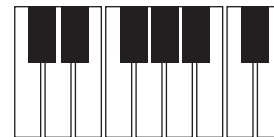


Tickling the Ivory (Towers)

Insight into Research



Implementing the Research Question

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"Tickling the Ivory (Towers): Insight into Research" will give practicing school library media specialists insight into the world of research, with some tips and activities to bring active academic research and practice-based action research closer together. Throughout, the column pairs definitions of research terms with examples linked back to SLMR articles and other education journals.

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Once a researcher chooses the question to research, the next step is to decide how to go about doing the study. Usually the research design is apparent from the question to be studied. If the best way to answer the research question is to look at facts and numbers for a large number of people, then the research will be quantitative. This type of research is conducted by the use of questionnaires, surveys, or other numeric data, which are collected under stringent conditions, analyzed with statistical tests, and reported. Sturm's quantitative research study of the reading preferences for North Carolina children used two thousand responses to a reading interest survey, as shown in figure 1.

If however, the research question is best answered by a focused look at a limited number of cases or situations, then the research is qualitative. Qualitative research data are derived from interviews, observations, or in-depth case studies. Wolf, Bush, and Saye used one class of eighth graders for their qualitative study on the Big Six Information Skills (figure 2). A simplistic definition of the difference between quantitative and qualitative research is that quantitative research data are numbers, and qualitative research data are words. It is

possible for a study to have both quantitative and qualitative components.

Numbers or words

The first difference in these two types of research may be the number of participants included in the study, typically called the "sample." Figure 3 shows a description of the research sample for a quantitative study.

The size of the sample is described in research reports as "N." In the figure 3, N = 265. However, a further reading shows that the results were subdivided by grade. For fourth graders, N=177; for eighth graders, N=88. Although the researcher does not tell us that the participants were selected randomly, we do know that the N was determined by the number

Figure 1

Brian W. Sturm, "The Information and Reading Preferences of North Carolina Children"

Children's reading and information preferences have been a source of study for more than a century. This study is meant to add to this growing understanding of children's preferences. Two thousand responses to an open-ended survey conducted by the State Library of North Carolina were analyzed. (SLMR 6, <www.ala.org/ala/aasl/aaslpubsandjournals/slmrb/slmrcontents/volume62003/readingpreferences.htm>. Accessed 20 Jan. 2004.)

Figure 2

Sara Wolf, Thomas Brush, and John Saye, "The Big Six Information Skills As a Metacognitive Scaffold: A Case Study"

This study examines the effect of Big6 on a class of eighth-grade students asked to research and write about events surrounding the African-American Civil Rights movement. (SLMR 6, <www.ala.org/ala/aasl/aaslpubsandjournals/slmrb/slmrcontents/volume62003/bigsixinformation.htm>. Accessed 20 Jan. 2004.)

of students who received parental permission. In quantitative research, the sample, represented by N , should have the same characteristics as the population, which in this case is the total number of fourth and eighth graders in the school. If the sample was selected randomly, then there is a greater chance that the representation is accurate and not biased. The researcher does indicate that, after the students were identified, she looked to see the number of boys versus girls and found that number to be equal. This will be important if future research shows that information overload is more prevalent in girls than in boys, or the reverse. By noting that the gender distribution is equal, the researcher ensures that her research will be viewed as valid regardless of future findings.

The above research found some important information about this group of fourth and eighth graders, but we don't know much about the specific information struggles of each child. On the other hand, quantitative research conducted with interviews or in-depth surveys tells a lot about a very small number of cases.

Figure 4, from Gordon's study on tenth-grade research, illustrates the qualitative research design.

In this case, ten ($N=10$) tenth-grade biology students were chosen. Generally, in the quantitative research, such as the Akin study in figure 3, a broad-based sampling technique is used to choose participants. However, in most qualitative studies, such as this one, with only ten participants, the researcher wanted to choose students with very specific attributes. She used *purposive sampling*, intentionally choosing students who had the criteria she wanted. If this were a random sample, the criteria may have been noted about each student but would not have been used to choose the participants.

One of the reasons that qualitative research uses just a few participants is that the amount of data gathered on each participant is tremendous. Think of watching tenth graders do

research, and writing down their every move, question, and general behavior. Imagine how much paper is generated in transcribing every word said in a half-hour interview. Unlike quantitative research, where the data are mathematical, in qualitative research, every word, observation, and description must be read, reread, and then grouped to find general themes. Qualitative research with hundreds of participants would take an enormous amount of time and effort.

There are pros and cons for using each type of research. Quantitative research can sometimes be generalized to include the entire population from which the sample is drawn. For instance, in Akin's quantitative example, the population may have been the fourth and eighth graders in the school, or even the fourth and eighth graders in Texas. If a large enough percentage of the fourth and eighth graders in Texas had been surveyed, then it could be said that the results could apply to all students of that age in Texas. The results could not apply to all of the fourth and eighth graders in the United States, no matter how large the sample, because the population only included students from Texas. Other states would have had to be included to make them part of the study population.

The studies on the academic impact of school library media centers conducted by Lance are quantitative studies based on individual states. At its Web site, <www.lrs.org>, the Library Research Service reports on data from current states. The population of each of these samples is based on one state. Replication and adaptation of the studies in other states strengthens the original findings, and adds new proof for the impact of school library media center programs.

However, in Gordon's qualitative study, the findings for only ten students probably could not even be generalized to apply to the tenth graders in that one school. This type of result is common when the research participants are not chosen randomly. Such findings are not unusual; qualitative studies are very rarely

Figure 3

Lynn Akin, "Information Overload and Children: A Survey of Texas Elementary School Students"

Two hundred sixty-five fourth and eighth graders in two different Texas public elementary schools participated in a written survey involving information overload. The 177 fourth graders and 88 eighth graders took part after receiving parental permission. A gender distribution shows an almost equal representation. (SLMQ Online 1, <www.ala.org/ala/aasl/aaslpubsandjournals/slmrb/slmrcontents/volume11998slmqo/akin.htm>. Accessed 20 Jan. 2004.

Figure 4

Carol A. Gordon, "The Effects of Concept Mapping on the Searching Behavior of Tenth-Grade Students"

"A qualitative study addressed the effect of concept mapping on the searching behavior of tenth-grade students engaged in research projects based on their instruction in a classroom-based genetics unit. The setting was an automated library of a private American school in Europe. Ten biology students were chosen by purposive sampling. Selection criteria, monitored by user profiles, included student age, computer experience, native language, grades, and test scores." (SLMR 3, <www.ala.org/aasl/SLMR/vol3/mapping/mapping.html>. Accessed 20 Jan. 2004.

generalizable. However, the researcher will know far more about those ten students than if she had surveyed hundreds of tenth graders. Some researchers refer to this type of research as "ethnographic," and use the term interchangeably with "qualitative," but it is more typical for researchers to define ethnography as just one type of qualitative research, usually investigating aspects of a culture.

The field of school library media service needs both qualitative and quantitative research. Both create new knowledge for the field, but in different and very important ways. We need to have findings that we can say apply to all students, but we also need to be able to back up those findings with in-depth research on individual students.

These first two columns have explained the development of the research question, and the design differences between quantitative and qualitative research. The third column will begin to look at how research results are reported in these two types of research. ●