Analysis of Qualitative Data

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Regardless of the chosen paradigm or methodology, data analysis is the process of *making meaning* from collected data. Qualitative researchers continue to collect data until they reach a point of **data saturation**. Data saturation occurs when the researcher is no longer hearing or seeing new information. Unlike quantitative researchers who wait until the end of the study to analyze their data, qualitative researchers usually analyze their data throughout their study.

Bogdan and Biklen (1982) define qualitative data analysis as "working with data, organizing it, breaking it into manageable units, synthesizing it, searching for patterns, discovering what is important and what is to be learned, and deciding what you will tell others" (p. 145). Qualitative researchers tend to use inductive analysis of data, meaning that the critical themes emerge out of the data (Patton, 1990). Qualitative analysis requires some creativity, for the challenge is to place the raw data into logical, meaningful categories; to examine them in a holistic fashion; and to find a way to communicate this interpretation to others.

Sitting down to organize a pile of raw data can be a daunting task. It can involve literally hundreds of pages of interview transcripts, field notes and documents. The mechanics of handling large quantities of qualitative data

can range from physically sorting and storing slips of paper to using one of the several computer software programs such as AtlasTi or NVivo, which were designed to aid in this task. However, it is a good idea to read through *all* of the data to get a general *sense* of the information prior to conducting the analyses with the aid of the qualitative software of your choice. There is also a pretty steep learning curve to effectively use these software programs. You may wish to consider consulting with a qualitative software coach, or obtaining a workshop to help with this process.

Most qualitative studies depend on responses to interview questions. As each individual responds to interview questions, the responses can be analyzed and compared for relevance to the research questions. It is also helpful to have an expert review the data independently. Attention should be given to the quality of the database. For instance, individuals may provide irrelevant information (outside the scope of the study). Once the data are organized and entered into a computer file for analysis, the next step is to conduct a statistical analysis to explore the contours of the data.

Analysis begins with identification of the themes emerging from the raw data, a process sometimes referred to as "open coding" (Strauss and Corbin, 1990). You can only classify something as a theme when it cuts across a preponderance of the data. During open coding you identify and tentatively name the conceptual categories into which the phenomena observed will be grouped. The goal is to create descriptive, multi-dimensional categories which form a preliminary framework for analysis. Words, phrases or events that appear to be similar should be grouped into the same category. These categories may be gradually modified or replaced during the subsequent stages of analysis that follow.

As the raw data are broken down into manageable chunks, it is helpful to devise an *audit trail*—that is, a scheme for identifying these data chunks according to their speaker and context. The particular identifiers developed may or may not be used in the research report, but speakers are typically referred to in a manner that provides a sense of context (see, for example, Brown, 1996; Duffee and Aikenhead, 1992; and Sours, 1997). If you have 12 teachers and 12 administrators in a study, you can identify teachers as T1, T2,…T12. and administrators as A1, A 2, …A 12. Then, if A4 makes a comment worth citing, you could identify that comment and the source with the chosen code. Qualitative research reports are usually characterized by the use of *voice* in the text; that is, participant quotes that illustrate the themes being described.

The next stage of analysis involves re-examination of the categories identified to determine how they are linked, a complex process called *axial coding* (Strauss and Corbin, 1990). The discrete categories identified in open coding are compared and combined in new ways as the researcher begins to assemble the *big picture*. The purpose of coding is to not only describe but, more importantly, to acquire new understanding of a phenomenon of interest. Therefore, causal events contributing to the phenomenon; descriptive details of the phenomenon itself; and the ramifications of the phenomenon under study should be identified and explored. During axial coding you build a conceptual model and determine whether sufficient data exist to support that interpretation.

Finally, you translate the conceptual model into the story line that will be read by others. Ideally, the research report will be a rich, tightly woven

account that "closely approximates the reality it represents" (Strauss and Corbin, 1990, p. 57).

Although the stages of analysis are described here in a linear fashion, in practice they may occur simultaneously and repeatedly. During axial coding you may determine that the initial categories identified needs to be revised, leading to re-examination of the raw data. Additional data collection may occur at any point if you uncover gaps in the data. As stated earlier, informal analysis begins with initial data collection, and can and should guide subsequent data collection. For a more detailed, yet very understandable description of the analysis process, see Simpson and Tuson (1995).

It is also helpful to provide visual data displays. This can be accomplished through:

1. Tables that include relevant personal or demographic information for each participant.
2. Data comparison tables between different sources of data.
3. Hierarchical tree diagram that represents themes and their connections.
4. Figures that show connections between themes.

When the data are interpreted (usually in chapter 5 of a dissertation), make sure the data are construed in view of past research, and explain how the findings both support and refute prior studies.

The Product of Qualitative Data Analysis

In their classic text *Discovery of Grounded Theory,* Glaser and Strauss (1967) described what they believed to be the primary goal of qualitative research: the generation of theory, rather than theory testing or mere description. According to this view, theory is not a "perfected product but an

ever-developing entity" or process (p. 32). Glaser and Strauss claimed that one of the requisite properties of grounded theory is that it be "sufficiently general to be applicable to a multitude of diverse situations within the substantive area" (p. 237).

The grounded theory approach described by Glaser and Strauss (1967) represents a somewhat extreme form of naturalistic inquiry. It is not necessary to insist that the product of qualitative inquiry be a theory that will apply to a *multitude of diverse situations*. Examples of a more flexible approach to qualitative inquiry can be gained from a number of sources. For example, both Patton (1990) and Guba (1978) posit that naturalistic inquiry is *always a matter of degree* of the extent to which the researcher influences responses and imposes categories on the data. The *purer* the naturalistic inquiry, the less reduction of the data into categories is needed.

Figure 1 illustrates one interpretation of the relationship between description, verification, and generation of theory—or, in this case, the development of what Cronbach (1975) calls *working hypotheses*, which suggests a more tractable form of analysis than the word *theory*. According to this interpretation, a researcher may move between points on the description/ verification continuum during analysis, but the final product will fall on one particular point, depending on the degree to which it is naturalistic.

Figure 1

Court (2005) presents an interesting data analysis exercise to enable the novice qualitative researcher rich insights into how to carefully conduct qualitative research and uncover cultural meaning, build theory and open new directions for further study. The exercise is called: *What a load of garbage*! It can be found at: http://findarticles.com/p/articles/mi_hb3325/is_1_9/ai_n29182823/

In this exercise, participants examine recycling items in the 21st century through the perspective of an anthropologist in the year 31th century.

The novice qualitative researcher should also check out: http://www.sagepub.com/upm-data/30484_Chapter1.pdf

References

Bogdan, R. C., & Biklen, S. K. (1982). *Qualitative research for education: An introduction to theory and methods*. Boston: Allyn and Bacon, Inc.

Brown, D. C. (1996). Why ask why: patterns and themes of causal attribution in the workplace. *Journal of Industrial Teacher Education*, 33(4), 47-65.

Court, M. (2005). *What a load of garbage!* Academic Exchange Quarterly, Spring, 2005

Cronbach, L. J. (1975, February). Beyond the two disciplines of scientific psychology. American Psychologist, 30(2), 116-127.

Duffee, L., & Aikenhead, G. (1992). Curriculum change, student evaluation, and teacher practical knowledge. *Science Education*, *76*(5), 493-506.

Eisner, E. W. (1991). *The enlightened eye: Qualitative inquiry and the enhancement of educational practice*. New York, NY: Macmillan Publishing Company.

Gagel, C. (1997). Literacy and technology: reflections and insights for technological literacy.

Lewis, T. (1997). Impact of technology on work and jobs in the printing industry - implications for

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Beverly Hills, CA: Sage Publications, Inc.

Lofland, J., & Lofland, L. H. (1984). Analyzing social settings. Belmont, CA: Wadsworth Publishing Company, Inc.

Neuman, W.L. (2003). Social Research Methods: Qualitative and Quantitative Approaches (Fourth ed.). Boston, MA: Allyn and Bacon.

Patton, M. Q. (1990). Qualitative Evaluation and Research Methods (2nd ed.). Newbury Park, CA: Sage Publications, Inc.

Schatzman, L., & Strauss, A. L. (1973). Field research. Englewood Cliffs, N.J.: Prentice-Hall, Inc.

Simon, M. K. (2011). Dissertation and scholarly research: Recipes for success (2011 ed.). Lexington, KY: Dissertation Success, LLC. http://dissertationrecipes.com/

Simpson, M., & Tuson, J. (1995). *Using observations in small-scale research: A beginner's guide*. Edinburgh: Scottish Council for Research in Education. ERIC Document 394991.

Smith, J. K., & Heshusius, L. (1986, January). Closing down the conversation: The end of the quantitative-qualitative debate among educational inquirers. *Educational Researcher*, *15*(1), 4-12.

Sours, J. S. (1997). *A descriptive analysis of technical education learning styles*. University of Arkansas: Unpublished doctoral dissertation.

Stake, R. E. (1978, February). The case study method in social inquiry. *Educational Researcher*, *7*(2), 5-8.

Stallings, W. M. (1995, April). Confessions of a quantitative educational researcher trying to teach qualitative research. *Educational Researcher*, *24*(3), 31-32.

Strauss, A., & Corbin, J. (1990). *Basics of qualitative research: Grounded theory procedures and techniques*. Newbury Park, CA: Sage Publications, inc.