Module 15
Qualitative Methods
Module Objectives

By the end of this module you will be able to:

1. Understand and explain the central differences between the qualitative and quantitative perspectives in evaluation research

2. Identify evaluation questions that would be well or best served by an evaluation that includes qualitative approaches

3. Describe:
   - Several qualitative evaluation designs or frameworks and their main focus
   - 5 methods for collecting qualitative data
   - Steps or continuum of qualitative data analysis
   - Ways of enhancing the trustworthiness of qualitative evaluation findings
### ADS References

<table>
<thead>
<tr>
<th>ADS Reference</th>
<th>Topic or Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADS 203.3.1.6</td>
<td>Given the nature of development activities, both qualitative and quantitative methods yield valuable findings, and a combination of both often is optimal; observational, quasi-experimental and experimental designs all have their place. No single method will be privileged over others; rather, the selection of method or methods for a particular evaluation should principally consider the empirical strength of study design as well as the feasibility.</td>
</tr>
<tr>
<td>ADS 203.1.9</td>
<td>Findings should be specific, concise and supported by quantitative and qualitative information that is reliable, valid and generalizable.</td>
</tr>
<tr>
<td>ADS 203.3.1.6; 3.7</td>
<td>There is no standardized methodology for evaluations of USAID programs. Methods of data collection [for which USAID’s ADS provides TIPs] will generate qualitative and/or quantitative data that require specific types of data analyses.</td>
</tr>
</tbody>
</table>
Qualitative approaches range from the use of a single qualitative method for collecting and analyzing data in an evaluation.....

...... to evaluation designs that serve as a qualitative framework for interpreting data that may be both qualitative and quantitative in nature.

We begin with frequently used methods and build to broader qualitative evaluation strategies.
### Distinguishing Characteristics

<table>
<thead>
<tr>
<th>Quantitative Approaches</th>
<th>Qualitative Approaches</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Deductive Reasoning</td>
<td>• Inductive Reasoning</td>
</tr>
<tr>
<td>• Outsider perspective</td>
<td>• Insider perspective</td>
</tr>
<tr>
<td>• Focus on specific concerns</td>
<td>• Holistic</td>
</tr>
<tr>
<td>• Environment neutral</td>
<td>• Environment sensitive</td>
</tr>
<tr>
<td>• Selection of units – often probability sampling methods</td>
<td>• Selection of units – often purposive sampling methods</td>
</tr>
<tr>
<td>• Number of units may be large</td>
<td>• Number of units often small</td>
</tr>
<tr>
<td>• Numeric emphasis in reporting</td>
<td>• Narrative and visual emphasis in reporting</td>
</tr>
<tr>
<td></td>
<td>• Heuristic and Iterative</td>
</tr>
</tbody>
</table>
Methods

Evaluations with a qualitative design or emphasis use a variety of data collection methods. The focus is on capturing holistic picture, not reducing a complex phenomenon to a few numbers.

Methods include:

**Asking questions** in ways that produce rich narrative answers.

**Observation** with our eyes and our ears what people say and do.
Data Collection Basics

Structured Methods

Forms and other mechanisms used to standardize the way data are collected

Unstructured Methods

Reliance on training, memory and adaptability to capture data.
Data Collection Basics

Obtrusive Methods

People are aware that data are being collected

Unobtrusive Methods

People do not know that data are being collected
Data Collection Basics

How evaluators look may have an impact on the data collection process. What we wear and our body language may be neutral in some settings – and anything but neutral in others.
For All Methods

• Consider the “pros” and “cons” for each method.

• Before deciding on a method, look at which is appropriate for your purpose. A combination?

• Develop written instruments in advance of field work. All instruments must be included in an annex in a final report.
Collecting Narrative Data

Which questions require qualitative data? Quantitative?

- How many farmers have adopted improved farming methods, i.e., use of new CIMMYT maize variety Longe 1 and inorganic fertilizer?

- Who are the adopters and non-adopters of improved farming methods?

- What characterizes or explains their adoption or non-adoption?
### Options for Collecting Narrative Data

<table>
<thead>
<tr>
<th>Evaluation Question</th>
<th>Data Source/Unit of Analysis</th>
<th>Data Collection Method</th>
<th>Data Analysis Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who are the adopters and non-adopters of improved farming methods promoted by USAID’s project?</td>
<td>Farmers in the target area (Iganga District)</td>
<td>Interview individual farmers?</td>
<td></td>
</tr>
<tr>
<td>What characterizes or explains their adoption or non-adoption?</td>
<td></td>
<td>Interview groups of farmers?</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Interview key informants who can describe farmer behavior and thinking?</td>
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</tbody>
</table>
Tool Shop

Divide into groups and make sure that each group will read the appropriate reference for one of the following qualitative data collection methods:

- Key Informant Interviews (R-9/ R2R)
- Evaluative Case Studies (R-10)
- Focus Groups (R-11)
- Direct Observation (R-12)
- PRA Techniques (R-13/R2R)

Prepare a 10-minute presentation to the class teaching about that qualitative method. What is it? How do you do it? What are common challenges and solutions? Be creative – use role play, games, or other teaching techniques.
Progression in Qualitative Data Transformation

- Transcription
- Coding
- Interpretation

Theory-building

Observation
Qualitative transcription seeks an accurate descriptive record not yet subject to processing by the researcher.

- Complete, not summarized or “sound bites”
- Holistic – includes gestures, body language
- Multi-media – words, pictures, drawings
Responses from Mayors on Interview Question 5: Quality and reliability of garbage collection services

The people don’t understand the garbage collection schedule, when garbage is not collected it is their fault for putting it out the wrong day (Mayor 1)

With a small budget, we have to hire drivers only when we can pay them, sometimes we have to skip a pick up (Mayor 8)

Some of the contractors we use do not stick to our garbage pick-up schedule (Mayor 11)

This is a complex problem mostly from schedules which are not followed either by citizens or the pick-up agents (Mayor 2)
Coding is iterative and progressive. Also called content analysis (narratives) or pattern analysis (observations).

- **Open coding** – moves from categories to themes
- **Axial coding** – identifies relationships among codes
- **Selective coding** – occurs when the researcher steps in and selects a main category or theme around which to organize or explain other codes
Recognize that, even at this early stage of qualitative data analysis, the chances that you are being truly “objective” are slim. Be mindful as you code.

Researcher objectivity – said Nobel Laureate, Gunner Myrdal – is limited by:

- All that we have learned in our fields of study – the thoughts of writers and teachers who came before us.
- The cultural, social, economic and political milieu in which we live and work – today, and its history.
- The influence of our own personalities and life histories.
Open coding examines text or visual materials asking “what is this about?”

- **Topical coding** – key words and phrases. Often limited to manifest (obvious) meaning.

- **Thematic coding** – may follow after topical coding – and consider latent as well as manifest meaning: meaning that is potentially there or clearly present but not active; words that are symbols for larger meanings.
Open Coding

For narrative data combine impressionistic and systematic approaches to coding:

- **Nouns** – topics in the narrative
- **Verbs** – action in the narrative
- **Adverbs** – when, where, why, or under what conditions
- **Adjectives** – judgments, degree, intensity
Exercise 15-1

Coding content is often an iterative process.

After a first round of coding, you may see other patterns emerge.

Code and capture all important patterns in the content of responses.

<table>
<thead>
<tr>
<th>Responses from Mayors on Interview Question 5: Quality and reliability of garbage collection services</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>The people don’t understand the garbage collection schedule, when garbage is not collected it is their fault for putting it out the wrong day (Mayor 1)</td>
<td></td>
</tr>
<tr>
<td>With a small budget, we have to hire drivers only when we can pay them, sometimes we have to skip a pick up (Mayor 8)</td>
<td></td>
</tr>
<tr>
<td>Some of the contractors we use do not stick to our garbage pick-up schedule (Mayor 11)</td>
<td></td>
</tr>
<tr>
<td>This is a complex problem mostly from schedules which are not followed either by citizens or the pick-up agents (Mayor 2)</td>
<td></td>
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</tbody>
</table>
New software that visually displays word frequencies or groups of words saves evaluators time and may force them to notice patterns they might have missed counting manually.
Rubble Removal Continues in Haiti

Visual data show a strong pattern in approach used.

Is there a more efficient, affordable option?

Software can be used to code visual images as well as text and they can be analyzed together.
Qualitative Analysis Software

- Manages data of many types
- Supports coding process
- Helps establish an audit trail as coding evolves
- Wide range of choices – from CDC’s EZ-text (free) to commercial products, many of which manage data from multimedia sources and have free demonstrations and trial download
Qualitative Data Transformation

After qualitative data are coded it may be desirable to transform them into a quantitative form.

Of the mayors who were interviewed, what number or percentage attributed problems with garbage collection to citizen lack of awareness?

Once transformed, this data can be integrated into a broader analysis, e.g., with citizen survey on awareness of the day trash is picked up in their neighborhood.

- 58% of mayors think citizens do not know the trash schedule.

- 72% of citizens correctly identified their neighborhood “trash day”

This doesn’t match up. Let’s dig further!
Axial coding examines relationships among codes – including potentially causal relationships.
Try diagrams, different size words to indicate frequency, and other techniques for suggesting relationships.
Interpretation is the first point at which the researcher actively intervenes to transform qualitative data.

- Interpretation of qualitative data is intended to extract meaning – not necessarily pass judgment.

- Interpretation often draws on theory and experience as well as on data collected during the study.

- Meaning is meaning “to me” or “to those we studied” -- be transparent about the perspective from which meaning is being derived, and who is interpreting the meaning of the data.
Theory-building

Interpretation that goes beyond extracting meaning to posit explanations, generate hypotheses, or make predictions involves theory-building – sometimes called “grounded theory”:

- Explanations of how processes work in the study environment – decisions about years of education for male and female children.

- Predictions about how a new phenomenon -- cell phones -- will affect the environment.
Qualitative Evaluation Designs

- Serve as an analytic framework for studies with a predominantly qualitative focus.

- Incorporate characteristic qualitative research features – inductive reasoning; holistic and insider perspective.

- Utilize qualitative data collection and analysis methods – as well as other methods.
Common Qualitative Study Designs

- Case study – focuses on the “case” as it is defined described briefly in Module 7
- Ethnography -- focuses on the culture, or a project’s fit with a culture
- Phenomenology – focuses on a lived experience
- Action Research – focuses on stakeholders’ involvement as researchers and on the “learning by doing” principle

All of these qualitative frameworks use a variety of methods for collecting data. As designs or frameworks they provide the structure through which evaluation data will be analyzed.
## Characteristics of Common Qualitative Study Designs

<table>
<thead>
<tr>
<th>Type of Design</th>
<th>Focus of the Inquiry</th>
<th>Dominant Methods</th>
<th>Evaluation Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Case Study</strong></td>
<td>The case, a bounded unit of analysis – wide range of units</td>
<td>Key Informant Interviews and other methods; triangulation</td>
<td>In-depth look at a practice that works, a critical incident or other cases of interest</td>
</tr>
<tr>
<td><strong>Ethnography</strong></td>
<td>Fit between an intervention and a culture; or simply beliefs and practices in a culture</td>
<td>Participant observation, interviews, and other methods as appropriate</td>
<td>Acceptability or fit of an intervention in a culture, e.g., secondary school education for girls in some cultures, or fit of a new system in an organizational culture</td>
</tr>
<tr>
<td><strong>Phenomenology</strong></td>
<td>A phenomenon, as it is perceived -- often a lived experience, e.g., of a type of assistance received</td>
<td>In-depth Interviews Focus Groups</td>
<td>HIV/AIDS afflicted experience of treatment Trafficking survivors experience of assistance</td>
</tr>
<tr>
<td><strong>Action or Operations Research</strong></td>
<td>An intervention – services, a new system; policy; other deliberate change</td>
<td>Performance measures, interviews, and other methods as appropriate</td>
<td>Fine tune an intervention to ensure intended results are achieved</td>
</tr>
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</table>
A case study is a method (or approach) for learning about a complex instance, based on a comprehensive understanding of that instance obtained by extensive description and analysis of that instance taken as a whole and in its context.

U.S. Government Accountability Office
The case study is the design most frequently used in USAID evaluations.

-- Single project case studies.

-- Comparative case studies

-- Multiple case studies, including a synthesis
Focus in Evaluation Case Studies May Vary

**Explanatory** – may examine cause and effect to understand how changes came about – though a holistic, in depth examination of a single case. May or may not start with a “theory of change”.

**Critical Incident** – how political changes came about; the impact of the tsunami, other unique events.

*New York Times* story on how Egypt shut down the internet was a critical incident case study.

**Program Implementation** – how processes are working, or not.
Critical Incident Case Study

When Uganda seemed to be the only country in Africa that was able to slow the rate of increase of HIV/AIDS, case study approaches were used to determine why.
## Logic Behind Case Study Selection

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Best Case</strong></td>
<td>What makes this project effective?</td>
</tr>
<tr>
<td><strong>Worst Case</strong></td>
<td>Why isn’t this project working?</td>
</tr>
<tr>
<td><strong>Bracketing</strong></td>
<td>What do the extremes of performance look like? What characterizes the best and worst cases?</td>
</tr>
<tr>
<td><strong>Representative</strong></td>
<td>In instances chosen to represent important variations (e.g., in location, in types of beneficiaries), what are project processes and results like, and what best explains differences?</td>
</tr>
<tr>
<td><strong>Typical</strong></td>
<td>In a typical site, what is happening? [Difficult to select typical cases unless prior research has identified them]</td>
</tr>
<tr>
<td><strong>Special cases</strong></td>
<td>In unusual locations (e.g., where there is conflict, or drought) how is the intervention proceeding and with what results?</td>
</tr>
</tbody>
</table>
Case Study

USAID Evaluation of Girl’s Education

Multiple Case Studies

Guatemala, Pakistan, Guinea, Nepal and Malawi

Figure 1. Girls’ and Boys’ Gross Enrollment, Balochistan and North-West Frontier Province

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Girls</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boys</td>
<td></td>
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</tbody>
</table>

Household Views on Benefits And Costs of Schooling

Results of a survey of 20 families, 10 each in rural Blantyre and urban Blantyre, a city in the southern highlands, give a glimpse of what motivates parents to send their children to school. Families shared these thoughts:

Value of schooling. Schooling is highly valued because it is perceived to increase the chances of finding employment. Most interviewees said that it is equally important for boys and girls to be educated, preferably through high school or university. Respondents in both urban and rural communities consider education to be “crucial” and “important for everyone on earth.”

Schooling costs. Both primary and secondary schooling are costly to households. Some respondents initially said that primary schooling was free, because they no longer paid school tuition fees. But after further discussion, it became clear that primary schooling has other substantial costs, including uniforms and materials. In the rural area visited for this survey, parents spend an average of 79 kwacha per year ($4.53) to send their children to primary school. In the urban areas visited, households reported spending, on average, 149 kwacha per year ($8.54) to send their children to primary school.
Synthesis Volume from USAID’s Evaluation of Girl’s Education

In a case study synthesis patterns are examined to develop findings and lessons.
Case Study

The World Bank and the U.S. GAO both have case study evaluation handbooks available online.

World Bank

While an ethnographic approach to social research is no longer purely that of the cultural anthropologist, a more precise definition must be rooted in ethnography's disciplinary home of anthropology. Thus, ethnography may be defined as both a qualitative research process or method (one conducts an ethnography) and product (the outcome of this process is an ethnography) whose aim is cultural interpretation.

Brian A. Hoey, Ph.D.
Marshall University
In the international development context, we can use standard ethnographic methods – **participant observation** – to:

- Prospectively examine how things work in a cultural setting where we are considering funding a project intervention.
- Retrospectively examine differences in the way a project intervention work in one or more cultural settings.
In Nepal, USAID invested in an ethnographic study to help staff understand, on a pre-project or “baseline” basis, how acute respiratory diseases were understood and treated in several different caste/ethnic groups.

Participatory Ethnographic Evaluation and Research (PEER) is a term used to describe rapid appraisal methods for gathering observation data when they are used in an ethnographic study framework and on a participatory basis.

This is one of the methods that USAID said should be used in its SOW for an evaluation of its Eastern Caribbean Community Action Project (EC-CAP).
Guidelines on ethnography and participant observation are available on line and in book form, including from USAID partners.

Table 3. What to observe during participant observation

<table>
<thead>
<tr>
<th>Category</th>
<th>Includes</th>
<th>Researchers should note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Clothing, age, gender, physical appearance</td>
<td>Anything that might indicate membership in groups or in sub-populations of interest to the study, such as profession, social status, socioeconomic class, religion, or ethnicity</td>
</tr>
<tr>
<td>Verbal behavior and interactions</td>
<td>Who speaks to whom and for how long; who initiates interaction; languages or dialects spoken; tone of voice</td>
<td>Gender, age, ethnicity, and profession of speakers; dynamics of interaction</td>
</tr>
<tr>
<td>Physical behavior and gestures</td>
<td>What people do, who does what, who interacts with whom, who is not interacting</td>
<td>How people use their bodies and voices to communicate different emotions; what individuals’ behaviors indicate about their feelings toward one another, their social rank, or their profession</td>
</tr>
<tr>
<td>Personal space</td>
<td>How close people stand to one another</td>
<td>What individuals’ preferences concerning personal space suggest about their relationships</td>
</tr>
<tr>
<td>Human traffic</td>
<td>People who enter, leave, and spend time at the observation site</td>
<td>Where people enter and exit; how long they stay; who they are (ethnicity, age, gender); whether they are alone or accompanied; number of people</td>
</tr>
<tr>
<td>People who stand out</td>
<td>Identification of people who receive a lot of attention from others</td>
<td>The characteristics of these individuals; what differentiates them from others; whether people consult them or they approach other people; whether they seem to be strangers or well known by others present</td>
</tr>
</tbody>
</table>
Phenomenology

An attempt to capture experience as lived, through descriptive analysis. It studies how things appear to consciousness or are given in experience, and not how they are in themselves.

Phenomenology is a way of unfolding the dimensions of human Experience. It examines:

a. What is distinct in each person's experience.

b. What is common to the experience of groups of people who have shared the same events or circumstances

Victor Daniels, PhD
Sonoma State University
Phenomenology

In Macedonia, following a period of ethnic tension, USAID mounted a community self-help project in the education sector, with a confidence building focus. Mid-way through the project USAID sought an evaluation.

The evaluation focused on perceptions of the project among staff and stakeholders. Phenomenological research methods were employed.
Action research is known by many other names, including participatory research, collaborative inquiry, emancipatory research, action learning, and contextual action research, but all are variations on a theme. Put simply, action research is “learning by doing” - a group of people identify a problem, do something to resolve it, see how successful their efforts were, and if not satisfied, try again.

Rory O’Brien, University of Toronto.
Action Research Cycles Stress Evidence-Based Planning

Cycle 1
- Study and Plan
  - Take Action
  - Collect and Analyze Evidence
  - Reflect

Cycle 2
- Study and Plan
  - Take Action
  - Collect and Analyze Evidence
  - Reflect

Cycle 3
- Study and Plan
  - Take Action
  - Collect and Analyze Evidence
  - Reflect

Progressive Problem Solving with Action Research

Source: Center for Collaborative Action Research
USAID frequently integrates Action Research into project implementation when the intervention it is delivering is still in an exploratory phase – being improved as it is being delivered.

Action Research may be a good choice when an intervention is innovative – but not yet stable enough to warrant an Impact Evaluation.
## Strengths and Limitations of Qualitative Studies

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Methods can be relatively flexible and adjusted to meet evolving needs and understanding unexpected results.</td>
<td>• Method may be difficult to replicate, particularly if emergent design was used that resulted in significant design and methods modifications.</td>
</tr>
<tr>
<td>• May take more time and effort to collect and analyze data than is true for other types of evaluation designs, but this is not always the case.</td>
<td>• Quality depends heavily on skills of individual researchers.</td>
</tr>
<tr>
<td>• Provides a rich understanding of informant’s categories of meaning and experience and context in which the intervention was/will be implemented.</td>
<td>• Not always viewed as being adequate for generalization, i.e., predicting how an intervention will work in other situations. (Multiple case studies and phenomenological studies with a fairly large number of informants are stronger than single case studies in this regard, particularly if their findings converge.)</td>
</tr>
<tr>
<td>• High confidence in accuracy of picture drawn if member checking and other qualitative validity checks were employed.</td>
<td>• Causation findings may be ideographic (unique and not replicable).</td>
</tr>
<tr>
<td>• Useful for developing a comprehensive understanding how interventions operate and what fosters and hinders their success.</td>
<td>• Findings could be misleading if units examined were selected using inherently biased methods, or were otherwise non-representative (even of best cases if purposive sampling was used).</td>
</tr>
</tbody>
</table>
Across a wide range of disciplines – beyond program evaluation – we accept evidence of causality that is based on the elimination of alternative explanations, rather than on randomized assignment and statistical analyses.

- Epidemiology – what caused the out break of disease or food poisoning?
- Justice systems – who committed the crime? (Sherlock Holmes, Law & Order, NCIS)
- Journalistic and historical inquiry – what precipitated the 2008-2009 recession?

Many of the instances in which we establish causality at an acceptable level (beyond a reasonable doubt) by demonstrating that no other cause was logically possible are single instance situations -- like case studies.
Modus Operandi (MO) was conceptualized by evaluation theorist Michael Scriven (1976) as a way of inferring causality when experimental designs were impractical or inappropriate. The MO approach, drawing from forensic science, makes the inquirer a detective. The inquirer/detective observes some pattern and makes a list of possible causes. Evidence from the inquiry is compared to the list of suspects (possible causes). Those possible causes that do not fit the pattern of evidence can be eliminated from further consideration. Following the autopsy-like logic of Occam’s razor, as each possible cause is compared to the evidence, that possible cause supported by the preponderance of the evidence and offering the simplest interpretation among competing possibilities is preferred and considered most likely.

Michael Quinn Patton
Trustworthiness as a composite concept:

- **Credibility** – Are the findings believable to the participants on whom they report?
- **Transferability** – Are the study’s findings generalizable - do they help us understand other situations?
- **Dependability** or Auditability – are the methods documented? Replicable?
- **Confirmability** – Can the findings be confirmed or corroborated? Other studies? Other voices?
- **Utilization** – How useful are the findings to clients, researchers, and the communities studied?
Threats to Trustworthiness

- **Reactivity** – Has the presence of the researcher affected behavior and thus the study data? (Hawthorne effect)

- **Researcher bias** – To what degree have researcher preconceptions and opinions colored the way in which data are recorded or interpreted?

- **Respondent biases** – To what degree have respondent perceptions of the process distorted the data: withholding information; deliberate misdirection; selective memory or interpretation of questions or events.
## Strategies for Limiting Threats to Trustworthiness

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prolonged Engagement</strong></td>
<td>Researcher present enough times and for long enough periods to be recognized and accepted/tolerated.</td>
</tr>
<tr>
<td><strong>Triangulation</strong></td>
<td>Findings are consistent across variety of methods of study, observers and perspectives.</td>
</tr>
<tr>
<td><strong>Peer Debriefing/Support</strong></td>
<td>Researcher participation in deliberate sharing and feedback mechanisms with peers and colleagues, particularly if researcher is operating alone in the field.</td>
</tr>
<tr>
<td><strong>Member Checking</strong></td>
<td>Findings presented to participants for their reactions – credibility, completeness.</td>
</tr>
<tr>
<td><strong>Negative Case Analysis</strong></td>
<td>Data that do not align with the researcher summarization/interpretation and their implications are fully examined.</td>
</tr>
<tr>
<td><strong>Audit Trail</strong></td>
<td>Adequacy of documentation of process; transparency.</td>
</tr>
</tbody>
</table>
Review Questions

• When and why should qualitative data collection methods be used?
• What are some commonly used qualitative data collection methods?
• What are the key steps of qualitative data analysis?
• How could you enhance the validity of inferences based on qualitative data?
Exercise 15-2:
Watershed Case Study