An example may help. As noted earlier, organizations are very concerned with innovation, idea generation, and internal communications. In response to this, many designers are suggesting spaces to enhance informal interactions. Placed in the terms stated above, the hypothesis might look like this:

Design hypothesis.

- Informal meeting areas scattered throughout the workspace will lead to more interactions among workers, which, in turn, will generate more conversations and ideas of value to work. The underlying logic and basis for this hypothesis comes from numerous sources, many of which are intuitive rather than based on previous research. Reasons given for the value of informal areas include: people are more likely to join in a conversation if it is nearby, workers like to take a break from their work and need a different kind of place, informal spaces aid teamwork and spontaneous brainstorming and problem solving.

Relevant features and attributes of the environment.

- Informal meeting spaces in many organizations include the following features and their intended purpose: comfortable seating to encourage lingering, location in open areas adjacent to private workspaces to encourage casual teaming, white boards for discussions, good visual access into the spaces so others can see and hear what is going on and can spontaneously join in.

Expected outcomes.

- This component of design is usually not well articulated. However, to assess the impact of a design, the expected outcomes need to be clearly stated because these serve as measures of success. For instance, potential indicators of successful outcomes of informal team spaces might be increased use of the spaces, increases in the perceived value of the space by users, more frequent interactions among workers, greater generation and flow of ideas, increased knowledge of what is going on in the office, and an increased sense of belonging.

Setting performance goals.

- The design team and the organization need to decide together what degree of improvement they are working toward. Does even the slightest increase in the expected outcomes matter? Or should you aim for a 10 percent improvement, a 25 percent improvement? Setting performance guidelines will help in the evaluation of the research data. Scientific research uses statistical significance as proof of success. However, this may not be as useful to an organ-

ization. The degree and direction of change over time may be more relevant to organizational performance. Very few performance metrics yield statistical analyses to judge whether organizational changes are "working." Instead, managers look at the overall profile of outcomes and make a decision about new policies or procedures based on this.

Once these steps have been accomplished, it is much easier to identify the specific measures and methods to use in gathering data to test the design hypothesis.

Measurement Issues

Key measurement issues are criteria for selecting metrics, the use of control groups, the timing of the measurement process, and deciding how data will be used. Each of these topics is discussed below. The specific measures chosen should meet the following criteria:

- ***Relevancy:*** addresses the mission, goals, and objectives of the business unit and can be used in strategic planning.
- ***Reliability:*** produces consistent results when applied again.
- ***Validity:*** a good indicator of the outcome of interest (it measures what it purports to measure).
- ***Efficiency:*** using the minimal set of measures needed to do the job; enables conclusions to be drawn from the entire data set.
- ***Discriminating:*** small changes will be noticed and are meaningful (many workplace effects are likely to be subtle and may show small changes over time).
- ***Balanced:*** the metrics will include both quantitative and qualitative measures; direct and indirect measures. *Quantitative* data can be translated into numbers and used for statistical analyses. *Qualitative* data, on the other hand, often include interviews and results from focus groups that are more difficult to translate into numeric scales. Nonetheless, such data provide a rich understanding of the context and processes that make it easier to interpret quantitative results. Further, qualitative approaches are often used as a means to develop items for surveys and structured interviews or other data gathering mechanisms. The second aspect of a balanced family of measures is direct