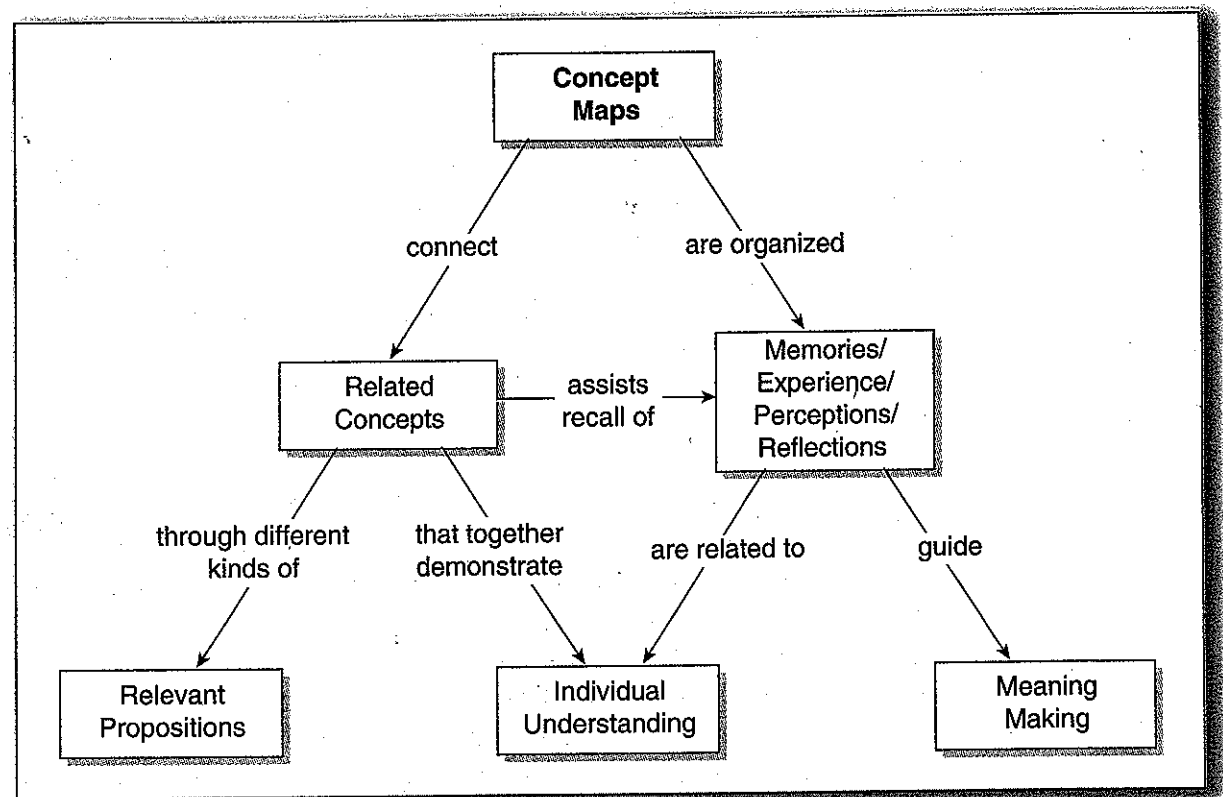


## Using Concept Maps to Gather Data

Concept maps can help to organize research projects, reduce data, analyze themes, and present findings (Daley, 2004). They can also be used as a means to collect data (see Figure 3.4). Concept mapping used as a data-collection method facilitates a global understanding of the topic under consideration. Because it is less common to collect data through visual representations, mapping may uniquely demonstrate the way in which people connect knowledge and experience. Within the fields of science education, engineering, mathematics, nursing, psychology, statistics, and medicine, concept maps have been the subject of a number of studies (Wheeldon, 2010). In education, they have been shown to be more effective in assisting knowledge retention than attending class lectures, reading, and participating in class discussion (Poole & Davis, 2006).

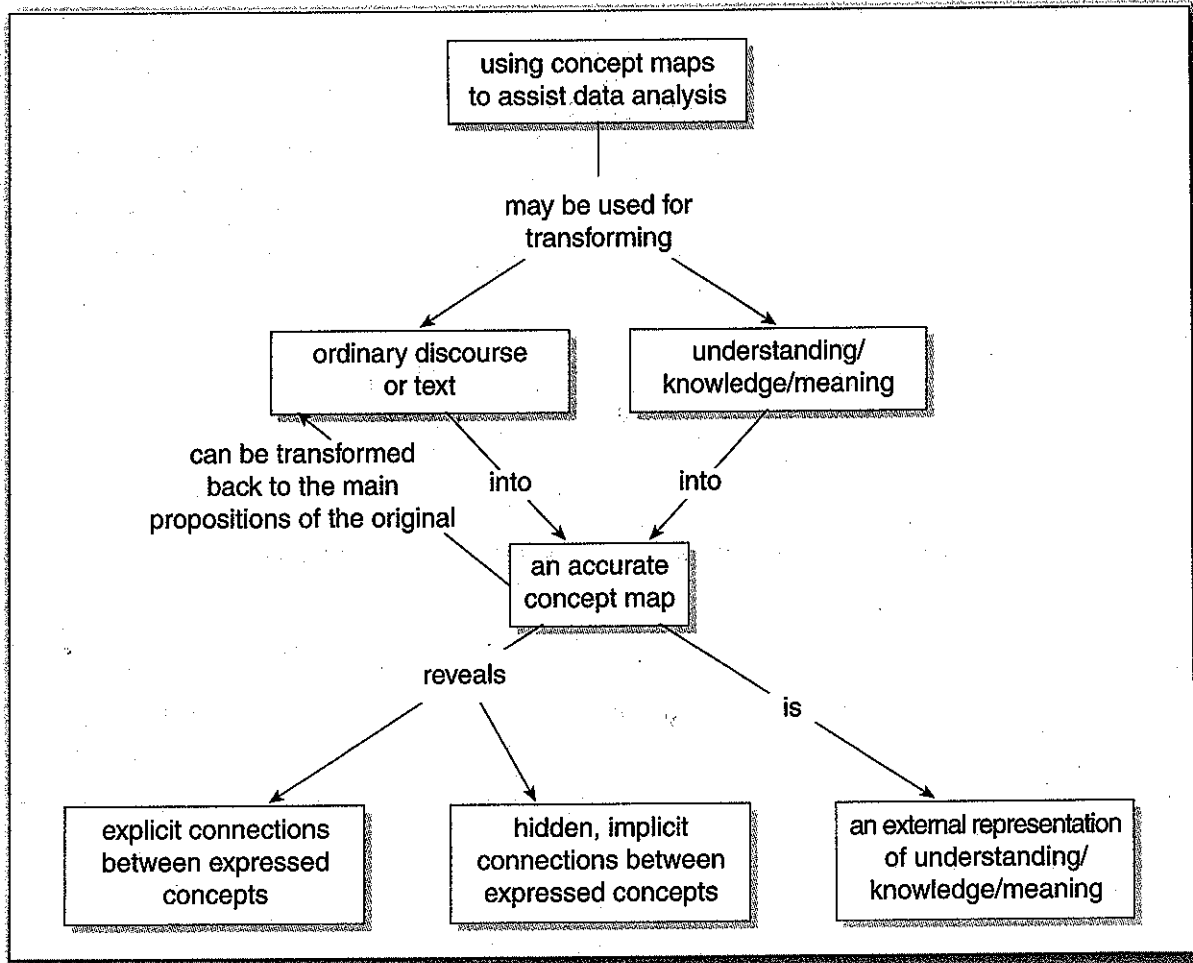
One approach is to use maps in place of other sorts of pre/post data-collection strategies. In one study, student-constructed pre- and postlaboratory concept

Figure 3.4 Concept Map of Data Collection



Source: Wheeldon (2010, p. 90).

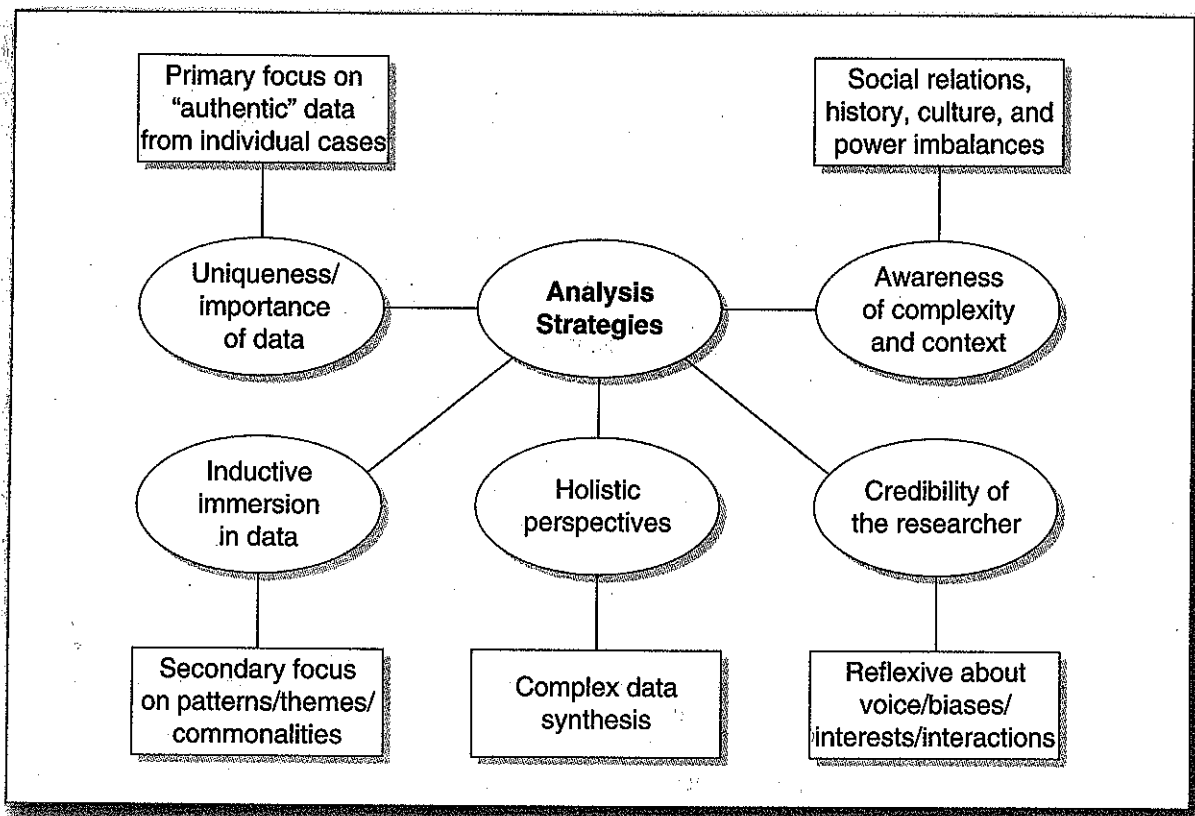
Figure 3.5 Concept Mapping Data Analysis



refinements have been proposed since (Åhlberg & Ahoranta, 2008; Besterfield-Sacre et al., 2004), Figure 3.6 provides a traditional example of how a concept map might be scored based on its structure.

In addition to individual concepts and labels that make clear propositions, the example in Figure 3.6 relies on Novak's approach to map measurement. Because this approach views cross-links as an important part of meaningful learning, concept maps that include cross-links receive higher scores than maps that include other kinds of links between concepts. According to Åhlberg's (1993) theory of high-quality learning, it is the quality of cross-links that matters, not the existence or total number of cross-links. Instead of attaching different weights to concepts, cross-links, or examples that may appear arbitrary, Åhlberg's approach requires that all relevant links between concepts be treated as equal in value. Using this approach, it is the

Figure 4.3 Data-Analysis-Stage Considerations in Qualitative Research

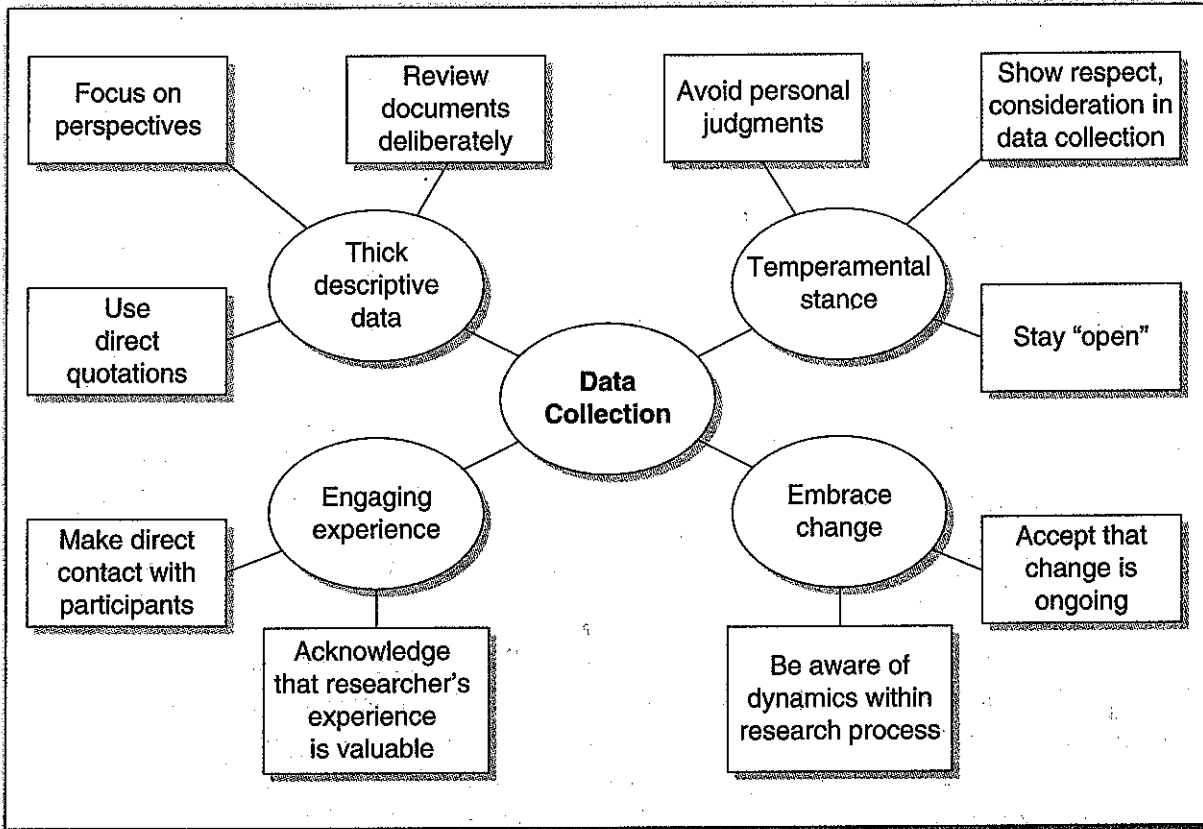


Faubert (2009) have suggested mind maps may offer a unique visual means to ground research in participants' knowledge and demonstrate clearly how themes within the data are developed. In this way, maps can promote more transparency in the research process and show how qualitative researchers identify themes, connections, and findings. For now, let's examine in general terms how mind maps can be used within qualitative research.

### MIND MAPS AND QUALITATIVE STUDY: EXISTING STUDIES AND ENGAGING PARTICIPANTS

There are a number of characteristics of qualitative research. A common starting point is a focus on the gathering, analysis, interpretation, and presentation of narrative information (Teddlie & Tashakkori, 2009, p. 6). This has often resulted in data collection that is structured through interviews. Kvale (1996, p. 88) described seven stages of interview investigations, shown in Figure 4.4.

Figure 4.2 Data-Collection-Stage Considerations in Qualitative Research



which people try to understand others by recognizing that we each have our own point of view shaped by culture and societal forces (Burger, 1977). This suggests important challenges to traditional notions of objectivity, neutrality, and the separateness of the “knower and the known” (Teddlie & Tasakkori, 2009, p. 90). Garfinkel (1967) also considered the importance of understanding how people within social situations guide and are guided by the nature of these interactions. This understanding has led qualitative researchers to acknowledge the importance of the role they themselves play within their own research (Guba & Lincoln, 1989).

In recent years, there has been a move to integrate and address this limitation through *reflexivity* (Willig, 2001). Reflexivity requires an awareness of the improbability of the researcher’s remaining neutral, impartial, and unconnected to his or her subject (Nightingale & Cromby, 1999, p. 228) and a willingness to undergo a process of internal reflection. It may also both entail that researchers acknowledge the reasons for their selection of a phenomenon to study and be extremely transparent about the process they use to interpret their data (Charmaz, 2006). Wheelon and