Mastering Qualitative Data: The Process and Tools You Can Use

September 11, 2016
Southeastern Association for Community College Research
Atlanta, GA
Background: GMS Program

The Gates Millennium Scholars (GMS) program, established in 1999, is a 1.6 billion dollar initiative funded by grant from the Bill & Melinda Gates Foundation.

The goal of GMS is to promote academic excellence and to provide an opportunity for 20,000 outstanding students with significant financial need to reach their full potential.
Background: Program Partners

- UNCF- the United Negro College Fund is the administrator of the GMS initiative and has partnered with the following organizations:
  - Asian & Pacific Islander American Scholarship Fund
  - American Indian Graduate Center Scholars
  - Hispanic Scholarship Fund
Agenda

• Theoretical Portion
  • When to Use/Importance
  • Approach
  • Collection
  • Content Analysis

• Applied Portion
  • Analysis Tools
    • Excel
    • QDA Miner Lite
    • Additional Options
  • Presenting the Results
  • Questions
When to Use/Importance
When to Use

• Quantitative analysis uses deductive analysis

• Qualitative data analysis is necessary when an **inductive** approach is required. Examples include
  • Narrative/metaphor
  • Hermeneutic: interpretation of text
  • Semiotics: study of signs and symbols
Importance

• Data reduction. A researchers role is to reduce a large amount of data. You expertise is used to complete work others do not want to do or do not have the ability to do

• Purpose
  • Identify patterns
  • Gain insights not possible through quantitative analysis
Approach
Approach: Theoretical Sensitivity

• Develop **theoretical sensitivity**. This is a personal quality
  • Awareness of data subtleties
  • Attribute of having insight
  • Ability to give meaning to the data
  • Ability to separate important from non-important
  • Conceptual rather than concrete level
Approach: Theoretical Sensitivity

• Theoretical Sensitivity Sources
  • Literature
  • Personal Experience
  • Analytical Process
    • Insight and understanding increase as you interact with the data
Approach: Theoretical Sensitivity

• Methods to Maintain Balance Between Data and Interpretation
  • Step Back From the Data. Ask “Does what I think fit the reality of the data?”
  • Maintain skepticism
  • Adhere to research methodology
  • Acknowledge and limit bias
Data Collection
Data Collection Types

- Qualitative data sources include
  - Surveys
  - Interviews
  - Focus Groups
  - Literature Review
  - Observation Forms
  - Media Review
Data Collection: Considerations

- Reliability and validity do not only apply to surveys

- Consistent data collection methods support reliability and validity
  - Other than surveys, training must be supplied so that all data collection methods are consistent
Data Collection: Common Mistakes

• Failing to provide training on data analysis
• Failing to have multiple raters
• Data collection person unintentionally influencing respondents (brief demonstration)
Content Analysis
Content Analysis: Coding

• The main job of the researcher is to distill large amounts of data into meaningful information stakeholders can utilize

• Coding Types
  • Open-coding
  • Axial coding
  • Selective coding
Content Analysis: Open-Coding

• Process of analyzing, comparing, conceptualizing and categorizing data

• Definitions
  • Concepts: Labels applied to discrete events
  • Category: Classification of concepts
  • Code Notes: Memos or descriptions for the concepts and categories
Content Analysis: Open-Coding

• Stages
  • Label phenomena
  • Discover categories
  • Name category
  • Define category by one or more important dimensions
    • Frequency (often…never)
    • Extent (more…less)
    • Intensity (high…low)
    • Duration (long…short)

• Methods
  • Identify keywords
  • Write concepts after reading passage
Content Analysis: Open-Coding Example

36:07  P1  Yeah, for a faculty member… cause I had one professor who asked my friend, she’s no longer here—she transferred, could she have her hair when she let it go natural and the professor asked her “what happened to your hair.” And, I shit you not, she asked “do you have like a button that you press in your hair.” See, now you laugh but she was totally dead serious. She had no smile on her face. She asked her “do you have a button you press to make your hair grow longer and shorter” cause for a while my friend was switching her hair style and she never, not once, felt the need to ask how her hair got like that. She just instantly assumed that there was a button that needed to be pressed. I give my friend all the kudos for it, she took in stride, she was like “No, this is not my real hair, it’s fake, it’s called extensions.” She went and she explained it to her. But then, that professor, after she realized she was wrong for it like, of course, that didn’t go uncorrected she came back to my friend and said “I’m sorry my question came off rude but I don’t know, I don’t know how to ask you certain things cause I’ve never experienced and I’ve never been around people of color before. So, I took from that, as rude as the questions come off… some of them come off real, real derogatory, a lot of them don’t know better and there’s a thin line between ignorance and offensiveness.

38:06  P9  Well, last week we had an experience… I don’t feel comfortable in this class anymore because I am one of like three black people in the class and we were talking about slavery. And, I guess like because they don’t have any experience with the topic they tried to make a joke about it, they made a lot jokes and the professor even made a joke about it. Like when he was younger he tied his brother to a tree with some of the binding cord. Or like when the movie 12 Years a Slave you should watch Netflix and chill… it was really bad and I felt super uncomfortable and I was really angry. It was bad.

38:47  F  Was there any way for you to express that anger? Who did you tell about this?

39:03  P9  I told my roommate. I was like “You wouldn’t believe what they were talking about in class”. I really don’t feel like part of the class anymore. I mean, I try… like I used to try and talk to the person next to me but now I don’t want to talk to anybody.

39:23  F  Is there anybody, and you can say there isn’t anybody, is there anybody that you feel that you could talk to that could talk to the professor.

39:34  P9  He’s not a bad professor it’s just that he said something bad and really inappropriate.

39:43  F  But, you don’t feel like there’s anyone that you can go to talk about these kinds of things.

39:47  P9  I was going to talk to one of my counselors about it (Facilitator—but you didn’t). I haven’t had time yet. (Facilitator—so this was real recent). Yeah.
Content Analysis: Coding

• Our codes:
Content Analysis: Axial Coding

• After open-coding, categories are joined by making connections between categories. Connections are based on conditions, context, actions/interactions, consequences

• Definitions
  • Phenomena: Central idea
  • Context: Set of conditions where activities, actions, etc. occurred
  • Consequences: Outcomes related to other actions/interactions
Content Analysis: Axial Coding

- Axial coding makes connections between categories and its sub-categories
- Focus: Specifying the phenomena in terms of the condition that creates it
### Content Analysis: Axial Coding

<table>
<thead>
<tr>
<th>Time</th>
<th>Participant</th>
<th>Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>40:00</td>
<td>P10</td>
<td>I just want to add that I sometimes have questions like that but I don’t want to come off as rude. But, I definitely have questions like that.</td>
</tr>
<tr>
<td>40:15</td>
<td>P4</td>
<td>But, if you have questions like that, feel free to ask... if you feel like it’s going to be rude just say “I don’t mean to be rude, but...” One of my personal experiences, I actually sat down with a bunch of white people and said “I know you’re all from one of these cities that I don’t know how to pronounce, I know there aren’t a lot of black people out there, ask me anything you want.” And, they had a lot of questions</td>
</tr>
<tr>
<td>40:46</td>
<td>F</td>
<td>What was the first question</td>
</tr>
<tr>
<td>40:48</td>
<td>P4</td>
<td>Why doesn’t your hair fall when it gets wet... why does it stay up... why does it stay curly. (Facilitator—more about hair). Yeah, hair’s a big thing... it’s a big thing. The second question was “Why does your hair curl?” I’m like...</td>
</tr>
<tr>
<td>41:15</td>
<td>P11</td>
<td>I think asking these questions in this environment, there’s no excuse for that, I mean you’re trying to promote education, especially from a professor, if you don’t know it, look it up. You got your PhD by doing research. You want to ask us a question...like I had a professor that emailed me and wanted to meet ten minutes before class. She wanted to talk about some stuff before we got to class. She pre-warned me that she wanted to talk to me... she asked me if I would be OK talking about this issue. And, I know that’s a professional way to go about it. However, calling someone out in class, especially shit about slavery, I would have knocked that professor out. That would have been no question at all. But, the thing is in this environment is you cannot test a faculty member without going the full extent. I just brought one, two of them in the last year all the way up to the provost’s office. There’s no reason a student should have to go through all those letters, all that time to bring a faculty member that you really feel that wronged you that far, cause how many students really go that far, not many</td>
</tr>
<tr>
<td>42:16</td>
<td>F</td>
<td>But you understand that now as a senior. You’re a freshman, right? (To P9, response—yeah). As a freshman, it’s just not being sure what to do.</td>
</tr>
<tr>
<td>42:24</td>
<td>P9</td>
<td>I wasn’t sure. I was going to email the professor after and tell him I wasn’t comfortable but then I felt like... I didn’t know what would happen. I don’t know. I’ve talked to him one-on-one and he seems like a good guy and maybe he didn’t realize it was really inappropriate.</td>
</tr>
</tbody>
</table>
Content Analysis: Axial Coding

- Our connections:
Content Analysis: Selective Coding

• Similar to axial coding but done at a higher, more abstract level. Process of selecting a core category and relating it to other categories.

• Definitions
  • Core category: Central phenomena that integrates all other categories
  • Story: A descriptive story about the central phenomena
  • Story line: The conceptualization of the story
Content Analysis: Tips

• Whenever possible have two or more people code the data. This supports the reliability and validity of your analysis

• Take breaks! This is tough work!

• Start with direct/clear statements to theme. This can create momentum

• Someone wants the report fast? Select a random sample of the data to a size you can deal with
Content Analysis: Cautions

• Avoid tendency to place too much importance on highly positive or negative comments unless they are representative.

• Do not be afraid to modify your theory based on the data.

• You may feel a certain theme is vitally important. But, if only one or two data points apply to that theme, you may be allowing your biases to effect your analysis.
Analysis Tools
Analysis Tools

• Excel
  • Not designed for textual analysis but ability to organize data increases utility

• QDA Miner Lite
  • Free version of QDA Miner

• Other Tools Discussion
  • NVivo
  • ATLAS.ti
  • Microsoft Access
  • Additional Options
Analysis Tools
Microsoft Excel
Analysis Tools: Excel

• When to use
  • Number of responses is small (300 or less)
  • Responses to be analyzed tend to be very short (for Excel 2010 and higher the character limit is 32,767 per cell. That’s about 10 pages!)
  • As IR professionals, Excel will most likely be sufficient for teacher evaluations
Analysis Tools: Excel

• Benefits
  • Familiar Interface
  • Data sorting ability
  • Ability to easily add sub-codes
  • Derivation of statistics
  • Charting/graphing easy
Analysis Tools: Excel

• Practical Process
  • Step One: Know your data
  • Step Two: Identify key words that are possible themes
  • Step Three: Clean the data
  • Step Four: Begin coding process
  • Step Five: Review codes
  • Step Six: Combine where needed
Excel Demonstration And Exercise

Let’s Code Some Data!
Analysis Tools

QDA Miner Lite
Analysis Tools: QDA Miner Lite

• When to use
  • Long passages of data
    • Interviews
    • Focus Groups
    • Documents

• More complex coding
  • Passages can apply to multiple themes
Analysis Tools: QDA Miner Lite

• Benefits
  • Can import documents from multiple sources (text, rtf, pdf, Excel, Access, CSV, tab delimited)
  • Can import from other qualitative software
QDA Miner Lite: Data Import

1. Open the software and select “Create a new project”.

2. Select “Import from existing data file”.

3. Select your data file and click “Open”.

4. Name your project and click “Save”.

5. Confirm that you are importing the correct data and click “Import”. You can also select “Preview” to see if you are importing the correct data.
QDA Miner Lite: User Interface

The “Documents” tabs display the data fields that can be coded. The case for the variable you are viewing is displayed in the box below.

“Cases” represents your data rows.

“Variables” represents columns. If it is a column that can be coded, QDA will call it a “Document” variable type.

If you have started coding, your “Codes” are displayed here.
Here is where you create your codes. This is where your “Knowing the data” step is important. Have your themes in mind.

Click on the green pen to assign a code. You can create a new code by selecting the pen with the plus sign next to it.
QDA Miner Lite: Data Coding/Option Two

1. Specify the field that you want to search in

2. Enter your keyword(s) that you want to search for
**QDA Miner Lite: Data Coding/Option Two**

3. All the cases that have your keyword will be returned. To assign the code, select the green pen.
QDA Miner Lite: Analysis

1. [Image of QDA Miner Lite interface showing cases and documents]

2. [Image of Coding Frequency window with detailed code analysis]

Gates Millennium Scholars
QDA Miner Lite: Data Export

1. Choose what you would like to export

2. When you export, the data will open in Excel
QDA Miner Lite: Resources

• Download:  

• Additional Training Resources:  
  http://provalisresearch.com/resources/
QDA Miner Lite Demonstration
Analysis Tools

Additional Options
Analysis Tools: Additional Options

• There are a growing number of options available for qualitative analysis. A small sample includes:
  
  • NVivo
    • One of the original qualitative analysis programs (originally NUD*IST)
    • Costly
    • Learning Curve
Analysis Tools: Additional Options

• ATLAS.ti
  • Provides many powerful analysis tools
  • Costly
  • Learning curve can be steep but thought not to be as steep as NVivo

• Microsoft Access
  • Widely available
  • Comment fields are easier to read
  • Issues can occur related to linking tables
Analysis Tools: Additional Options

• HyperRESEARCH
• MAXQDA
• Qiqqa
• Quirkos
• Xsight
• Dedoose
• webQDA
• f4analyze
• Annotations
• Saturate
• Raven’s Eye
• Focuss On
Presenting Qualitative Data
Presenting Qualitative Data

• Deepen the Understanding of Your Themes

• Further reduce data to what your audience can manage

• To the greatest extent possible, quantify the data (either visually or directly)

• Show connections between themes
Presenting Qualitative Data: Concept Maps

Notice the line weights. This is an efficient way to let your audience know the comparative importance of the themes.

- **GMS Engagement/Outreach:** (n=83, 34.7%)
  (e.g. Networking with Scholars, telling others of the program)

- **Confidence/Motivation:** (n=52, 21.8%)
  (e.g. Belief in abilities, motivation to achieve)

- **Academic Strategies/Motivation:** (n=46, 19.3%)
  (e.g. Meeting with the professors, studying, applying self in-class)

- **Campus Engagement:** (n=31, 13.0%)
  (e.g. Becoming more involved on campus)

- **Service to Others:** (n=22, 9.1%)
  (e.g. Engaging in more community service, helping others)

- **Grants Management:** (n=5, 2.1%)
  (e.g. Talking to financial aid counselors)

How Scholars will apply information from the conference
Presenting Qualitative Data: Illustrative Quotes

- The use of illustrative quotes further explains data meaning to your audience. These can increase the depth and impact of reports. Examples from the concept map:

  - GMS Engagement/Outreach: *Experiencing the incredible Leadership Conference and meeting the Gates Family, I am motivated to contact current high school seniors in my high school back home and help them continue on the process of applying for the Gates Millennium Scholarship and many others. I want qualified and deserving seniors to also experience what I am so blessed to be a part of, the Gates Millennium Scholarship.*

  - Confidence/Motivation: *Coming back to my campus, I felt myself change with the acceptance in college. The conference helped remind me why I am in college and that I am not alone. I have been more involved in school activities and with many of my peers as well. Thank you so much for this great opportunity and reminder that we are all here to help change the world and everyone and everything that is in the world.*
Presenting Qualitative Data: Illustrative Quotes

- **Academic Strategies/Motivation:** *I will do my best to do well in my courses, because this scholarship is a blessing that I should not take for granted. This weekend inspired me to work harder to reach success for myself and for my community.*

- **Campus Engagement:** *The UNCF meeting was very inspirational. My school has a very weak BSU presence due to the poor organization and lack of planning for the events. As a new member of BSU I felt as if I needed to change the club in a few ways throughout the whole UNCF meeting. Directly after the UNCF meeting I wrote down several notes that I can use to improve the BSU club on my campus. So returning to my campus I will make a point to seek out the leaders of the club and give them my input and offer them my help and support.*
Presenting Qualitative Data: Illustrative Quotes

• Quantification can be listed in a table

<table>
<thead>
<tr>
<th>Theme</th>
<th>N</th>
<th>Representative Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased Knowledge</td>
<td>21</td>
<td>For me personally, <strong>GSI helped me realize where I went wrong and areas I could improve upon on my graduate school applications. The panel gave a lot of tips and advice on what a strong and competitive PhD application should consist of and that information was very valuable!</strong> Also, seeing representatives from schools who work in admissions being so candid and personable was comforting for applicants.</td>
</tr>
<tr>
<td>Motivation</td>
<td>13</td>
<td>I am already pursuing a graduate degree but it made me realize that there are more opportunities out there than I thought. <strong>There are people out there who are willing to help if I asked. I am more confident about applying to my post doc now than ever before.</strong></td>
</tr>
<tr>
<td>Networking</td>
<td>3</td>
<td>… However (big however), <strong>the connections I made personally with the rep from UNC and Stanford were fantastic</strong> since I was able to talk with them over lunch or outside the fair and inquire about the process etc., since I had looked heavily into those schools already.</td>
</tr>
<tr>
<td>Not Helpful</td>
<td>4</td>
<td>As a student currently in graduate school, <strong>I failed to find the GSI particularly helpful.</strong></td>
</tr>
</tbody>
</table>
Presenting Qualitative Data: Charts

- Most Likert scale questions are qualitative data. This can be presented in a bar chart or other appropriate charts.

![Bar chart showing responses to qualitative questions]

- Increasing understanding of STEM related career pathways: 45.2% Very Effective, 28.0% Very to Moderately Effective
- Providing ideas navigating first-year of college: 53.8% Very Effective, 24.7% Very to Moderately Effective
- Providing information on being successful in internships: 53.8% Very Effective, 23.7% Very to Moderately Effective
Presenting Qualitative Data: Network Diagram

- Network diagrams join connected themes. This is an example of axial coding.
Questions?
Contact

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