phenomena in a controlled setting
- Focus on “quantity” questions
- Concerned with identification and measure of a set of variables
- Reductionist perspective
- Hypothesis testing
- Predetermined, structured research design
- Large samples randomly selected aiming at representativeness
- Standardized instruments
- Produce objective data
- Deductive approach
Pros and Cons of Qualitative Research

• **Pros**
  – Seeks a wide understanding of the entire situation
  – Produces more in-depth, comprehensive information

• **Cons**
  – Difficult to establishing reliability and validity because of subjectivity of the inquiry
  – Difficult to prevent or detect researcher induced bias
  – Limited scope due to the in-depth, comprehensive data gathering approaches required
Combination of Qualitative and Quantitative Methods

• Different research methods focus on different aspects of reality
  – Richer understandings could be gained
• Different tasks and problems in different research phases that require different research methods
  – Better research results
• Validate data and results through triangulation
• Discover fresh factors
• Take in wider aspects of the situation and widen the study scope
• …
### Different Types of Mixed Research Designs

<table>
<thead>
<tr>
<th>Type of Design</th>
<th>Method Mix</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sequential</td>
<td>Methods are employed in sequence with results from one feeding into the later one.</td>
<td>Do a statistically analyzed questionnaire then follow up with some in-depth interviews to better understand the results. Or, undertake ethnographic research and content analysis to design a questionnaire.</td>
</tr>
<tr>
<td>Parallel</td>
<td>Methods are carried out in parallel with results feeding into each other</td>
<td>Observation and recording of computer usage together with interviewing and cognitive mapping of users</td>
</tr>
<tr>
<td>Dominant (Imperialist)</td>
<td>One method or methodology as the main approach with contribution(s) from the other(s)</td>
<td>An intensive study using ethnography or participant observation with some statistical data analysis in the Appreciation phase</td>
</tr>
<tr>
<td>Multimethodology*</td>
<td>A combination of methods, embodying different paradigms, developed specifically for the task</td>
<td>Interviews, data analysis, and questionnaires, combined with root definitions and conceptual models (from SSM), and strategic choice commitment package.</td>
</tr>
<tr>
<td>Multilevel</td>
<td>Research conducted simultaneously at different levels of an organization and using different methods</td>
<td>Survey of call-center operators and interviews/cognitive mapping with supervisors and managers.</td>
</tr>
</tbody>
</table>
Take-Home Messages

• Qualitative research is …
  NOT easy!

• Lots of open space and uncertainties through whole research procedure
  – Research question formulation
  – Data collection, analysis
  – Result validation
  –
  –

• Learning about qualitative research is challenging.
Take-Home Messages

• Often qualitative research can tell us something quantitative research cannot provide.
  – Combining different methods usually can lead to deeper understanding.

• Respect the diversity of research methods!
  – Developing new algorithms is challenging. So is gaining insight into people's complex behaviors.
“Hang Loss” + “Rigor”

- When planning a project, be open and flexible on research goal.
- When conducting research, be rigorous on procedures to establish trustworthiness
Exercise

The followings are research projects concerning the information system used in a company. Which projects would you expect to see a qualitative approach used and in which projects would you expect to see a quantitative approach?

- An examination of the effectiveness of the information system.
- An exploration of the role of organizational culture in the effectiveness of the information system.
- A descriptive study of managers’ experiences of working with the information system.
- A company-wide survey of all the employees’ knowledge of the information system.

Based on your research question, describe what aspects of your research could use qualitative research methods. Discuss what data your would collect, and what data collection method you would use.