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## Writing@CSU Writing Guide

# Understanding Generalizability and Transferability

In this chapter, we discuss generalizability, transferability, and the interrelationship between the two. We also explain how these two aspects of research operate in different methodologies, demonstrating how researchers may apply these concepts throughout the research process.

## Generalizability Overview

Generalizability is applied by researchers in an academic setting. It can be defined as the extension of research findings and conclusions from a study conducted on a sample population to the population at large. While the dependability of this extension is not absolute, it is statistically probable. Because sound generalizability requires data on large populations, quantitative research -- experimental for instance -- provides the best foundation for producing broad generalizability. The larger the sample population, the more one can generalize the results. For example, a comprehensive study of the role computers play in the writing process might reveal that it is statistically probable that students who do most of their composing on a computer will move chunks of text around more than students who do not compose on a computer.

## Transferability Overview

Transferability is applied by the *readers* of research. Although generalizability usually applies only to certain types of quantitative methods, transferability can apply in varying degrees to most types of research. Unlike generalizability,

transferability does not involve broad claims, but invites readers of research to make connections between elements of a study and their own experience. For instance, teachers at the high school level might selectively apply to their own classrooms results from a study demonstrating that heuristic writing exercises help students at the college level.

## Interrelationships

Generalizability and transferability are important elements of any research methodology, but they are not mutually exclusive: generalizability, to varying degrees, rests on the transferability of research findings. It is important for researchers to understand the implications of these twin aspects of research before designing a study. Researchers who intend to make a generalizable claim must carefully examine the variables involved in the study. Among these are the sample of the population used and the mechanisms behind formulating a causal model. Furthermore, if researchers desire to make the results of their study transferable to another context, they must keep a detailed account of the environment surrounding their research, and include a rich description of that environment in their final report. Armed with the knowledge that the sample population was large and varied, as well as with detailed information about the study itself, readers of research can more confidently generalize and transfer the findings to other situations.

## Generalizability

Generalizability is not only common to research, but to everyday life as well. In this section, we establish a practical working definition of generalizability as it is applied within and outside of academic research. We also define and consider three different types of generalizability and some of their probable applications. Finally, we discuss some of the possible shortcomings and limitations of generalizability that researchers must be aware of when constructing a study they hope will yield potentially generalizable results.

### Definition

In many ways, generalizability amounts to nothing more than making predictions based on a recurring experience. If something occurs frequently, we expect that it

will continue to do so in the future. Researchers use the same type of reasoning when generalizing about the findings of their studies. Once researchers have collected sufficient data to support a hypothesis, a premise regarding the behavior of that data can be formulated, making it generalizable to similar circumstances. Because of its foundation in probability, however, such a generalization cannot be regarded as conclusive or exhaustive.

While generalizability can occur in informal, nonacademic settings, it is usually applied only to certain research methods in academic studies. Quantitative methods allow some generalizability. Experimental research, for example, often produces generalizable results. However, such experimentation must be rigorous in order for generalizable results to be found.

### Example

An example of generalizability in everyday life involves driving. Operating an automobile in traffic requires that drivers make assumptions about the likely outcome of certain actions. When approaching an intersection where one driver is preparing to turn left, the driver going straight through the intersection assumes that the left-turning driver will yield the right of way before turning. The driver passing through the intersection applies this assumption cautiously, recognizing the possibility that the other driver might turn prematurely.

American drivers also generalize that everyone will drive on the right hand side of the road. Yet if we try to generalize this assumption to other settings, such as England, we will be making a potentially disastrous mistake. Thus, it is obvious that generalizing is necessary for forming coherent interpretations in many different situations, but we do not expect our generalizations to operate the same way in every circumstance. With enough evidence we can make predictions about human behavior, yet we must simultaneously recognize that our assumptions are based on statistical probability.

Consider this example of generalizable research in the field of English studies. A study on undergraduate instructor evaluations of composition instructors might reveal that there is a strong correlation between the grade students are expecting to earn in a course and whether they give their instructor high marks. The study

might discover that 95% of students who expect to receive a "C" or lower in their class give their instructor a rating of "average" or below. Therefore, there would be a high probability that future students expecting a "C" or lower would not give their instructor high marks. However, the results would not necessarily be conclusive. Some students might defy the trend. In addition, a number of different variables could also influence students' evaluations of an instructor, including instructor experience, class size, and relative interest in a particular subject. These variables -- and others -- would have to be addressed in order for the study to yield potentially valid results. However, even if virtually all variables were isolated, results of the study would not be 100% conclusive. At best, researchers can make educated predictions of future events or behaviors, not guarantee the prediction in every case. Thus, before generalizing, findings must be tested through rigorous experimentation, which enables researchers to confirm or reject the premises governing their data set.

## Considerations

There are three types of generalizability that interact to produce probabilistic models. All of them involve generalizing a treatment or measurement to a population outside of the original study. Researchers who wish to generalize their claims should try to apply all three forms to their research, or the strength of their claims will be weakened (Runkel & McGrath, 1972).

In one type of generalizability, researchers determine whether a specific treatment will produce the same results in different circumstances. To do this, they must decide if an aspect within the original environment, a factor beyond the treatment, generated the particular result. This will establish how flexibly the treatment adapts to new situations. Higher adaptability means that the treatment is generalizable to a greater variety of situations. For example, imagine that a new set of heuristic prewriting questions designed to encourage freshman college students to consider audience more fully works so well that the students write thoroughly developed rhetorical analyses of their target audiences. To responsibly generalize that this heuristic is effective, a researcher would need to test the same prewriting exercise

in a variety of educational settings at the college level, using different teachers, students, and environments. If the same positive results are produced, the treatment is generalizable.

A second form of generalizability focuses on measurements rather than treatments. For a result to be considered generalizable outside of the test group, it must produce the same results with different forms of measurement. In terms of the heuristic example above, the findings will be more generalizable if the same results are obtained when assessed "with questions having a slightly different wording, or when we use a six-point scale instead of a nine-point scale" (Runkel & McGrath, 1972, p.46).

A third type of generalizability concerns the subjects of the test situation. Although the results of an experiment may be internally valid, that is, applicable to the group tested, in many situations the results cannot be generalized beyond that particular group. Researchers who hope to generalize their results to a larger population should ensure that their test group is relatively large and randomly chosen. However, researchers should consider the fact that test populations of over 10,000 subjects do not significantly increase generalizability (Firestone, 1993).

### **Potential Limitations**

No matter how carefully these three forms of generalizability are applied, there is no absolute guarantee that the results obtained in a study will occur in every situation outside the study. In order to determine causal relationships in a test environment, precision is of utmost importance. Yet if researchers wish to generalize their findings, scope and variance must be emphasized over precision. Therefore, it becomes difficult to test for precision and generalizability simultaneously, since a focus on one reduces the reliability of the other. One solution to this problem is to perform a greater number of observations, which has a dual effect: first, it increases the sample population, which heightens generalizability; second, precision can be reasonably maintained because the random errors between observations will average out (Runkel and McGrath, 1972).

### **Transferability**

Transferability describes the process of applying the results of research in one situation to other similar situations. In this section, we establish a practical working definition of transferability as it's applied within and outside of academic research. We also outline important considerations researchers must be aware of in order to make their results potentially transferable, as well as the critical role the reader plays in this process. Finally, we discuss possible shortcomings and limitations of transferability that researchers must be aware of when planning and conducting a study that will yield potentially transferable results.

### Definition

Transferability is a process performed by *readers* of research. Readers note the specifics of the research situation and compare them to the specifics of an environment or situation with which they are familiar. If there are enough similarities between the two situations, readers may be able to infer that the results of the research would be the same or similar in their own situation. In other words, they "transfer" the results of a study to another context. To do this effectively, readers need to know as much as possible about the original research situation in order to determine whether it is similar to their own. Therefore, researchers must supply a highly detailed description of their research situation and methods.

Results of any type of research method can be applied to other situations, but transferability is most relevant to qualitative research methods such as ethnography and case studies. Reports based on these research methods are detailed and specific. However, because they often consider only one subject or one group, researchers who conduct such studies seldom generalize the results to other populations. The detailed nature of the results, however, makes them ideal for transferability.

### Example

Transferability is easy to understand when you consider that we are constantly applying this concept to aspects of our daily lives. If, for example, you are an inexperienced composition instructor and you read a study in which a veteran writing instructor discovered that extensive prewriting exercises helped students in her classes come up with much more narrowly defined paper topics, you could ask

yourself how much the instructor's classroom resembled your own. If there were many similarities, you might try to draw conclusions about how increasing the amount of prewriting your students do would impact their ability to arrive at sufficiently narrow paper topics. In doing so, you would be attempting to *transfer* the composition researcher's techniques to your own classroom.

An example of transferable research in the field of English studies is Berkenkotter, Huckin, and Ackerman's (1988) study of a graduate student in a rhetoric Ph.D. program. In this case study, the researchers describe in detail a graduate student's entrance into the language community of his academic program, and particularly his struggle learning the writing conventions of this community. They make conclusions as to why certain things might have affected the graduate student, "Nate," in certain ways, but they are unable to generalize their findings to all graduate students in rhetoric Ph.D. programs. It is simply one study of one person in one program. However, from the level of detail the researchers provide, readers can take certain aspects of Nate's experience and apply them to other contexts and situations. This is transferability. First-year graduate students who read the Berkenhotter, Huckin, and Ackerman study may recognize similarities in their own situation while professors may recognize difficulties their students are having and understand these difficulties a bit better. The researchers do not claim that their results apply to other situations. Instead, they report their findings and make suggestions about possible causes for Nate's difficulties and eventual success. Readers then look at their own situation and decide if these causes may or may not be relevant.

## Considerations

When designing a study researchers have to consider their goals: Do they want to provide limited information about a broad group in order to indicate trends or patterns? Or do they want to provide detailed information about one person or small group that might suggest reasons for a particular behavior? The method they choose will determine the extent to which their results can be transferred since transferability is more applicable to certain kinds of research methods than others.

**Thick Description:** When writing up the results of a study, it is important that the researcher provide specific information about and a detailed description of her



subject(s), location, methods, role in the study, etc. This is commonly referred to as "thick description" of methods and findings; it is important because it allows readers to make an informed judgment about whether they can transfer the findings to their own situation. For example, if an educator conducts an ethnography of her writing classroom, and finds that her students' writing improved dramatically after a series of student-teacher writing conferences, she must describe in detail the classroom setting, the students she observed, and her own participation. If the researcher does not provide enough detail, it will be difficult for readers to try the same strategy in their own classrooms. If the researcher fails to mention that she conducted this research in a small, upper-class private school, readers may transfer the results to a large, inner-city public school expecting a similar outcome.

**The Reader's Role:** The role of readers in transferability is to apply the methods or results of a study to their own situation. In doing so, readers must take into account differences between the situation outlined by the researcher and their own. If readers of the Berkenhotter, Huckin, and Ackerman study are aware that the research was conducted in a small, upper-class private school, but decide to test the method in a large inner-city public school, they must make adjustments for the different setting and be prepared for different results.

Likewise, readers may decide that the results of a study are not transferable to their own situation. For example, if a study found that watching more than 30 hours of television a week resulted in a worse GPA for graduate students in physics, graduate students in broadcast journalism may conclude that these results do not apply to them.

Readers may also transfer only certain aspects of the study and not the entire conclusion. For example, in the Berkenhotter, Huckin, and Ackerman study, the researchers suggest a variety of reasons for why the graduate student studied experienced difficulties adjusting to his Ph.D. program. Although composition instructors cannot compare "Nate" to first-year college students in their composition class, they could ask some of the same questions about their own class, offering them insight into some of the writing difficulties the first-year undergraduates are



experiencing. It is up to readers to decide what findings are important and which may apply to their own situation; if researchers fulfill their responsibility to provide "thick description," this decision is much easier to make.

## Potential Limitations

Understanding research results can help us understand why and how something happens. However, many researchers believe that such understanding is difficult to achieve in relation to human behaviors which they contend are too difficult to understand and often impossible to predict. "Because of the many and varied ways in which individuals differ from each other and because these differences change over time, comprehensive and definitive experiments in the social sciences are not possible...the most we can ever realistically hope to achieve in educational research is not prediction and control but rather only temporary understanding" (Cziko, 1993, p. 10).

Cziko's point is important because transferability allows for "temporary understanding." Instead of applying research results to every situation that may occur in the future, we can apply a similar method to another, similar situation, observe the new results, apply a modified version to another situation, and so on. Transferability takes into account the fact that there are no absolute answers to given situations; rather, every individual must determine their own best practices. Transferring the results of research performed by others can help us develop and modify these practices. However, it is important for readers of research to be aware that results cannot always be transferred; a result that occurs in one situation will not necessarily occur in a similar situation. Therefore, it is critical to take into account differences between situations and modify the research process accordingly.

Although transferability seems to be an obvious, natural, and important method for applying research results and conclusions, it is not perceived as a valid research approach in some academic circles. Perhaps partly in response to critics, in many modern research articles, researchers refer to their results as generalizable or externally valid. Therefore, it seems as though they are not talking about

transferability. However, in many cases those same researchers provide direction about what points readers may want to consider, but hesitate to make any broad conclusions or statements. These are characteristics of *transferable results*.

Generalizability is actually, as we have seen, quite different from transferability. Unfortunately, confusion surrounding these two terms can lead to misinterpretation of research results. Emphasis on the value of transferable results -- as well as a clear understanding among researchers in the field of English of critical differences between the conditions under which research can be generalized, transferred, or, in some cases, both generalized and transferred -- could help qualitative researchers avoid some of the criticisms launched by skeptics who question the value of qualitative research methods.

## **Generalizability and Transferability: Synthesis**

Generalizability allows us to form coherent interpretations in any situation, and to act purposefully and effectively in daily life. Transferability gives us the opportunity to sort through given methods and conclusions to decide what to apply to our own circumstances. In essence, then, both generalizability and transferability allow us to make comparisons between situations. For example, we can generalize that most people in the United States will drive on the right side of the road, but we cannot transfer this conclusion to England or Australia without finding ourselves in a treacherous situation. It is important, therefore, to always consider context when generalizing or transferring results.

Whether a study emphasizes transferability or generalizability is closely related to the goals of the researcher and the needs of the audience. Studies done for a magazine such as *Time* or a daily newspaper tend towards generalizability, since the publishers want to provide information relevant to a large portion of the population. A research project pointed toward a small group of specialists studying a similar problem may emphasize transferability, since specialists in the field have the ability to transfer aspects of the study results to their own situations without overt generalizations provided by the researcher. Ultimately, the researcher's

subject, audience, and goals will determine the method the researcher uses to perform a study, which will then determine the transferability or generalizability of the results.

## A Comparison of Generalizability and Transferability

Although generalizability has been a preferred method of research for quite some time, transferability is relatively a new idea. In theory, however, it has always accompanied research issues. It is important to note that generalizability and transferability are not necessarily mutually exclusive; they can overlap.

From an experimental study to a case study, readers transfer the methods, results, and ideas from the research to their own context. Therefore, a generalizable study can also be transferable. For example, a researcher may generalize the results of a survey of 350 people in a university to the university population as a whole; readers of the results may apply, or transfer, the results to their own situation. They will ask themselves, basically, if they fall into the majority or not. However, a transferable study is not always generalizable. For example, in [case studies](#), transferability allows readers the option of applying results to outside contexts, whereas generalizability is basically impossible because one person or a small group of people is not necessarily representative of the larger population.

## Controversy, Worth, and Function

Research in the natural sciences has a long tradition of valuing empirical studies; experimental investigation has been considered "the" way to perform research. As social scientists adapted the methods of natural science research to their own needs, they adopted this preference for empirical research. Therefore, studies that are generalizable have long been thought to be more worthwhile; the value of research was often determined by whether a study was generalizable to a population as a whole. However, more and more social scientists are realizing the value of using a variety of methods of inquiry, and the value of transferability is being recognized.

It is important to recognize that generalizability and transferability do not alone determine a study's worth. They perform different functions in research, depending

on the topic and goals of the researcher. Where generalizable studies often indicate phenomena that apply to broad categories such as gender or age, transferability can provide some of the how and why behind these results.

However, there are weaknesses that must be considered. Researchers can study a small group that is representative of a larger group and claim that it is likely that their results are applicable to the larger group, but it is impossible for them to test every single person in the larger group. Their conclusions, therefore, are only valid in relation to their own studies. Another problem is that a non-representative group can lead to a faulty generalization. For example, a study of composition students' revision capabilities which compared students' progress made during a semester in a computer classroom with progress exhibited by students in a traditional classroom might show that computers do aid students in the overall composing process. However, if it were discovered later that an unusually high number of students in the traditional classrooms suffered from substance abuse problems outside of the classroom, the population studied would not be considered representative of the student population as a whole. Therefore, it would be problematic to generalize the results of the study to a larger student population.

In the case of transferability, readers need to know as much detail as possible about a research situation in order to accurately transfer the results to their own. However, it is impossible to provide an absolutely complete description of a situation, and missing details may lead a reader to transfer results to a situation that is not entirely similar to the original one.

## **Applications to Research Methods**

The degree to which generalizability and transferability are applicable differs from methodology to methodology as well as from study to study. Researchers need to be aware of these degrees so that results are not undermined by over-generalizations, and readers need to ensure that they do not read researched results in such a way that the results are misapplied or misinterpreted.

## **Applications of Transferability and Generalizability: Case Study**

## **Research Design**

Case studies examine individuals or small groups within a specific context.

Research is typically gathered through qualitative means: interviews, observations, etc. Data is usually analyzed either holistically or by coding methods.

## **Assumptions**

In research involving case studies, a researcher typically assumes that the results will be transferable. Generalizing is difficult or impossible because one person or small group cannot represent all similar groups or situations. For example, one group of beginning writing students in a particular classroom cannot represent all beginning student writers. Also, conclusions drawn in case studies are only about the participants being observed. With rare exceptions, case studies are not meant to establish cause/effect relationships between variables. The results of a case study are transferable in that researchers "suggest further questions, hypotheses, and future implications," and present the results as "directions and questions" (Lauer & Asher 32).

## **Example**

In order to illustrate the writing skills of beginning college writers, a researcher completing a case study might single out one or more students in a composition classroom and set about talking to them about how they judge their own writing as well as reading actual papers, setting up criteria for judgment, and reviewing paper grades/teacher interpretation.

## **Results of a Study**

In presenting the results of the previous example, a researcher should define the criteria that were established in order to determine what the researcher meant by "writing skills," provide noteworthy quotes from student interviews, provide other information depending on the kinds of research methods used (e.g., surveys, classroom observation, collected writing samples), and include possibilities for furthering this type of research. Readers are then able to assess for themselves how the researcher's observations might be transferable to other writing classrooms.

## **Applications of Transferability and Generalizability: Ethnography**

## Research Design

Ethnographies study groups and/or cultures over a period of time. The goal of this type of research is to comprehend the particular group/culture through observer immersion into the culture or group. Research is completed through various methods, which are similar to those of case studies, but since the researcher is immersed within the group for an extended period of time, more detailed information is usually collected during the research. (Jonathon Kozol's "There Are No Children Here" is a good example of this.)

## Assumptions

As with case studies, findings of ethnographies are also considered to be transferable. The main goals of an ethnography are to "identify, operationally define, and interrelate variables" within a particular context, which ultimately produce detailed accounts or "[thick descriptions](#)" (Lauer & Asher 39). Unlike a case study, the researcher here discovers many more details. Results of ethnographies should "suggest variables for further investigation" and not generalize beyond the participants of a study (Lauer & Asher 43). Also, since analysts completing this type of research tend to rely on multiple methods to collect information (a practice also referred to as triangulation), their results typically help create a detailed description of human behavior within a particular environment.

## Example

The Iowa Writing Program has a widespread reputation for producing excellent writers. In order to begin to understand their training, an ethnographer might observe students throughout their degree program. During this time, the ethnographer could examine the curriculum, follow the writing processes of individual writers, and become acquainted with the writers and their work. By the end of a two year study, the researcher would have a much deeper understanding of the unique and effective features of the program.

## Results of a Study

Obviously, the Iowa Writing Program is unique, so generalizing any results to another writing program would be problematic. However, an ethnography would provide readers with insights into the program. Readers could ask questions such as: what qualities make it strong and what is unique about the writers who are

trained within the program? At this point, readers could attempt to "transfer" applicable knowledge and observations to other writing environments.

## Applications of Transferability and Generalizability: Experimental Research

### Research Design

A researcher working within this methodology creates an environment in which to observe and interpret the results of a research question. A key element in experimental research is that participants in a study are [randomly assigned to groups](#). In an attempt to create a causal model (i.e., to discover the causal origin of a particular phenomenon), groups are treated differently and measurements are conducted to determine if different treatments appear to lead to different effects.

### Assumptions

Experimental research is usually thought to be generalizable. This methodology explores cause/effect relationships through comparisons among groups (Lauer & Asher 152). Since participants are randomly assigned to groups, and since most experiments involve enough individuals to reasonably approximate the populations from which individual participants are drawn, generalization is justified because "over a large number of allocations, all the groups of subjects will be expected to be identical on all variables" (155).

### Example

A simplified example: Six composition classrooms are randomly chosen (as are the students and instructors) in which three instructors incorporate the use of electronic mail as a class activity and three do not. When students in the first three classes begin discussing their papers through e-mail and, as a result, make better revisions to their papers than students in the other three classes, a researcher is likely to conclude that incorporating e-mail within a writing classroom improves the quality of students' writing.

### Results of a Study

Although experimental research is based on cause/effect relationships, "certainty" can never be obtained, but rather results are "probabilistic" (Lauer and Asher 161). Depending on how the researcher has presented the results, they are generalizable



in that the students were selected randomly. Since the quality of writing improved with the use of e-mail within all three classrooms, it is probable that e-mail is the cause of the improvement. Readers of this study would transfer the results when they sorted out the details: Are these students representative of a group of students with which the reader is familiar? What types of previous writing experiences have these students had? What kind of writing was expected from these students? The researcher must have provided these details in order for the results to be transferable.

## **Applications of Transferability and Generalizability: Survey**

### **Research Design**

The goal of a survey is to gain specific information about either a specific group or a representative sample of a particular group. Survey respondents are asked to respond to one or more of the following kinds of items: open-ended questions, true-false questions, agree-disagree (or Likert) questions, rankings, ratings, and so on. Results are typically used to understand the attitudes, beliefs, or knowledge of a particular group.

### **Assumptions**

Assuming that care has been taken in the development of the survey items and selection of the survey sample and that adequate response rates have been achieved, surveys results are generalizable. Note, however, that results from surveys should be generalized only to the population from which the survey results were drawn.

### **Example**

For instance, a survey of Colorado State University English graduate students undertaken to determine how well French philosopher/critic Jacques Derrida is understood before and after students take a course in critical literary theory might inform professors that, overall, Derrida's concepts are understood and that CSU's literary theory class, E615, has helped students grasp Derrida's ideas.

### **Results of a Study**

The generalizability of surveys depends on several factors. Whether distributed to a mass of people or a select few, surveys are of a "personal nature and subject to

distortion." Survey respondents may or may not understand the questions being asked of them. Depending on whether or not the survey designer is nearby, respondents may or may not have the opportunity to clarify their misunderstandings.

It is also important to keep in mind that errors can occur at the development and processing levels. A researcher may inadequately pose questions (that is, not ask the right questions for the information being sought), disrupt the data collection (surveying certain people and not others), and distort the results during the processing (misreading responses and not being able to question the participant, etc.). One way to avoid these kinds of errors is for researchers to examine other studies of a similar nature and compare their results with results that have been obtained in previous studies. This way, any large discrepancies will be exposed. Depending on how large those discrepancies are and what the context of the survey is, the results may or may not be generalizable. For example, if an improved understanding of Derrida is apparent *after* students complete E615, it can be theorized that E615 effectively teaches students the concepts of Derrida. Issues of transferability might be visible in the actual survey questions themselves; that is, they could provide critical background information readers might need to know in order to transfer the results to another context.

## **The Qualitative versus Quantitative Debate**

In Miles and Huberman's 1994 book *Qualitative Data Analysis*, quantitative researcher Fred Kerlinger is quoted as saying, "There's no such thing as qualitative data. Everything is either 1 or 0" (p. 40). To this another researcher, D. T. Campbell, asserts "all research ultimately has a qualitative grounding" (p. 40). This back and forth banter among qualitative and quantitative researchers is "essentially unproductive" according to Miles and Huberman. They and many other researchers agree that these two research methods need each other more often than not. However, because typically qualitative data involves words and quantitative data involves numbers, there are some researchers who feel that one is better (or more scientific) than the other. Another major difference between the two is that qualitative research is inductive and quantitative research is deductive. In qualitative research, a hypothesis is not needed to begin research. However, all quantitative research requires a hypothesis before research can begin.

Another major difference between qualitative and quantitative research is the underlying assumptions about the role of the researcher. In quantitative research, the researcher is ideally an objective observer that neither participates in nor influences what is being studied. In qualitative research, however, it is thought that the researcher can learn the most about a situation by participating and/or being immersed in it. These basic underlying assumptions of both methodologies guide and sequence the types of data collection methods employed.

Although there are clear differences between qualitative and quantitative approaches, some researchers maintain that the choice between using qualitative or quantitative approaches actually has less to do with methodologies than it does with positioning oneself within a particular discipline or research tradition. The difficulty of choosing a method is compounded by the fact that research is often affiliated with universities and other institutions. The findings of research projects often guide important decisions about specific practices and policies. The choice of which approach to use may reflect the interests of those conducting or benefitting from the research and the purposes for which the findings will be applied. Decisions about which kind of research method to use may also be based on the researcher's own experience and preference, the population being researched, the proposed audience for findings, time, money, and other resources available (Hathaway, 1995).

Some researchers believe that qualitative and quantitative methodologies cannot be combined because the assumptions underlying each tradition are so vastly different. Other researchers think they can be used in combination only by alternating between methods: qualitative research is appropriate to answer certain kinds of questions in certain conditions and quantitative is right for others. And some researchers think that both qualitative and quantitative methods can be used simultaneously to answer a research question.

To a certain extent, researchers on all sides of the debate are correct: each approach has its drawbacks. Quantitative research often "forces" responses or people into categories that might not "fit" in order to make meaning. Qualitative research, on the other hand, sometimes focuses too closely on individual results and fails to make connections to larger situations or possible causes of the results.

Rather than discounting either approach for its drawbacks, though, researchers should find the most effective ways to incorporate elements of both to ensure that their studies are as accurate and thorough as possible.

It is important for researchers to realize that qualitative and quantitative methods can be used in conjunction with each other. In a study of computer-assisted writing classrooms, Snyder (1995) employed both qualitative and quantitative approaches. The study was constructed according to guidelines for quantitative studies: the computer classroom was the "treatment" group and the traditional pen and paper classroom was the "control" group. Both classes contained subjects with the same characteristics from the population sampled. Both classes followed the same lesson plan and were taught by the same teacher in the same semester. The only variable used was the computers. Although Snyder set this study up as an "experiment," she used many qualitative approaches to supplement her findings. She observed both classrooms on a regular basis as a participant-observer and conducted several interviews with the teacher both during and after the semester. However, there were several problems in using this approach: the strict adherence to the same syllabus and lesson plans for both classes and the restricted access of the control group to the computers may have put some students at a disadvantage. Snyder also notes that in retrospect she should have used case studies of the students to further develop her findings. Although her study had certain flaws, Snyder insists that researchers can simultaneously employ qualitative and quantitative methods if studies are planned carefully and carried out conscientiously.

## **Annotated Bibliography**

**Babbie, Earl R. (1979). *The practice of social research*. Belmont: Wadsworth Publishing Company, Inc.**

A comprehensive review of social scientific research, including techniques for research. The logic behind social scientific research is discussed.

**Berkenkotter, C., Huckin, T.N., & Ackerman, J. (1988). Conventions, conversations, and the writer: Case study of a student in a rhetoric Ph.D. program. *Research in the Teaching of English* 22 (1), 9-44.**

Describes a case study of a beginning student in a Ph.D. program. Looks at the process of his entry into an academic discourse community.

**Black, Susan. (1996). Redefining the teacher's role. *Executive Educator*, 18 (8), 23-26.**

Discusses the value of well-trained teacher-researchers performing research in their classrooms. Notes that teacher-research focuses on the particular; it does not look for broad, generalizable principles.

**Blank, Steven C. (1984). *Practical business research methods*. Westport: AVI Publishing Company, Inc.**

A comprehensive book of how to set up a research project, collect data, and reach and report conclusions.

**Blank, Steven C. (1984). *Practical business research methods*. Westport: AVI Publishing Company, Inc.**

A comprehensive book of how to set up a research project, collect data, and reach and report conclusions.

**Bridges, David. (1993). Transferable Skills: A Philosophical Perspective. *Studies in Higher Education* 18 (1), 43-51.**

Transferability of skills in learning is discussed, focusing on the notions of cross-disciplinary, generic, core, and transferable skills and their role in the college curriculum.

**Brookhart, Susan M. & Rusnak, Timothy G. (1993). A pedagogy of enrichment, not poverty: Successful lessons of exemplary urban teachers. *Journal of Teacher Education*, 44 (1), 17-27.**

Reports the results of a study that explored the characteristics of effective urban teachers in Pittsburgh. Suggests that the results may be transferable to urban educators in other contexts.

**Bryman, Alan. (1988). *Quantity and quality in social research*. Boston: Unwin Hyman Ltd.**

**Butcher, Jude. (1994, July). *Cohort and case study components in teacher education research*. Paper presented at the annual conference of the Australian Teacher Education Association, Brisbane, Queensland, Australia.**

Argues that studies of teacher development will be more generalizable if a broad set of methods are used to collect data, if the data collected is both extensive and intensive, and if the methods used take into account the differences in people and situations being studied.

**Carter, Duncan. (1993). *Critical thinking for writers: Transferable skills or discipline-specific strategies? *Composition Studies/Freshman English News*, 21 (1), 86-93.***

Questions the context-dependency of critical thinking, and whether critical thinking skills are transferable to writing tasks.

**Carter, Kathy. (1993). *The place of story in the study of teaching and teacher education. *Educational Researcher*, 22(1), 5-12.***

Discusses the advantages of story-telling in teaching and teacher education, but cautions instructors, who are currently unfamiliar with story-telling in current pedagogical structures, to be careful in implementing this method in their teaching.

**Clonts, Jean G. (1992, January). *The concept of reliability as it pertains to data from qualitative studies*. Paper presented at the annual meeting of the Southwest Educational Research Association, Houston, TX.**

Presents a review of literature on reliability in qualitative studies and defines reliability as the extent to which studies can be replicated by using the same methods and getting the same results. Strategies to

enhance reliability through study design, data collection, and data analysis are suggested. Generalizability as an estimate of reliability is also explored.

**Connelly, Michael F. & Clandinin D. Jean. (1990). Stories of experience and narrative inquiry. *Educational Researcher*, 19.(5), 2-14.**

Describes narrative as a site of inquiry and a qualitative research methodology in which experiences of observer and observed interact. This form of research necessitates the development of new criteria, which may include apparency, verisimilitude, and transferability (7).

**Crocker, Linda & Algina, James. (1986). *Introduction to classical & modern test theory*. New York: Holt, Rinehart and Winston.**

Discusses test theory and its application to psychometrics. Chapters range from general overview of major issues to statistical methods and application.

**Cronbach, Lee J. et al. (1967). *The dependability of behavioral measurements: multifaceted studies of generalizability*. Stanford: Stanford UP.**

A technical research report that includes statistical methodology in order to contrast multifaceted generalizability with classical reliability.

**Cziko, Gary A. (1992). Purposeful behavior as the control of perception: implications for educational research. *Educational Researcher*, 21 (9), 10-18.**  
**El-Hassan, Karma. (1995). Students' Rating of Instruction: Generalizability of Findings. *Studies in Educational Research* 21 (4), 411-29.**

Issues of dimensionality, validity, reliability, and generalizability of students' ratings of instruction are discussed in relation to a study in which 610 college students who evaluated their instructors on the Teacher Effectiveness Scale.



**Feingold, Alan. (1994). Gender differences in variability in intellectual abilities: a cross-cultural perspective. *Sex Roles: A Journal of Research* 20 (1-2), 81-93.**

Feingold conducts a cross-cultural quantitative review of contemporary findings of gender differences in variability in verbal, mathematical, and spatial abilities to assess the generalizability of U.S. findings that males are more variable than females in mathematical and spatial abilities, and the sexes are equally variable in verbal ability.

**Firestone, William A. (1993). Alternative arguments for generalizing from data as applied to qualitative research. *Educational Researcher*, 22(4), 16-22.**

Focuses on generalization in three areas of qualitative research: sample to population extrapolation, analytic generalization, and case-to-case transfer (16). Explains underlying principles, related theories, and criteria for each approach.

**Fyans, Leslie J. (Ed.). (1983). Generalizability theory: Inferences and practical applications. In *New Directions for Testing and Measurement: Vol. 18*. San Francisco: Jossey-Bass.**

A collection of articles on generalizability theory. The goal of the book is to present different aspects and applications of generalizability theory in a way that allows the reader to apply the theory.

**Hammersley, Martyn. (Ed.). (1993). *Social research: Philosophy, politics and practice*. Newbury Park, CA: Sage Publications.**

A collection of articles that provide an overview of positivism; includes an article on increasing the generalizability of qualitative research by Janet Ward Schofield.

**Hathaway, R. (1995). Assumptions underlying quantitative and qualitative research: Implications for institutional research. *Research in higher education*, 36 (5), 535-562.**

Hathaway says that the choice between using qualitative or quantitative approaches is less about methodology and more about aligning oneself with particular theoretical and academic traditions. He concluded that the two approaches address questions in very different ways, each one having its own advantages and drawbacks.

**Heck, Ronald H., Marcoulides, George A. (1996). . *Research in the Teaching of English* 22 (1), 9-44.**

Describes a case study of a beginning student in a Ph.D. program. Looks at the process of his entry into an academic discourse community.

**Hipps, Jerome A. (1993). *Trustworthiness and authenticity: Alternate ways to judge authentic assessments*. Paper presented at the annual meeting of the American Educational Research Association, Atlanta, GA.**

Contrasts the foundational assumptions of the constructivist approach to traditional research and the positivist approach to authentic assessment in relation to generalizability and other research issues.

**Howe, Kenneth & Eisenhart, Margaret. (1990). Standards for qualitative (and quantitative) research: A prolegomenon. *Educational Researcher*, 19(4), 2-9.**

**Huang, Chi-yu, et al. (1995, April). *A generalizability theory approach to examining teaching evaluation instruments completed by students*. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.**

Presents the results of a study that used generalizability theory to investigate the reasons for variability in a teacher and course evaluation mechanism.

**Hungerford, Harold R. et al. (1992). *Investigating and Evaluating Environmental Issues and Actions: Skill Development Modules.***

A guide designed to teach students how to investigate and evaluate environmental issues and actions. The guide is presented in six modules including information collecting and surveys, questionnaires, and opinionnaires.

**Jackson, Philip W. (1990). The functions of educational research. *Educational Researcher* 19(7), 3-9. Johnson, Randell G. (1993, April). *A validity generalization study of the multiple assessment and program services test.* Paper presented at the annual meeting of the American Educational Research Association, Atlanta, GA.**

Presents results of study of validity reports of the Multiple Assessment and Program Services Test using quantitative analysis to determine the generalizability of the results.

**Jones, Elizabeth A & Ratcliff, Gary. (1993). *Critical thinking skills for college students.* (National Center on Postsecondary Teaching, Learning, and Assessment). University Park, PA.**

Reviews research literature exploring the nature of critical thinking; discusses the extent to which critical thinking is generalizable across disciplines.

**Karpinski, Jakub. (1990). *Causality in Sociological Research.* Boston: Kluwer Academic Publishers.**

Discusses causality and causal analysis in terms of sociological research. Provides equations and explanations.

**Kirsch, Irwin S. & Jungeblut, Ann. (1995). *Using large-scale assessment results to identify and evaluate generalizable indicators of literacy.* (National Center on Adult Literacy, Publication No. TR94-19). Philadelphia, PA.**

Reports analysis of data collected during an extensive literacy survey in order to help understand the different variables involved in literacy proficiency. Finds that literacy skills can be predicted across large, heterogeneous populations, but not as effectively across homogeneous populations.

**Lauer, Janice M. & Asher, J. William. (1988). *Composition research: empirical designs*. New York: Oxford Press.**

Explains the selection of subjects, formulation of hypotheses or questions, data collection, data analysis, and variable identification through discussion of each design.

**LeCompte, Margaret & Goetz, Judith Preissle. (1982). Problems of reliability and validity in ethnographic research. *Review of Educational Research*, 52(1), 31-60.**

Concentrates on educational research and ethnography and shows how to better take reliability and validity into account when doing ethnographic research.

**Marcoulides, George; Simkin, Mark G. (1991). Evaluating student papers: the case for peer review. *Journal of Education for Business* 67 (2), 80-83.**

A preprinted evaluation form and generalizability theory are used to judge the reliability of student grading of their papers.

**Maxwell, Joseph A. (1992). Understanding and validity in qualitative research. *Harvard Educational Review*, 62 (3), 279-300.**

Explores the five types of validity used in qualitative research, including generalizable validity, and examines possible threats to research validity.

**McCarthy, Christine L. (1996, Spring). What is "critical thinking"? Is it generalizable? *Educational Theory*, 46 217-239.**

Reviews, compares and contrasts a selection of essays from Stephen P. Norris' book *The Generalizability of Critical Thinking: Multiple Perspectives on an Education Ideal* in order to explore the diversity of the topic of critical thinking.

**Miles, Matthew B. & Huberman, A. Michael. (1994). *Qualitative data analysis*. Thousand Oaks: Sage Publications.**

A comprehensive review of data analysis. Subjects range from collecting data to producing an actual report.

**Minium, Edward W. & King, M. Bruce, & Bear, Gordon. (1993). *Statistical reasoning in psychology and education*. New York: John Wiley & Sons, Inc.**

A textbook designed to teach students about statistical data and theory.

**Moss, Pamela A. (1992). Shifting conceptions of validity in educational measurement: Implications for performance assessment. *Review of Educational Research*, 62(3), 229-258. Nachmias, David & Nachmias, Chava . (1981). *Research methods in the social sciences*. New York: St. Martin's Press.**

Discusses the foundations of empirical research, data collection, data processing and analysis, inferential methods, and the ethics of social science research.

**Nagy, Philip; Jarchow, Elaine McNally. (1981). Estimating variance components of essay ratings in a complex design. *Speech/Conference Paper*.**

This paper discusses variables influencing written composition quality and how they can be best controlled to improve the reliability assessment of writing ability.

**Nagy, William E., Herman, Patricia A., & Anderson, Richard C. (1985). *Learning word meanings from context: How broadly generalizable?* (University of Illinois at Urbana-Champaign. Center for the Study of Reading, Technical Report No. 347). Cambridge, MA: Bolt, Beranek and Newman.**

Reports the results of a study that investigated how students learn word meanings while reading from context. Claims that the study was designed to be generalized.

**Naizer, Gilbert. (1992, January). *Basic concepts in generalizability theory: A more powerful approach to evaluating reliability*. Presented at the annual meeting of the Southwest Educational Research Association, Houston, TX.**

Discusses how a measurement approach called generalizability theory (G-theory) is an important alternative to the more classical measurement theory that yields less useful coefficients. G-theory is about the dependability of behavioral measurements that allows the simultaneous estimation of multiple sources of error variance.

**Newman, Isadore & Macdonald, Suzanne. (1993, May). *Interpreting qualitative data: A methodological inquiry*. Paper presented at the annual meeting of the Ohio Academy of Science, Youngstown, OH.**

Issues of consistency, triangulation, and generalizability are discussed in relation to a qualitative study involving graduate student participants. The authors refute Polkinghorne's views of the generalizability of qualitative research, arguing that quantitative research is more suitable for generalizability.

**Norris, Stephen P. (Ed.). (1992). *The generalizability of critical thinking: multiple perspectives on an education ideal*. New York: Teachers College Press.** A set of essays from a variety of disciplines presenting different perspectives on the topic of the generalizability of critical thinking. The authors refer and respond to each other. **Peshkin, Alan. (1993). *The goodness of qualitative research*. *Educational Researcher*, 22(2), 23-29.**

Discusses how effective qualitative research can be in obtaining desired results and concludes that it is an important tool scholars can use in their explorations. The four categories of qualitative research--description, interpretation, verification, and evaluation--are examined.

**Rafilson, Fred. (1991, July). *The case for validity generalization.***

Describes generalization as a quantitative process. Briefly discusses theory, method, examples, and applications of validity generalization, emphasizing unseen local methodological problems.

**Rhodebeck, Laurie A. The structure of men's and women's feminist orientations: feminist identity and feminist opinion. *Gender & Society* 10 (4), 386-404.**

This study considers two problems: the extent to which feminist opinions are distinct from feminist identity and the generalizability of these separate constructs across gender and time.

**Runkel, Philip J. & McGrath, E. Joseph. (1972). *Research on human behavior: A systematic guide to method.* New York: Holt, Rinehart and Winston, Inc.**

Discusses how researchers can utilize their experiences of human behavior and apply them to research in a systematic and explicit fashion.

**Salomon, Gavriel. (1991). Transcending the qualitative-quantitative debate: The analytic and systemic approaches to educational research. *Educational Researcher*, 20 (6), 10-18.**

Examines the complex issues/variables involved in studies. Two types of approaches are explored: an Analytic Approach, which assumes internal and external issues, and a Systematic Approach, in which each component affects the whole. Also discusses how a study can never fully measure how much x affects y because there are so many inter-relations. Knowledge is applied differently within each approach.

**Schrag, Francis. (1992). In defense of positivist research paradigms. *Educational Researcher*, 21(5), 5-8.**

Positivist critics Elliot Eisner, Fredrick Erikson, Henry Giroux, and Thomas Popkewitz are logically committed to propositions that can be



tested only by means of positivist research paradigms. A definition of positivism is gathered through example. Overall, it is concluded that educational research need not aspire to be practical.

**Sekaran, Uma. (1984). *Research methods for managers: A skill-building approach*. New York: John Wiley and Sons.**

Discusses managerial approaches to conducting research in organizations. Provides understandable definitions and explanations of such methods as sampling and data analysis and interpretation.

**Shadish, William R. (1995). The logic of generalization: five principles common to experiments and ethnographies. *American Journal of Community Psychology* 23 (3), 419-29.**

Both experiments and ethnographies are highly localized, so they are often criticized for lack of generalizability. This article describes a logic of generalization that may help solve such problems.

**Shavelson, Richard J. & Webb, Noreen M. (1991). *Generalizability theory: A primer*. Newbury Park, CA: Sage Publications.**

**Snyder, I. (1995). Multiple perspectives in literacy research: Integrating the quantitative and qualitative. *Language and Education*, 9 (1), 45-59.**

This article explains a study in which the author employed quantitative and qualitative methods simultaneously to compare computer composition classrooms and traditional classrooms. Although there were some problems with integrating both approaches, Snyder says they can be used together if researchers plan carefully and use their methods thoughtfully.

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

Discusses the trials and tribulations of teaching a qualitative research course to graduate students. The author describes the successes and failings he encounters and asks colleagues for suggestions of readings for his syllabus.

**Wagner, Ellen D. (1993, January). *Evaluating distance learning projects: An approach for cross-project comparisons*. Paper presented at the annual meeting of the Association for educational Communication and Technology, New Orleans, LA.**

Describes a methodology developed to evaluate distance learning projects in a way that takes into account specific institutional issues while producing generalizable, valid and reliable results that allow for discussion among different institutions.

**Yin, Robert K. (1989). *Case Study Research: Design and Methods*. London: Sage Publications.**

A small section on the application of generalizability in regards to case studies.

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