Conducting Educational Research: A Primer for Teachers and Administrators

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Conducting Educational Research: A Primer for Teachers and Administrators is designed to provide the step-wise, content-specific information masters students must possess to design, conduct, and disseminate a qualitative, quantitative or mixed methods classroom or school research study. The text will help school professionals to see both the value of being life-long critical consumers of educational research and the merit of using research in helping them to become teacher leaders and/or change agents in their own professional settings.

Specifically, the text provides master level students with:

• the background they need to see the importance of educational research in their daily professional lives
• instruction in all aspects of a typical five-chapter research design (introduction/literature review/methodology/results/conclusion, discussion, implications)
• the tools needed to locate and critically review published educational research
• instruction on common qualitative methodologies
• instruction on the types of quantitative methodologies that master level candidates would be most likely to use
• knowledge of the importance of being intelligent consumers of existing research
• ways to engage the students in a reflection plan for the future.
Conducting Educational Research
BOLD VISIONS IN EDUCATIONAL RESEARCH: PIONEERS

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Scope

Bold Visions in Educational Research was co-founded by Joe L Kincheloe and Kenneth Tobin for the purposes of publishing cutting edge research that incorporated incisive insights supported by rich theoretical frameworks. The editors stance was that scholars with bold visions would pave the way for the transformation of educational policies and practices. In conjunction with this idea of encouraging theoretically rich research, the editors planned a series of Pioneers—first readers in a given field. Pioneers are written for educators seeking entry into a field of study. Each Pioneer is a “starter”; an introduction to an area of scholarship, providing well-developed, theory-rich, jargon-free texts about current, state-of-the-art research that affords deep understandings of an area and lays the foundation for further studies in the same and related areas. The books are excellent texts for graduate studies, useful resources for professional development programs, and handy reference readers for early career researchers.
Conducting Educational Research

A Primer for Teachers and Administrators

Patricia D. Morrell
James B. Carroll

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PREFACE

We designed this book for use by preservice and inservice teachers completing an education masters program. Most university programs require the completion of a mid-level research project. These projects are more in-depth than an undergraduate senior-level capstone, but not as intense an undertaking as required by a doctoral-level research study. Some, though not most, may be thesis-level work.

We have found that these preservice teachers have unique needs for educational research instruction. Typically, the fifth year students already possess a bachelor’s degree. Some are older and dissatisfied with their current career choices. Others were uncertain of their career options as undergraduates. All have decided to enter the teaching profession. These students tend to have limited classroom experience, are not familiar with educational research, probably have not used statistics outside an introductory undergraduate class, and in all likelihood know nothing about qualitative design.

Similarly, inservice teachers and administrators also seek a master’s degree in education. Students in these thesis and non-thesis option degree programs tend to be practicing teachers, with strong classroom experience. However, like the 5th year students, they are typically not familiar with educational research (relying on practitioner articles), and also are not fluent in statistical or qualitative methods.

Both groups of students are learning about educational research methods and designing and conducting their own initial research project while they are taking other coursework and have heavy responsibilities as classroom teachers, administrators or student teachers. Their comfort level with research is generally not high, which makes juggling work, school, and personal responsibilities even more difficult.

When it comes to coursework on research, preservice and inservice teachers both need the same basics: (a) an understanding of why educational research is important to them in their professional lives; (b) instruction on being critical consumers of educational research; and (c) guiding direction on designing, conducting, and reporting on their own research. We have designed this text to meet those goals. Specifically, the book provides:

- the background needed for preservice and inservice teachers and administrators to appreciate the importance of educational research in their daily professional lives (outside of degree requirements).
- instruction in all aspects of a typical five-chapter research design (introduction; literature review; methodology; results; conclusion/discussion/implications), with guidance to actually write a five chapter research report.
- the tools needed to locate and review published educational research.
- instruction on common qualitative methodologies.
- instruction on the types of quantitative methodologies masters-level candidates would be most likely to use.
- ways to engage the student in a reflection plan for the future.
PREFACE

The text leads preservice and inservice teachers and administrators step-by-step through the process of educational research, providing actual classroom examples and showing the relevance of the materials. We strived to include the essentials without being overwhelming. Ultimately, we hope the text will help teachers and administrators see both the value of becoming life-long critical consumers of educational research and the merits of using research in helping them to become teacher leaders and change agents in their own professional settings.

Features of this Text:

The following key features appear in each chapter of the text:

– **Concept Map:** Each chapter of the book begins with a concept map providing a visual outline of the chapter.
– **Chapter Overview:** The chapter overview provides a brief description of the content of the chapter.
– **Key Terms:** Key terminology appears in boldface on first introduction in the text. Definitions appear in the comprehensive glossary at the end of the text.
– **Figures and Tables:** Figures and tables supplement the text for clarification and elucidation of key concepts.
– **Examples:** Numerous student examples appear throughout the text and are designed to insure relevancy to a classroom professional.
– **Next Steps:** Each chapter closes with a lead-in to the next chapter.
– **Chapter Self-Check:** The self-checklist at the end of each chapter is designed to help students determine their understanding of key concepts.
– **Chapter Review Questions:** End-of-chapter questions help reinforce learning and measure students’ understanding of the material presented in the chapter. These questions are available for use by the student or by the instructor as an outcomes assessment.

Supporting Materials:

The website that accompanies this text http://teaching.up.edu/ResearchPrimer provides both the students and instructors using this book with a variety of online resources, materials, and activities they can use to strengthen and enrich their understanding or presentation of the topics in the text.
ACKNOWLEDGMENTS

We have a number of people to thank for their assistance with the development of this text. First, we would like to thank all the students we have worked with over the years who have taught us what a master’s level student needs. We are especially grateful to those students who allowed us to use their work as examples for this text: Debbie Bale, Stacey Boatright, Deborah Brandell, William Burns, Carolyn Cameron, Sharon Clark, Steve Colkitt, April Crysler, David Dempsey, Emily Ferguson, Carlos Gumataotao, Kim Huber, Tom Kuntz, Krista MacGregor, Tia Martini, Caroline Missal, Sherilyn Mooney, Sheryl Nash, Nancy Petersen, Robert Probert, Chris Stiles, and Ken Szopa. We also appreciate the other authors who allowed us to include portions of their work in our book.

Finally, we would like to thank the University of Portland for providing us with sabbatical time to work on this text and, more importantly, to our families for their encouragement, support, and for putting up with us throughout this endeavor: thanks Jeff, Barbara, Chris, Ian, Devon, and Adam.
CHAPTER 1

INTRODUCTION OF EDUCATIONAL RESEARCH

CHAPTER OVERVIEW

The first chapter sets the stage by introducing the reader to the area of educational research. It explains the importance of research, relating this to a teacher’s everyday professional practice. The chapter will briefly describe the format of a typical five chapter research paper and describe the layout of the text. It will also provide a brief historical overview of educational research and describe, compare and contrast the major types of educational research methodologies.

INTRODUCTION


Now let’s say a district administrator wants your school to adopt a new reading curriculum. What questions surface? Why is the new curriculum being adopted? Is it better than the current curriculum? How does it fit into the school-wide plan?
CHAPTER 1

Will it improve student understanding and achievement? What do teachers in schools who have adopted that curriculum have to say about it? What kind of inservice will be provided to you and the other teachers? Do you have a choice?

Or taking it down a notch, let’s say you’re taking a course at the local university and the professor is espousing a particular teaching methodology that you have not tried. Don’t you think of similar questions? Is this new method really better than your current method? On what is the answer to that question based?

Or making it even more personal, let’s say you do try that new method with your students and you are pleased with the results. How do you convince other colleagues in your building to try it?

THE IMPORTANCE OF EDUCATIONAL RESEARCH

So, what does buying a car have to do with buying into a new curriculum or instructional methodology? In order for us to make an informed decision about any of these, we need to have relevant data. It is more convincing to base a decision on information than on gut instinct.

That is what the processes of educational research are all about (see Figure 1-1). They provide us with information and tools that have been tested, they provide us with a way to know if the testing done was appropriate and the results can be trusted, and they provide us with a way to share our own practices and discoveries with others. We sometimes know what we are doing in our classroom is great, but we often know it because it seems to feel right or our students seem to be engaged. We don’t always have convincing data that we can use to persuade someone else that what we are doing is more effective than an alternative methodology. Think of educational research as a way to provide substance to the feelings. Educational research is not just a way to come up with new ideas about teaching and learning, but most often it is a way to convince us that the ideas we already have are worth exploring—that they are worth buying into.

Educational research is important in:

- Proposing theories
- Testing theories
- Increasing our understanding
- Improving teaching and learning

Figure 1-1. The importance of educational research.

Educational research helps us by improving our understanding of how students learn and how best to teach. New articles are continually being published. Learning
about the “how-tos” of educational research help us to become better consumers of what is out there. It teaches us to distinguish between legitimate claims and faulty or flawed ones.

Sometimes educational research is used to propose new theories. For example, in 1983 Gardner first proposed his theory of Multiple Intelligences. Besides accommodating different learning styles when teaching, Gardner recommended teachers should also be concerned with the strengths and weaknesses of students’ intelligences. Should they? Once new theories are published, other researchers can test them. Do the ideas seem to hold true under some circumstances better than others? Do they need to be adjusted to accommodate different settings or students? In reference to multiple intelligences, thousands of studies have been completed by educational researchers to expand on Gardner’s original ideas. Many of these studies were completed by classroom teachers trying to better understand how the more global theory actually works in the real world of schools and classrooms. After further research, Gardner himself added the multiple intelligence of “naturalist” (Gardner, 1999) to the list.

Perhaps most importantly, educational research is an important tool in helping us to improve our own teaching and learning. By being an informed reader, we are in a better position to make educated decisions about curriculum adoption, new teaching strategies, management ideas, and other pedagogical choices. By conducting research in our own classrooms or school, our opinions, suggestions, and ideas will be taken more seriously by teaching colleagues, administrators, parents, and school board members. Research also makes us more reflective about our own practice. All of these move us toward the ultimate goal of improved learning by our students.

BEING A CRITICAL CONSUMER OF RESEARCH

Not all research is created equal. Some studies are stronger than others: their methods are well designed and the conclusions and recommendations clearly flow from the data. Other studies are poorly designed, or the authors took great liberties in discussing the results and determining the conclusions. Findings of studies with major flaws should be suspect. Understanding how to construct a research project will help you not only with your own research but will also equip you to become a critical consumer of research. It will provide you with the tools you need to determine whether any study should be believed and its recommendations tried, or if it should be taken lightly or totally ignored. As you go through this text, the questions you will apply to your own developing project should also be applied to anything you read to help you determine the value of work written by others.

FIVE CHAPTER FORMAT

Typically, research tends to follow a general five-chapter format. It is kind of like “the” scientific method. Most of us learned a five step model to scientific problem solving (e.g., state the problem, make observations, devise a hypothesis, test the
hypothesis, make a conclusion). While this works well for many scientific problems, it really is not a “one size fits all” methodology—think ecological studies, as an example. The same holds true with the five-chapter design for educational research that we are about to describe. This model works for many educational studies, but not necessarily all. However, it brings an easy to understand, logical structure to your work and it is by far the most common approach to reporting on educational research.

This basic design of educational research involves the following five components:

Chapter 1 – Introduction
Chapter 2 – Review of the Literature
Chapter 3 – Study Design and Research Methods
Chapter 4 – Results
Chapter 5 – Discussion/Conclusions/Implications

Let’s look at these chapters with a little more detail so you’ll have a better understanding of what is ahead (see Figure 1-2). Chapter One, the Introduction, is a narrative that lets the reader know what you plan to study or examine. It sets the

![Figure 1-2. Schematic of a five chapter design.](image-url)
INTRODUCTION OF EDUCATIONAL RESEARCH

scene for the entire study. What is the problem or purpose of the work? Why is this issue important to you, as an educator, and why is it a worthy project to pursue? Chapter One describes the significance and the need for the study. It typically provides a description of the context in which the question was raised, some history of the problem, and what theoretical constructs (ways in which the research community views the problem) have been applied to the problem. Often, also included in Chapter One are definitions of important terms. For example, “cooperative learning” has a variety of definitions. Which one pertains to the particular study? “Looping” may be a term that is not familiar to all. A definition would help the reader understand just what the study concerns. If we think of educational research as a road trip, Chapter One is stating the starting point of the proposed destination. It is the point at which you would describe why you wanted to make the trip and to state as clearly as possible where you intend to go.

Chapter Two is the Literature Review. It presents an overview of what is already known about a topic. What background is needed to understand the problem? What similar work has already been done? What has been found? What theoretical constructs are important and relevant? Going back to our road trip analogy, Chapter Two is exploring ways of getting from Point A to Point B. What are the pros and cons of driving, taking the train or bus, or flying? How long will the trip take? What roadblocks might be encountered? Chapter Two provides the background information that will help us in planning our own excursion. It is appropriate here to point to Newton’s edict that “if I have seen a little further it is by standing on the shoulders of giants.” All of what you read may not necessarily seem to be written by giants, but the point remains that we need to be sure that we understand what has come before in order to make good progress ourselves.

The third chapter is the methods section. In it we explain how we plan to go about gathering and analyzing data to solve the problem. Who will you be studying (e.g., your own class, all third graders, just the students in your math class)? What techniques do you plan to use to gather data (e.g., a survey, pre/post tests, observations)? How do you think you might make sense of the data you collect? Will you be running statistical tests? Coding video-tapes of lessons or categorizing classroom behaviors? This is the nuts and bolts of the road trip: what means of transportation will you take, what routes, what stops, how did you prepare for the journey. The methods section of the report on your research is important because it lets others know how you have approached your research in sufficient detail that they can make judgments about the quality of the procedures you applied to your work. You will be asking the same questions when you read other authors’ work that readers of your research will be asking. Was the study conducted in such a way that I can believe the conclusions of the study?

Chapter Four is the results section. Who or what was actually studied and what did you find? Let’s say you decided to drive on that road trip. Were you able to take the roads you had originally planned? Did you have any detours? Any car problems? Did everything go smoothly? What did you actually see and do while on the trip? At some point you will gather data about your research problem. In almost
all cases (particularly qualitative studies) the amount of information you gather is far greater than could be comfortably listed in a research report. Your job is to condense those data into an understandable form. Depending on the type of research you are doing, there are clear conventions for how to do this. Readers of your results section will know exactly what you found after you applied your research methods to gather and analyze information around your topic. Chapter Four sets the stage for your chance to talk in the final chapter about the meaning of what you have found.

The last chapter—Conclusions—is the chapter that ties everything together and suggests plans for the future. You make sense of your data, share your insights, compare the findings to what you thought you would discover and to what you found in the literature. The research question is answered, the process and findings are discussed, and personal reflections are added. Chapter Five includes the “so what” of your findings. What does your study mean to you? Because of it, will you change your teaching style, curriculum, or some other important part of your work? Did this study lead you to think of other questions you would like to answer? If you had the opportunity to redo the study, what did you learn in hind-sight? How will your findings impact your current and future teaching? Chapter Five is the destination of your road trip. Think of it as the gathering you have with friends to show slides of your trip. Did you get to where you hoped? If you had to do it again, is there anything you would recommend be changed? Would you use the same mode of transportation and follow the same route? If so, why? If not, why not? What is likely to be your next trip? Appendix A contains an outline of the five chapter model and Appendix B is a sample student research paper. You may want to refer to these as you write your research paper.

Every piece of educational research is part of a larger puzzle and it often seems that the conclusions of your study leave more questions than answers. But, if you have followed the traditions of good research your piece of the puzzle will be a valuable contribution. It will help you and/or others plan the next “trip.”

THE PHILOSOPHY OF THIS BOOK

We wrote this book to guide the first time researcher through the process of planning, conducting, and sharing the findings of an educational research project. We have been on the five-chapter journey many times ourselves and have helped numerous students take that trip. It is with our students in mind that we wrote the following chapters. Some of our students were pre-service teachers, others had been teaching for decades. Some were administrators and others were studying to be administrators. Some were young and impressionable; others were well seasoned and set in their ways. Like the Automobile Club, some of our “members” just needed a road map. Others needed possible routes pointed out to them. Many wanted everything we could give them, listing specific roads to travel, with places to visit, hotels, campgrounds, and eateries noted along the way.

Regardless of the amount of instruction you need as you embark on your first educational research journey, we want this text to provide the basic groundwork anyone needs to be successful. As noted earlier, we will use the five chapter model
as our guide. We will start with some basic information about the main types of educational research methodologies, and then provide instruction in a stepwise fashion through each of the phases of conducting a study. The book is designed to be a travel guide—use the sections as you need them and spend the time with the text and supplemental materials as your needs dictate. After you have successfully completed your first “journey,” we hope that you will continue to use the text as a refresher for future studies.

AM I CUT OUT TO BE A RESEARCHER?

We, the authors, have each been teaching research classes for well over a decade. Some of our students were very comfortable conducting a research study. Others were a little hesitant. Most were initially very tense. Please be aware that we plan to lead you through what would be the equivalent of a typical master’s level research project. And if you have spent at least one day in a classroom working with students, you have the raw materials you need to be successful in carrying out an educational research study.

Consider: as educators, our primary goal is to optimize the learning environment and opportunities for each of our students. We do this by making continual assessments and adjusting our teaching accordingly. If for just one day you kept a tally of all the decisions you made to help you reach this goal, we guess you would: (a) get tired of making hash marks; (b) forget to make a mark each time; (c) wear down your pencil before the end of the day.

How do you make all these decisions? The questions you ask, the impressions you make, the changes you implement are based on what you learned in education classes, watching others, what you gleaned from professional development, and your own experience. While you may think your decisions are being made “instinctively,” it would not take much to turn your decision-making issues into a research study. Educational research is nothing more than a systematic examination of an issue we face in our professional lives. For example, you may want to look at one of the following problems:

Why do some students have trouble with long-division problems?
What types of writing strategies are used by high achievers?
Does judicious discipline work in managing high school students?
How can I get non-volunteers to answer questions?
How could I more effectively get parents to participate in their child’s learning?

Perhaps your school is thinking of moving from a middle school to a junior high, or is being restructured to be a school within a school. Is that a good change? Maybe you would like to try some new idea in your own classroom or school. Is your reading/mathematics/writing curriculum being revamped? Will it be effective?

We know you have things you would like to study in more detail (even if you can’t think of what they are yet!). By following a research format you can do it in a way that provides you with the supportive data you need to defend your conclusions—to yourself and others. You can formalize what you do or think about
as part of your daily professional responsibilities in ways that provide defensible information about the choices you make—you can be an educational researcher. Let’s start by learning some background about educational research processes.

SCHOOLS OF RESEARCH

There are basically two main types of research paradigms: quantitative and qualitative. As the names imply, quantitative research methods have to do with quantities—numbers. Data might be pre and post test scores, ratings on a survey, amount of time spent doing homework or viewing television or playing computer and video games. They tend to answer the question “what.” They generally measure characteristics of groups. Qualitative research is more interested in the “whys” and “hows” of the what, often including beliefs and opinions of individuals. Data sources might be interview transcripts, reflective writings, photographs, and observations. It is more descriptive in nature. Qualitative and quantitative camps are opposite ends of a research continuum, with a variety of mixtures of the two main ideologies in between.

Here are some additional research questions to get a better sense of these schools of research before delving more deeply into them:

1. Is the amount of time spent viewing television related to student achievement?
2. Does the new mathematics curriculum improve students’ state test scores?
3. Why do students possess the attitudes they do about studying history?
4. What do teachers feel are the pros and cons of looping in the early elementary grades?
5. How do students feel about studying history?

Look at those five questions. Which of the above questions can be answered by some kind of measurement? (Do look first before continuing with the reading!!)

Did you decide questions one and two would lend themselves to gathering numbers? For the first question, we could have measurements of time and test (or other achievement) data. The second question could be answered by examining student scores taught using the old and new curricula (with some caveats). For questions three and four, however, there isn’t an easy number that could be obtained. Students would probably have to be asked specifically why they felt the way they do toward studying history—was it peer influence, family influence, boring content, riveting content, the way it is taught? Likewise, to get teachers’ opinions of looping, the easiest way would be to ask them to list or state what they perceive to be the pros and cons of the practice. So the first two would most likely be quantitative studies while the second two would employ qualitative methods.

What about the fifth question? The answer is—it depends. How do you want to go about collecting the data? An attitude questionnaire, with a Likert-type scale (strongly disagree to strongly agree) could produce a quantified idea of students’ attitudes toward the subject and lead to a quantitative study. An open-ended questionnaire (where students write in responses to questions) or a conversational interview with students could produce qualitative information about the students’ attitudes and lead to a qualitative study. So like most things in life, in educational research it is not always obvious how to proceed.
Which type of research is better? Some researchers (and granting agencies) believe the old adage that “numbers don’t lie.” They prefer hard and fast measurements. Think of “No Child Left Behind” in the United States (http://www.ed.gov/nclb/landing.jhtml) or a myriad of other government mandated assessments. Quantifiable test results are required. Others feel numbers don’t tell the whole story. Take for example the TIMSS studies, the Third International Math and Science Study (http://nces.ed.gov/timss). While student scores on tests were used to compare student achievement in different countries, the teachers from various countries were videotaped. These videotapes were analyzed qualitatively to examine exactly what the teaching looked like in some countries: how were the lessons delivered, what was the nature of teacher/student interaction, what types of learning activities were included in the lesson.

Like the discussion over the appropriateness of phonics or whole language, the preferred methodology in educational research tends to swing back and forth. Originally, educational research was quantitative in nature. It adhered to a traditional five step “scientific method” approach. In the 1960s, societal changes of civil rights, diversity issues, and inclusion, encouraged the use of qualitative methods for educational research (Bogdan & Biklen, 2006). Many “how” questions were being spotlighted (how to integrate, how to accommodate different learners, how to be culturally sensitive and encourage diversity), and these questions could not be easily answered quantitatively. Qualitative research gained a stronghold. Debate over the value/rigor of qualitative studies as compared with quantitative methodologies became an issue again in the mid 1980’s. Combinations of these two schools of thought became more widely used.

A struggle between qualitative and quantitative camps still exists. Qualitative studies are longer (both in the time they take to conduct and in volume of paper produced to disseminate the findings). At the 2006 National Association of Research in Science Teaching (NARST) business meeting, a lively discussion ensued about the decrease in the number of journal articles being published in the Journal of Research in Science Teaching, while the average number of pages in each journal had actually increased. The reason: mostly qualitative studies were being published, and compared with quantitative work, these require more pages to present their findings. Qualitative research has also been less likely to make a “contribution to theoretical knowledge” as compared with quantitative research (Zeichne, 2007, p. 43), mostly due to its limited context and generalizability. As noted by Erickson (1986), interpretative research targets “particularizability” not “generalizability.” Borko, Liston, and Whitcomb (2007), in their editorial introducing a paper set on teacher education, stress the values and needs for empirical research; that is, research based on observation and experimentation. The pendulum still swings.

So back to the question—which type of educational research design is better? For simplicity’s sake, imagine you want your students to be better readers. If you try to do this through the introduction of books into a classroom library you might want to know if the students were more excited about reading after the introduction of the books (probably a qualitative question) or you might want to know if reading scores went up (probably a quantitative question).
Which type of research is better depends on the study itself. The research approach needs to be appropriate for the specific question. While some people prefer one type of research to another, really the better method is the one that will address the problem—and sometimes both methods are needed in the same study. The question determines which type(s) of research design is required.

**QUANTITATIVE RESEARCH**

Let’s take a more detailed look at the two schools of research. We’ll start with quantitative because that is most like the typical five step process of problem solving and the design with which you are probably more familiar. In quantitative designs, you generally start with a question or a premise. Will using inquiry-based activities affect student achievement? If my students use this tutorial, will their mathematics grades improve?

Quantitative studies are linked to statistics. Most statistical studies phrase their question in the form of a hypothesis. A hypothesis is just a way of formalizing your question in the form of a statement. The hypothesis may be stated in an if/then format; for example, if I use more inquiry-based activities in my classes, then student grades will increase; if I use this tutorial with my students, their scores on the state mathematics test will increase.

Some of you may recall the “null hypothesis” from a statistics class. If you remember that phrase, you can state your hypothesis as a null hypothesis. This means you are saying the independent variable (the factor being changed) has no effect on the dependent variable (the variable being measured); for example, teaching students using an inquiry approach will not result in any change in achievement gains. (In this example, the independent variable is the type of instruction while the dependent variable is achievement gains.) Using this tutorial with my students (independent variable) will not affect their scores (dependent variable) on the state mathematics test. Quantitative researchers do this because it would be very hard to say that we have proved something will always be true when we are studying people. There are usually exceptions in any situation. So, we ask questions about how likely it is that the lack of what we thought we would see is a good explanation for what we are studying. If the lack isn’t a good explanation then that tells us that what we thought we were going to see in the first place is a better explanation.

You will become more comfortable with thinking like this as you apply these ideas to your specific research. We will go over writing a quantitative problem statement in detail later. And, for most cases, the quantitative problem statement for educational research does not need to look or sound like something out of a statistics primer! The important thing is to be able to clearly state what it is you are planning to investigate.

To answer quantitative questions, you typically follow some kind of experimental design. You usually have some baseline data, try an intervention, collect more data and see if the intervention made a difference. Or you have two sets of data that you are trying to compare. For instance, to see if teaching with inquiry methods affects
student learning more positively than teaching using direct instruction, you might
test the students before and after using one method and then do the before and
after tests using the other instructional method. After making some assumptions
(like the two units are comparable in difficulty and student interest), you can
compare the scores the students have on the tests of the two units. You would use
statistical methods to determine if one teaching methodology did, indeed, yield
greater improvements in scores than the other. As an additional example, perhaps
you want to see if the age at which children started walking is related to when they
started reading. Here you are not doing any intervention, but you are comparing
two sets of information to see if a relationship exists between them.

Quantitative research, then, is a structured process in which you gather and
analyze quantitative data. Ideally, it requires large, random samples. That is, you
would use your whole class rather than a just a handful of selected students.
Quantitative research follows a deductive model—you go from the general to the
specific. You have an idea or theory, you apply it to your sample (class, school,
etc.), and see if it holds true. The findings tend to be generalizable to other people
who are similar to those who were in your study. If teaching with a more inquiry-
like approach works for your students, it will probably work for all similar groups
of students. If direct instruction worked better for your students, it would probably
work better for other students in your school. Finally, quantitative research is
concerned with outcomes—it looks at a product.

QUALITATIVE RESEARCH

Qualitative research designs are quite different from quantitative methodologies.
Instead of starting with a hypothesis, you end up with one. You start with something
you want to learn more about, but have no hypothesis to test. For example, rather
than trying to measure student attitudes toward school, you want to find out what is
it they like or dislike about school. What affects their attitudes? Rather than using
an experimental set up, you study the students in an actual setting. You don’t
manipulate how the teacher teaches or what students are in the class, but rather
look at the situation in context. You will collect descriptive rather than numerical
data. You might do classroom observations, you might interview students, you might
have students journal about their thoughts. You would NOT give them a list of
items and ask them which statements were true about their attitudes toward school.
You would have the students generate the list. In qualitative designs, we typically
select small, non-random samples to study. Rather than study all students enrolled
in a history class, we might study a handful that we think possess (or have been
suggested to us as possessing) positive attitudes and some that have negative
attitudes. Because the numbers are small and the sample is non-representative, the
findings will not be generalizable. They hold true only for that specific group of
students.

In qualitative research, you don’t come up with an outcome or a product. Rather
than a “what,” you usually come up with “hows and/or whys.” The data are specu-
lation, based on the perceptions of those involved. You actually “conclude” with
a hypothesis. This may provide an excellent statement to be tested in another setting or with other research designs. After talking with and observing a select group of students, you may come up with some notion of what it is that affects students’ attitudes toward school. Students might like it when they feel they have more of a say in what happens and more freedom of choice in their schools. From that you might hypothesize that students in schools with an active and strong student government would have more positive attitudes toward school; however, you could not conclude that—you are just guessing based on what you discovered with this select group—that assertion is something that would need testing (probably using a quantitative design). Qualitative research tends to be inductive. You look at specific instances and try to come up with a generalization.

So, quantitative and qualitative studies differ in important ways (See Figure 1-3).

1. **Purpose of the study**—are you looking to test something specifically or determine an outcome or are you interested in coming up with possible explanations or descriptions?
2. **Kinds of data collected**—are you looking at quantitative outcomes (test scores, scales, etc.) or observational/descriptive data (you are the primary collection tool)?
3. **Methods of data collection**—are you using an experimental set up or a more naturalistic approach; is the process more objective or subjective?
4. **Analysis of the data**—are you applying statistical procedures or using inductive reasoning?

<table>
<thead>
<tr>
<th>Quantitative</th>
<th>Qualitative</th>
</tr>
</thead>
<tbody>
<tr>
<td>numerical data</td>
<td>descriptive data</td>
</tr>
<tr>
<td>deductive model</td>
<td>inductive model</td>
</tr>
<tr>
<td>large, random sample</td>
<td>small, purposeful sample</td>
</tr>
<tr>
<td>generalizable</td>
<td>not generalizable</td>
</tr>
<tr>
<td>outcome oriented</td>
<td>process oriented</td>
</tr>
</tbody>
</table>

*Figure 1-3. Comparison of quantitative and qualitative design.*

**SUBCAMPS OF QUANTITATIVE AND QUALITATIVE RESEARCH**

While specific types of quantitative and qualitative research methodologies will be discussed in more detail later, it is useful to provide an overview of the types of studies that fit into these paradigms now. We think this will help solidify the similarities and differences between the two major research models.
Quantitative categories. Common quantitative designs include experimental, causal-comparative, correlational, and survey or descriptive designs (see Figure 1-4). An experimental design is used when you want to test a particular variable. Using our previous examples, if you want to see whether inquiry-type learning produces different achievement results than direct instruction, you would use an experimental design. The variable being tested is the type of instructional methodology (independent variable) and the outcome being measured (dependent variable) is achievement. Experimental designs allow for manipulation of independent variables and make cause/effect conclusions possible by examining data that comes from dependent variables. In actuality, in most educational research studies that we will do, we will be using a quasi-experimental design rather than a true experimental design. This is because we cannot randomly select our students. We generally work with the sample we have the easiest access to, and this is not usually randomly assigned.

- **Experimental design** – testing a particular variable
- **Causal-Comparative (Ex post facto)** – testing a variable but researcher cannot control the independent variable
- **Correlational study** – determining relationships between variables
- **Descriptive quantitative study** – gathering information to clarify characteristics of a group
- **Survey research** – relying on answers to questions

When you cannot control or manipulate variables but want to see the effect a variable may have, you typically are doing causal-comparative research, also known as ex post facto research. For example, you want to determine if reading daily to preschoolers (independent variable) affects their reading readiness in kindergarten (dependent variable). You cannot (and should not) determine which preschoolers get read to, so you compare two intact kindergarten groups—those that had been read to with those that had not. It is similar to an experimental design in that groups are being compared to determine an outcome (the differences in the dependent variable); but dissimilar in that the experimenter does not control the independent variable (the factor being changed).

A correlational study is used when you want to determine if a relationship exists between two or more variables. Is there a relationship between socio-economic status and performance on open-ended mathematics tasks? Is there a relationship between homework completion rate and chapter test scores? These are not cause/effect studies, but help to determine the degree of a relationship that exists between/among variables. It may be enough for your study’s purposes to understand that two variables behave in the same (as one increases, the other increases) or opposite ways (one increases while one decreases) but often the results of correlational studies help in the design of further experimental studies.
CHAPTER 1

Descriptive quantitative studies gather information about a group so that it is easier to understand the nature of the group. The purpose of the study is not to compare groups or to understand the impact of an intervention, but simply to have a clearer picture of the characteristics of a group. As an example, you might want to track changes in your school district’s yearly expenditures over time to understand changing funding sources. In this case you are asking a descriptive question about the group being studied and not comparing groups.

A form of descriptive research is **survey research**. As the name suggests, survey research relies on answers to questions. Unlike qualitative descriptions, the data collected in this type of design are quantitative. Those in the sample respond to provided statements such as “choose from the following” or “rate on a scale from one to five.” Typical data collection instruments include tests and questionnaires; pencil and paper forms that the respondents can complete on their own (or via telemarketers).

**Qualitative categories.** Qualitative research can be categorized in a myriad of ways, but the main types typically are **grounded theory**, **ethnography**, **case study**, **phenomenology**, and **historical research**. (See Figure 1-5) In a grounded theory approach, the purpose is to collect and analyze data with the intent of coming up with a theory that explains the research situation. It is considered “grounded” because it develops out of—or is grounded in—collected data. You would use this approach when existing theories do not apply to your situation or context and when studying new phenomena. You are basically trying to understand a research situation; that is, what is happening and how those involved feel about it. As an example, you may be interested in understanding why conflict exists between parents of children in special education programs and school officials or how to best integrate the use of interactive white boards in a classroom. For grounded theory, the data collection and analysis process is an iterative cycle of collecting information, identifying commonalities in the data, and verifying those commonalities, narrowing the key components as you repeat the cycle. The outcome is a potential theory that explains the relationship.

- **Grounded theory** – generating a theory to understand a problem/situation
- **Ethnography** – examines the “culture” of a group
- **Case study** – detailed account of an individual or group
- **Phenomenology** – looking at something through the eyes of those being observed
- **Historical Research** – understand events that have already occurred

*Figure 1-5. Selected types of qualitative research designs.*

Another common qualitative approach is an ethnography. In an ethnography, you are interested in studying the “culture” of a group. You might examine how a group is formed, how the members interact, and what type of interactions occur.
You might be interested in looking at “skateboarding culture” or behaviors of teachers in a teachers’ lounge. One of our colleagues studied a group of graffiti artists to get a deeper understanding and insight into that subculture (Christen, 2003).

A case study is considered by some to be a subset of ethnography. Others consider it a separate type of qualitative design. As its name implies, a case study is an in-depth examination of one or more special “cases.” A case can be a specific person or a small group. It is similar to an ethnography, but has a more defined/limited focus. One of our students was doing her practicum in a grade school that was gradually implementing a new mathematics curriculum. Teachers were given the option of when and how they wanted to start using the newly adopted, student-centered program as long as everyone had it fully adopted by the end of three years. Our student chose a small group of teachers to study, which included early adopters, resisters, and some fence straddlers. She examined how they felt about the change, about mathematics in general, and about student learning. She hoped to understand why there was such a difference in attitude and behavior concerning the implementation of this new type of curriculum.

Phenomenology is looking at something (the phenomenon) through the eyes of a subject group. That something might be an event or an interaction; the focus is on understanding the perspectives of those you are studying. You attempt to find the “commonalities of their perceptions” (Slavin, 2006, p. 147). Phenomenology applies a social constructivist viewpoint to the research process. You might be interested in studying student teacher/mentor teacher interactions or how students deal with the loss of a classroom pet.

Historical research is used to help us understand events that have already occurred. We worked with a teacher who had started the school year in a new district. The physical design of her school building was very different from any she had worked in or seen. Her research question was why the school was designed as it was. She undertook a historical research project, examining school board minutes, looking at architectural plans, speaking with members on the school building/planning committee, to gain an understanding of the reasons for the physical configuration of the building.

As with anything, these subcategories of quantitative and qualitative research are not exhaustive. There are other distinctions and subcategories within subcategories. These are just the more common approaches you’re likely to encounter or pursue yourself.

MIXED METHODS

As mentioned earlier, sometimes a research study uses a combination of qualitative and quantitative methods. You may not be interested in just what teachers’ attitudes are toward state-mandated curricula (which can be measured using a scaled instrument) but also why they feel that way (answered by having them answer some open-ended or interview questions). You might want to know what methods neighboring districts use to identify talented and gifted students and how teachers feel about those methods. You may want to examine if and how student achievement
scores are affected by switching to PowerPoint presentations and what students think about your use of that type of medium. Using a mixture of qualitative and quantitative methods in one study is perfectly acceptable, and in some cases, necessary. Your question dictates the methodology or methodologies you should use! (You’ve heard that before.)

In a study that uses mixed methods, the methods can be used sequentially or simultaneously (see Figure 1-6). For example, you might initially administer a quantitative questionnaire to gain information on students’ attitudes toward a specific content area. You would then use those results to help identify a sample of students with a range of attitudes from positive to negative to interview for a deeper insight into the whys of these attitudes. This is referred to as an explanatory design: the quantitative portion precedes the qualitative data collection. Conversely, you might follow an exploratory design, carrying out qualitative methods prior to quantitative methods. You might interview a sample of students first to determine their attitudes toward a subject and the factors that affect that attitude. After analyzing the data to determine pertinent themes and patterns, you would use those findings to design a quantitative questionnaire that could be administered to a larger group of students.

At times your question might require that you collect both types of data simultaneously or concurrently. You might be integrating technology into your instruction and you want to determine if (a) this change in methodology will impact quantitative student achievement and (b) whether students’ behaviors in class are affected by the implementation of technology. You would use a quantitative design for the former and a qualitative design for the latter and be conducting both at the same time. This is referred to as a triangulated design.

In these types of mixed-methods studies, you actually have a two-pronged or compound research question. One part of the question would be answered using quantitative methods and the other using qualitative means. You could design the study as if you are doing two studies, using both types of methods and data analysis, but base your conclusions on the two sets of findings.

**Explanatory**
Quantitative precedes Qualitative

**Exploratory**
Qualitative precedes Quantitative

**Triangulated**
Quantitative occurs along with Qualitative

*Figure 1-6. Models of mixed methods.*

**ACTION RESEARCH**

There is one other main “body of research.” It is action research. Action research can be qualitative or quantitative or use mixed methods. It follows the same planning and guidelines as other types of research. What sets it apart, is that action research
INTRODUCTION OF EDUCATIONAL RESEARCH

is generally undertaken by individuals for their own, personal purpose—as opposed to educational researchers in college, universities or think tanks. Teachers and school administrators look at a problem in their own classroom/school/district to be able to gather information and make an informed “action plan.” The purpose is generally to improve one’s teaching or address a specific, local concern. Is the new tardy policy working? Is implementing judicious discipline in my history class helping students learn more deeply about democratic principles? Is using the student response system a more effective way of formative assessment than using non-technological means? Action research is not undertaken to have the findings apply to any situation except the one that is studied.

Mills (2007) categorizes action research into two main types: practical action research and participatory action research. Practical action research is research that addresses specific questions in a classroom, school, or district. The purpose is to improve teaching and learning or provide necessary information to help in decision making. Participatory action research differs from practical action research in that it involves a group of people focusing on the same problem (e.g., teachers, administrators, board members). This group of stakeholders collectively formulates the research problem, which leads to this type of action research also being dubbed collaborative action research. Additionally, participation action research attempts to “improve social practice by changing it” (McTaggart, 1989, Tenet 1). It is an iterative process of planning, implementing, observing the effects of the implementation, reflecting on the effects, and revising the action plan.

While there are entire books written just on action research (e.g., Mills, 2007), the basic research guidelines needed in conducting such a project parallel those outlined in this text. Depending on your question, you would follow the guidelines for conducting a qualitative, quantitative or mixed methods study. Once you are done with your data analysis, action research requires that you take one additional step. The implications section would be your action plan. Now that you have studied the issue, what do you propose be done in response to the problem?

A main drawback to conducting action research is that the researcher is an inherent part of the process, making it harder to maintain objectivity. The major advantage is action research focuses on self-reflection; and, because you are studying something that is relevant to your immediate professional practice, it is easy to keep focused on and enthused about the research question. You will be taking a systematic and critical look at an issue that will ultimately improve your effectiveness as a professional. Those of you who will be examining your own teaching practices or classroom policies may be conducting a study very similar to action research.

NEXT STEPS

Now that you are armed with a basic understanding of why you should know how research is conducted, why you should learn about designing and conducting your own research project, and the basic schools of research methodologies, the next logical step is to begin thinking about your own research project. It’s time to start drawing on the empowerment that you will get from becoming an educational researcher.
CHAPTER 1

CHAPTER SELF-CHECK

Having completed this chapter, you should be comfortable discussing the following:
- the importance of educational research
- what it takes to be an educational researcher
- the typical format of an educational research paper
- a comparison of qualitative and quantitative paradigms
- the description of the following quantitative methodologies: experimental design, causal-comparative, correlational, survey, descriptive
- the description of the following qualitative methodologies: grounded theory, ethnography, case study, phenomenology, historical research
- mixed methods research
- what constitutes action research

CHAPTER REVIEW QUESTIONS

1. What is the purpose of educational research?
2. Why is it important that you understand the basics of conducting educational research?
3. How is a typical research paper organized? What is included in each chapter?
4. What are the major differences between qualitative and quantitative research?
5. The text describes five main types of quantitative research. What are these? Provide a brief description of each.
6. The text also describes five main types of qualitative research. What are these? Provide a brief description of each.
7. Is it possible to mix qualitative and quantitative methodologies in the same research study? Why or why not?
8. Compare and contrast action research with qualitative and quantitative schools of research.

REFERENCES

INTRODUCTION OF EDUCATIONAL RESEARCH


CHAPTER 2

WRITING A RESEARCH QUESTION

Chapter Two guides the reader through the process of writing a research question. It provides considerations and tips for coming up with a good and manageable question, including a discussion of ethical considerations, informed consent, and getting institutional approval. It discusses the differences in framing a qualitative, quantitative, and mixed-design problem statement, and also discusses the practicalities of doing each type of research as a classroom teacher. The chapter concludes with instruction on how to write an introductory chapter to a research proposal and study.

INTRODUCTION

When planning a trip, you need to decide on a destination or at least a route. The same is true for our research journey. We need to start with a problem statement. What questions or problems exist in your daily professional life that you would like to answer? What concern or issue do you have that you would like to explore in depth?

Writing a problem statement may be the hardest part of the whole research process. You might know you want to vacation in a tropical paradise. Once you know where you want to go, making transportation arrangements, hotel accommodations, and packing begin to fall neatly into place. But, deciding on that one destination is not as easy. It is the same with selecting a problem statement. Once you know what you will be studying, the rest of the process follows; but choosing that starting point can be difficult. So, let’s work on coming up with a good problem statement.
SELECTING A PROBLEM TO STUDY

Sometimes seeing what others have done makes it easier to decide on a question for ourselves. Here are some problem statements that our students have examined:

_Do students in a self-contained seventh grade classroom score higher on standardized language arts tests than seventh grade students in other instructional settings?_

_What were the effects of the Read Well Program on kindergartners who had Read Well instruction versus kindergartners who did not receive Read Well instruction?_

_Do fifth grade students think it is important to pass the state benchmarks assessments?_

_Are current school start times in alignment with our students' sleep/wake habits?_

_How do teachers who have looped grade levels with their students feel about the process?_

_The purpose of this study is to analyze how eighth grade mathematics students view themselves as mathematicians._

_The purpose of this study is to determine if a student's reading fluency score can be correlated with their reading comprehension test scores._

_The purpose of this study is to investigate the work-related stress experienced by my teaching colleagues._

_This research proposes to investigate transition programs for grade six students in XX School District by comparing the characteristics of these programs with the characteristics of effective transition programs as described in the current literature._

GUIDING THOUGHTS

Have any of these spurred you on to your own question? Here are some things to consider in developing your own problem statement. These are adapted from Bogdan and Biklen (2006).

1. Be realistic. You will probably do this research project while attending other classes and/or teaching/working full time. Then there are those pesky personal responsibilities (shopping, cooking, cleaning, taking care of yourself and perhaps a family), and of course trying to find some down time to relax and keep yourself emotionally and physically healthy. Realize that you will have time constraints. Keep your study simple to start. Come up with a manageable question that can be answered in the time you have available.

2. Choose a sample that is convenient to study. While there are problems inherent in choosing your own students or colleagues, we feel your own classroom, school or district would be an optimal place to look. The main reasons we suggest this is that you have easy access to the students/staff/administration and you are a “known quantity.” A major drawback is that the responses you get
may be tainted for those same reasons. Your sample may act or respond in a way that they feel you want to see rather than more naturally and truthfully. There may also be ethical considerations. We will explore these more fully in this chapter.

3. Consider ease of access. Regardless of whether you choose to study your own teaching site or another, consider when you will be able to have access to your sample. For example, if you are going to compare teaching strategies of other teachers in your own building, are you able to do that? Do they teach during your planning period or other times you might have available? Are you just interviewing them? Can you do that before and/or after school? If you will be administering a survey to the staff, can that be done during a faculty meeting? If you are going to study a curriculum used by teachers in a neighboring district, when will you be able to meet with those teachers and see the curriculum being delivered? Can you do that during a prep period or is there a way that you can get release time to do that? Is their teaching schedule different from your own? What kind of paperwork will you need to file in order to gain access to teachers in another district? Don’t set yourself up for failure by choosing to study an issue that will cause obvious concerns with data collection.

4. Do not be too abstract with your question. Rather than being interested in multiculturalism in schools, think about what really concerns you in that area. Are you interested, for example, in policy, instruction, teacher/student or student/student relationships? Is it how teachers handle English Language Learners (ELL) in their classes or how relationships develop between ELL and the native students in the class? Are you really concerned with what services different school districts offer for ELL or teaching strategies that might be successful in working with ELL? Maybe you’re interested in examining how the ELL in your classroom cope with language difficulties. While you don’t want to be too narrow at the onset, you also don’t want to be so broad as to have no sense of where you want to go with the question. Doing background research will help you in focusing your question, but it really helps to have some basic ideas before doing much exploring.

5. Be flexible. You have to be willing to adjust and refine your question as you progress. You may find after doing a literature review that your question should have a slightly different focus or that you really would rather go a totally different direction than you had thought. That’s ok! There is a point in quantitative research where your problem statement will need to become permanently fixed but you do not need to do that initially.

6. Does your study have any importance? What would be gained by doing this study? Will it help you or others do your jobs better (practical importance)? Will it add to our knowledge about education in some important way (theoretical importance)? Will your study replicate what someone has already done to see if it works in your context? Conversely, if the question has already been rather thoroughly studied, perhaps just reading on the topic would provide you with what you need to know. In that case, it would not make a good problem statement.
CHAPTER 2

7. Probably most importantly, you must be interested in your topic. If you plan to study something that you are not so excited about, it will be a chore to get the project done. Working on a topic you don’t really have a vested interest in will not make or keep you motivated to collect and analyze your data, and your findings may be irrelevant for yourself. Research takes time and (as already discussed) provides much in terms of personal and professional development. Invest this time wisely. Given all the other demands on your time, it is important that you feel what you devote to your research project is a good use of this limited resource.

IDENTIFYING A PROBLEM AREA

If you are having problems coming up with a problem, here are some prompts that may be helpful:

- Is there an educational phenomenon you wish to describe (e.g., a move from a middle school to a junior high school; a historical overview of a change in curriculum; effects of block scheduling)?
- Is there something you have observed and would like to try and explain (e.g., why some students have trouble with long-division problems; what writing strategies are used by higher achievers; what thought processes do good problem solvers use)?
- Do you have a problem you want to try and develop a solution for (e.g., how can I make my students more self-directed learners; how can I get non-volunteers to answer questions; how can I better help my ADHD students to learn)?
- Is there a study you have read that you would like to replicate (e.g., check the validity of research findings with your population)?
- Have you heard a problem or concern raised at faculty meetings, committee groups, etc. that you would be interested in addressing?
- Look at the Review of Educational Research for ideas.
- Read the literature and see what the implication sections have to offer.
- Look at “hot topics” in current education to see if there is something that really piques your interest (e.g., whole language v. phonics; engineering design; alternative assessments).

If you are still stumped, for a few days or a week, journal at the end of each day on what happened in your classes or school. Read your journal. What recurrent issues arise? Can one of these act as the basis for your problem statement?

WHAT MAKES A RESEARCHABLE QUESTION?

The purpose of your research project is to answer your research question. So, in order to be researchable, you have to be able to answer your question, supported by the data you collected. Questions based on opinion, personal philosophies or beliefs are generally not researchable. For example, you cannot research the question “Should school uniforms be mandated?” This is a debatable question, but not one that is researchable as stated.
If your district is considering having all students wear a mandated school uniform and you would like to research that topic, you need to reframe the problem. You may want to see if the number of student behavioral referrals decrease if such a dress code is mandated. You may want to see if students have higher standardized test scores in schools with a mandated uniform as compared to schools with a less stringent dress code. Perhaps you are interested in how teachers/students/parents feel about having a mandated uniform for school attendance. All of these can be answered. While the last item (how people feel) is based on opinion, if your question is phrased to determine how a specific type of constituent in schools with a mandated uniform policy feel or how those constituents in a school that is considering such a dress code policy feel about it, that is a question that can be asked, data (responses) can be collected, and an answer can be found. Finding the answers to specifics related to mandating a uniform can help a district determine whether it should implement a similar policy. Making minor adjustments to a problem topic can often make it into a researchable question.

An important consideration in developing a researchable topic is the ethics involved with the question. We will discuss specifics about mandated ethical guidelines as they pertain to human subjects as they arise throughout the book; however, for now, keep in mind that you cannot do anything that would potentially harm any participant in any way. Usually potential harm is obvious. You wouldn’t want to test the effects of second hand smoke on student achievement by having students work in a room full of smoke. Sometimes potential harm is more subtle. Would asking questions about self-esteem make a student despondent? Particularly as a new researcher you should always err on the side of caution and get counsel from your advisor or your human subjects review board if you are unsure.

WHAT KIND OF PROBLEM IS IT?

Once you have a problem in mind, the next step is to frame it in an appropriate format. How you do that depends on whether the question calls for qualitative data, quantitative data, or both. So let’s examine your idea.

Will you be doing a more qualitative study? Are you interested in examining a topic from the viewpoint of those involved? Based on Borg and Gall (2007), the following broad categories of questions lend themselves to qualitative investigations:

− Theory developing; e.g., you are working on a grounded theory; you want to generate a hypothesis to explain an ongoing phenomenon.
− Understanding a complex process; e.g., you want to get to the root of misconceptions; you want to get a deeper understanding of students’ thought processes.
− Identifying variables; e.g., what teacher behaviors affect student learning; why do students dislike math; why are some students reluctant readers
− Why something does or does not work; e.g. why a cooperative learning activity fails miserably with one particular class while it is successful with others; why students oppose inquiry-type learning activities
CHAPTER 2

- Examining organizational structures; e.g., how do site councils function effectively; how does participating in professional learning communities affect staff relations
- Examining new constructs; e.g., block scheduling; blended classrooms; inclusion.

If, on the other hand, you are looking at a problem that can be solved by collecting numerical data, your question is better suited to a quantitative methodology. You have a specific hypothesis in mind to prove or disprove. You have variables that you can measure; for example, student achievement, gender differences, relationships among variables. You may want to determine the effect of something on something else—the use of a new curriculum on standardized test scores, a new teaching methodology on student achievement, different study skill techniques on homework completion rates.

You might have a study that requires a little of both methodologies. Perhaps a school district has placed Smart Boards in all classrooms. You might want to determine whether the students’ scores on year end exams increase (quantitative) and whether students felt the Smart Boards enhanced their learning (qualitative). Or you might want to not only measure how frequently teachers used the Smart Board in their teaching (quantitative), but also ascertain how they felt about using this new tool (qualitative). In these cases, you would be using multiple types of methodologies. Be cautious about deciding to approach your research problem as a mixed methods study. You need to decide if your problem is best addressed by doing a quantitative study first followed by a qualitative study (or vice versa), or does your problem really need to use both research strategies simultaneously. The more complex your research problem becomes, the more work it will take to gather and analyze data around your topic. Mixed methods studies are often done better as two studies, and you may want to choose only one of those to pursue for your own research, leaving the other for another time or another researcher.

Remember, the type of methodology you ultimately choose to use is determined by your question. Because you are in the “driver’s seat” right now with your question, there are a few things to consider: time, interest, and math self-confidence. Quantitative methodologies require mathematics skills or at least quantitative reasoning skills. Some new researchers tend to shy away from questions requiring numerical data, thinking qualitative studies will be easier. Let us assure you that in later chapters we will lead you through a variety of standard statistical tests in a simple fashion. We won’t let you get lost. Do not let any qualms about working with numbers sway your decision about what type of question to pursue.

Qualitative studies require a great deal of skill and time. Interviewing is an art that gets better with practice. Writing “essay-type” questions that prompt subjects to focus on a topic and provide solid information without biasing them is not simple. Reading responses to open-ended questions and making sense of multiple data sets are time consuming processes. Often times, studies using qualitative methodologies are more labor intensive than those requiring quantitative methodologies. If time is a serious limiting factor, keep that in mind.
The cardinal rule in choosing a study, however, is ultimately what is of the greatest interest to you. Remember, if you do not have a vested interest in your question, your research journey will be more like a trip to the dentist for a root canal than a trip to the ocean to watch the sun rise.

Once you have your research topic in mind, it is time to write your problem statement. The format of a problem statement or research question varies depending on whether the study involves qualitative, quantitative or mixed methodologies.

**QUALITATIVE QUESTIONS**

Qualitative research is useful for describing or answering questions about particular, localized occurrences or contexts and the perspectives of a particular group toward events, beliefs or practices. The general form of a qualitative problem statement is: what are the patterns and perspectives of a group about something in a particular setting. For example:

*The purpose of this research project is to find out from the perspective of our parents how our school can provide children access to a broad range of engaging reading materials through home, school and community programs.*

*How do middle school teachers feel about being required to use Student Response Systems in their classes?*

**QUANTITATIVE QUESTIONS**

Quantitative research is based on the collection and analysis of numerical data. Underlying quantitative research methods is the belief or assumption that we inhabit a relatively stable, uniform, and coherent world that can be measured. For descriptive and historical studies, the general form of quantitative questions is: what are the descriptions of the characteristics of a group. For example:

*What is the socio-economic status of students enrolled in a self-contained seventh grade classroom in a school where other students are in rotational classes?*

*What is the level of community participation in service projects in a community where service learning is being integrated into the elementary curriculum?*

For studies in which groups will be compared statistically, the general form of a quantitative question is: what are the comparisons of characteristics of groups based on an intervention. For example:

*Do students in a self-contained seventh grade classroom score higher on standardized language arts tests than seventh grade students in other instructional settings?*
CHAPTER 2

Does the integration of service learning in elementary curriculum affect teacher self-efficacy?

MIXED STUDIES

Because mixed studies are looking at two questions, one to be answered with a quantitative methodology and one with a qualitative methodology, the question must be a compound statement. This is the only time we recommend the use of the word “and” in writing a problem statement. You can also write your purpose in two sentences, or in a list. For example:

The purposes of this study are to determine: (a) if looping in lower elementary grades result in greater learning gains for students, and (b) how parents feel about their children being looped.

The purpose of this study is to measure fifth grade student attitudes toward classroom science. It will also examine the factors that students feel influence these attitudes.

GENERAL COMMENTS ABOUT PROBLEM STATEMENTS

Regardless of the type of problem statement you have decided on, here are a few guidelines to consider in writing your statement:

The statement typically starts with “The purpose of this study…” Some researchers prefer to use a question rather than a statement. Either is fine. Using one of our prior examples, you can say “The purpose of this study is to measure fifth grade student attitudes toward classroom science” or “What are fifth grade student attitudes’ toward classroom science?” We prefer the former just because it makes it very clear what the purpose of the study is.

Write for clarity. Avoid technical jargon or complicated grammatical construction.

Unless you are using a mixed methods design, you make your research work much more complicated if you include more than one question in a study. Especially for new researchers, avoid the use of the word “and” in a problem statement.

ETHICAL CONSIDERATIONS

Every university has a human subjects review committee, often called an institutional review board (IRB), on its campus. While in the United States its function initially is to review any federally funded grant to consider the risks involved to the subjects participating in the research study, in most universities any research project involving human subjects (regardless of funding) needs to be reviewed by the IRB. Depending on the nature of the study, the research project may fall into one of three categories: full review, expedited review, or exempt from review.
The category is determined by the degree to which the study will involve and impact the subjects. Those projects that have greater risks, stress or discomfort to the subjects require greater scrutiny. We encourage our students to design their studies so they will be deemed exempt. This does not mean the proposal is not required to be reviewed and approved by the IRB, but the number of members that must review the proposal is reduced. In our institution, examples of types of proposals generally determined to be exempt can be found in Table 2.1. A complete listing of exempt categories is available in the Code of Federal Regulations (45 CFR 46.101); the URL is located in the reference section of this chapter. You will need to check with your institution to get the specific guidelines to follow to get your research proposal approved.

**Table 2.1. Samples of an exempt proposal**

- Investigations of commonly accepted educational practices in established or commonly accepted settings (e.g., a faculty member or teacher is examining a new method of teaching instruction to determine educational effectiveness)
- Analysis of information from educational tests that will be recorded in such a manner that subjects cannot be identified
- Surveys or interviews in which responses will be recorded in such a manner that a subject cannot be identified directly or through identifiers linked to a subject. To qualify for exempt status, the surveys would not involve vulnerable populations (e.g., juveniles) or ask questions about sensitive aspects of a subject’s behavior (e.g., criminal behavior)
- Observations of public behavior (participant observation)
- Collection or study of publicly available existing data, documents, records or specimens
- Collection or study of existing data, documents, records or specimens in which information will be recorded or reported in such a manner that a subject cannot be identified directly or through identifiers linked to a subject


In expedited and full review studies, there are two important criteria that must be met concerning the use of human subjects: their privacy must be maintained and you must have informed consent. Privacy of individuals is maintained through the use of anonymous data collection or confidential means such as coding. Although this is not always possible, participants must be assured that they cannot—even through their responses—be identified by a third party.

Subjects must also be willing participants in the research project after being briefed about the purpose of the study and any risks. This consent is written. If the subjects are under 18 years of age, consent must be obtained by the parent/legal guardian of the minor.
Generally, exempt studies do not require written consent forms. Many action research projects do not require written consent because the data being collected are those which would normally be collected or available to the researcher outside the context of the study. For example, in the regular course of duties, a teacher may try new teaching methodologies, curricula, testing strategies, and the like. Having students participate in these classes and collecting data to determine the effectiveness is something the teacher would normally do. No special consent is required. Likewise, using already collected and available testing data (e.g., state test scores) requires no written consent, provided confidentiality can be assured. If a teacher plans on interviewing a student about things other than what is in the curriculum or studying students with whom they would not regularly interact, however, this is not typical and does require informed consent. The IRB has the final say on whether informed consent is required in specific situations. Written informed consent does need to include certain items. These are:

− Description of the purpose of the research
− How and for what length of time the subject will be expected to participate
− Any risks or benefits associated with participating in the study
− How confidentiality will be assured
− Contact information if the subject has questions about the study or his/her rights as a subject
− Statement that participation is voluntary, and participation may be discontinued at any time without any consequence
− What will be done with the findings of the study

A sample letter of informed consent can be found in Figure 2.1. The subjects (or the guardians if the subjects are minors) receive a copy of the written letter. If the data collection instrument is an anonymous questionnaire (with non-sensitive questions), a cover letter that includes the information can be provided. Submission of the completed instrument would be sufficient for “written” consent. A sample cover letter for that type of data collection is in Figure 2.2.

If you are interested in using a survey in which you will not be able to collect a consent form separately from the survey (online surveys are almost always in this form), there are models for writing consent forms in which completing the survey is implied consent (see Figure 2.2). The form of the letter is essentially the same and is shown on the first page of the survey before any questions are answered. The final line of the consent form reads something like: Completing this survey constitutes your informed consent to use your responses in our study. Some IRB committees are nervous about doing this because it is difficult to ensure anonymity. Be sure you know how your institution approaches this before you do a survey of this kind.

You should also be aware of any district guidelines for conducting research in your classroom, school or district. In some cases, a discussion with the principal is all that is required. In other districts, you need to go through a process similar to the IRB at a local level.
Your child is invited to be in a research study about test anxiety and academic self-esteem. I am asking for your child’s participation to assist in my research for the completion of my Master of Education degree as your child is currently enrolled in my class. I ask that you read this form and ask any questions you may have before agreeing to have your child in this study. I can be reached at the school at 555-1234 or at home at 555-1111 (please no calls after 9:00pm).

The study: The purpose of this study is to determine if there is a relationship between a students’ academic self-esteem and the presence of test anxiety. If you agree to have your child in this study, your child will be asked to complete two questionnaires. Your child will be asked to rate to what degree they feel anxiety coming into a test situation (on a rating scale of never, almost never, almost always and always) and the second will evaluate their level of academic self-esteem (by responding yes and no to different items). The questionnaires will take approximately 20 to 45 minutes to complete.

Risks/benefits: I feel there is little risk to the students. They are merely reporting their feelings in an anonymous setting. Individual students may feel like I will be scrutinizing them, but after explaining how the anonymity of the study works, hopefully their fears will be put to rest. Each student participating in this study will receive a fun pen or pencil, regardless of whether or not she or he completes the questionnaires.

Confidentiality: The records of this study will be kept private. Questionnaires will be coded to maintain anonymity and only I shall have access to the information. The coding is only done so that the data from the questionnaire can be sorted based on different demographic criteria. In the finished project, it will be impossible to identify subjects by name. Consent forms will be kept securely along with questionnaire results for 1 year after the completion of this study.

Voluntary nature/questions: Your decision whether or not to participate will not affect current or future relations with me or the school. This is a personal endeavor to help me better understand how my students think. If you decide to allow your child to participate, I would greatly appreciate the assistance. Again, I welcome any questions or concerns and look forward to getting started, so please feel free to contact me if you have concerns.

Tia Martini

Name of Child ________________________________________

Signature of Parent/Guardian _______________________________ Date _______

*Figure 2.1. Sample letter of informed consent that needs to be signed.*
You are invited to participate in a research study conducted by Patricia Morrell and James Carroll, School of Education, University of Portland. This study is being conducted for several purposes:

1. Initially to help determine what kind of support, training, or resources you need or would like to have to help you in integrating the Smart Board and Student Response System into your teaching;
2. To evaluate, at the end of the school year, the professional development delivered and determine what you may still want help with in the future;
3. To see what affect, if any, the use of the technologies has had on student achievement;
4. To learn how teachers infuse these technologies into their teaching; and
5. To shed light on the benefits and problems associated with a school-wide adoption of new technologies.

To help with objectives 1, 2 and 5, we are asking for your assistance by completing this survey. Your participation in this study is voluntary. Your decision whether or not to participate will not affect your relationship with the researchers or the administration at XYZ Middle School. If you decide to participate, you are free to withdraw your consent and discontinue participation at any time without penalty. All responses you make will be confidential. Only information in the aggregate will be reported. We will have two survey collections: one now and another at the end of the school year. We ask for an identification number (the last 4 digits of your phone number) just so we can track responses from the same individual over the two survey administrations.

We do not foresee any risks in your participating in this study. You would benefit from this study by helping to shape the professional development offered regarding use of the new technologies, by allowing us to trouble shoot any problems that might have been unforeseen with the integration of these technologies into your teaching, and by learning what affect, if any, the use of the technologies has had on student achievement.

If you have any questions about this study or the survey please contact Tisha Morrell at morrell@university.edu (123-456-7890) or Jim Carroll at carroll@university.edu (123-456-7890). If you have any questions regarding your rights as a research subject, contact the IRB at the University of Portland.

Your submission of the survey indicates that you have read and understand the information provided above, that you willingly agree to participate, that you may withdraw your consent at any time and discontinue participation without penalty, that you received this form, and that you are not waiving any legal claims.

Thank you!

Figure 2.2. Sample of letter of informed consent to accompany an anonymous survey.
Once you have your problem statement, you are ready to begin writing your research paper. You have what you need to write Chapter One, The Introduction. An introduction is a narrative in which you make the case that your research question is worth asking. As an exercise, select a published research study or use one of those included in this book and try to write a short phrase or sentence that summarizes the main point(s) of each paragraph in the introduction of the paper. More often than not you will discover that the notes you have made form a logical argument. Each point or paragraph works toward making the case that the research study needs to be done. For this reason, problem statements usually appear at the end of the introduction.

A simple way to structure an introduction is outlined in Table 2.2. Once you structure your argument, take each point and expand it into one or several paragraphs. This will provide you with the bulk of your introduction. Let’s look at an example. Suppose you think some of your students suffered from test anxiety. You want to see if you can reduce this test anxiety and get a better measure of your students’ actual learning. Your introductory outline might look like this:

I. History
   What prompted the study
   Types of assessments generally used

II. Context
   Where do you teach (brief description of school/community)
   Description of students
   (Note: descriptions are kept anonymous)

III. Theoretical constructs
   Purpose of assessment
   Why test anxiety is an issue
   Theories that shed light on the issue of test anxiety
   Strategies that exist to reduce test anxiety

IV. Why is it important?
   Importance in terms of accurately measuring student learning
   Improved test scores
   Personal teaching goals
   Meaning of scores for district/federal funding

V. Problem Statement
   Write the problem statement
   Which strategy will you implement to try and reduce students’ test anxiety

VI. Terms
   Define test anxiety
Table 2.2. Components of chapter one

Chapter One typically includes the follow pieces:

- History of the problem
- Description of the context
- Theoretical constructs
- Why the problem is important
- Problem statement
- List of terms

Let’s look at this in more detail. Readers of research reports expect to find certain information in the introduction in addition to support for the need for the study. They would expect to find a description of the history of what prompted you to study the problem. In our example above, the opening paragraph might include talk of how the results of on the tests you have been giving do not seem to match your predictions of how well you expected some students would do. Or, that you have noticed a high rate of absenteeism on test days. The introduction would include some narrative that helps the reader understand how you became aware of the problem.

Readers will expect to find information about the context in which the study is being done. A sense of the setting/context of your problem is necessary to understand why the problem exists and why it is important to research. For this next part of your introduction, you would briefly describe the type of school in which you are working and the students in your class. Provide demographics of the community if they are relevant. Do not include identifying information in your description. For example, when discussing a specific high school in Portland, Oregon, you would say a large, public, urban high school in the Pacific Northwest. Do not use actual names of schools or subjects. You may assign pseudonyms as needed. Perhaps the most confusing thing to beginning writers of research reports is the idea of a theoretical construct (ways in which the research community views the problem). See section III of the outline above. This includes some set of studies or the work of a specific author that defines the space in which your study fits into the larger body of educational research. This prior work helps define the way you will proceed with your study.

Readers will look for the reason your question is an important problem. Discussion of this would include number IV above. And, finally, they will want to have some idea of what you intend to do in the study. In our case, that would be a short description of why you chose a specific strategy (say playing soft music) to try with your students to reduce their test anxiety. If the progression of the argument makes sense, the introduction would end with the problem statement.

Also included in Chapter One are definitions for terms that either have multiple meanings or whose definitions may not be understood by all readers. These words are either defined within the Chapter as they appear in the text or under a separate heading at the end of Chapter One in a list format. Note that this
listing is not a glossary or a dictionary. It should only include salient terms that may cause confusion because of their use. “As has been demonstrated in the literature many times, sometimes seemingly familiar terms develop a life of their own as a diversity of definitions, understandings, and interpretations emerge over time” (Loughran, 2006, p. 1). Some examples of these are reflection, looping, blended, inclusion, cooperative learning. The purpose of including the definitions is so the readers will understand the meaning of the terms as you intend them to be understood.

Examples of introductory chapters for several of students are located in Appendix 2-A, located at the end of this chapter. Reading through them may help give you a more solid understanding of what goes into Chapter One.

NEXT STEPS
You are taking the hardest step. You are examining your professional life and determining what problem you would like to solve. After you decide on a purpose for your study, you have what you need to craft your question into a researchable problem statement. Chapter One of your research paper will lay the groundwork for what you want to do and why. It’s now time to examine what others have to say and have done in the same area. On to the Literature Review!

CHAPTER SELF-CHECK
Having completed this chapter, you should be comfortable discussing the following:
- considerations in deciding on a problem statement
- requirements of a researchable question
- characteristics of qualitative and quantitative questions
- guidelines for writing your problem statement
- ethical considerations when designing a study
- regulations affecting studies with human subjects
- organization and writing Chapter One

CHAPTER REVIEW QUESTIONS
1. What makes a question researchable?
2. Frame a question for the following problems:
   a. You are interested in discovering how the teachers in your building feel about the new reading curriculum.
   b. You are interested in determining whether the implementation of the new reading problem will affect student scores on the annual statewide reading test.
   c. You want to know both how teachers feel about the new reading program and if the reading program will affect student achievement scores.
CHAPTER 2

3. What is an exempt study?
4. What is a letter of consent, when is it required, and what must it contain?

REFERENCES
http://www.hhs.gov/ohrp/humansubjects/guidance/45cfr46.htm#46.101
http://www.up.edu/irb
APPENDIX 2-A: SAMPLE CHAPTER ONES

EXAMPLE 1 (REPRINTED WITH PERMISSION OF CHRIS STILES)

THE POTENTIAL POWER OF TESTWISENESS

CHAPTER ONE: INTRODUCTION

As an educator, nothing is more frustrating than handing a wretchedly low test score to a student who works diligently and tries his hardest. This is the student who puts in 110%, hands in all assignments, works well in collaborative student groups- yet still fails one examination after the other. These types of students seem to have two different learning tendencies. On one hand, the students possess skills that enable them to interact well with others and demonstrate sound work ethic, while on the other, they are simply not able to convert these abilities into successful test grades. It is disconcerting to hand back exams to these students when their effort and in-class contributions seem to be inversely proportionate to their overall test performance.

The ability to write a sound exam is a vital learned skill for any successful student. Whether to demonstrate proficiency in core subjects, complimentary courses, or for a government issued driver’s license, exams are a common fact of life that we are all forced to face. Many factors may affect students’ ability to achieve high grades on an exam. At some point or another, we have all been faced with these stressful hurdles. The stumbling blocks test takers often encounter usually encompass some level of test anxiety. Any activity which measures a person’s competencies with a score which reflects pass or failure, ultimately raises the stakes of that evaluative activity. Whether it be due to lack of preparation, inability to recollect requisite facts at the crunch time, or simply tripping up in the format of the exam, a test can present students with the opportunity to feel like a learned success story or an inept failure.

From an early age, students are coached to take a better exam. In the province of Alberta, students are required to complete a standardized exam as early as nine years of age. They then continue to write them in three year intervals culminating in the completion of diploma exams throughout their graduating year. While all educators surely agree that written exams are only one of a myriad of acceptable assessments, they seem to garner the majority of weighting and emphasis throughout a student’s educational career. The key, then, is to prepare students to assist them to enhance their scores on any given exam.

The buzz word that describes this process involves enlightening students in developing a competent aptitude to demonstrate “testwiseness.” Operationally defined, this involves training students to utilize strategies to improve their results largely independent from the material being assessed. Case in point, this means being able to write a better exam on the French Revolution without having to know
anything about the information from that period. In essence, most testwiseness skills lie in the ability to recognize faults in question design, helpful patterns, and well established strategies. Others emphasize the pre-test preparation that must occur, or skills to overcome reading comprehension, or to alleviate test anxiety. At the high school level, the question that arises is whether or not students have received ample amounts of coaching in order to be well versed in the art of testwiseness.

Standardized exams ultimately determine the suitability for seniors in high school to qualify for post-secondary admission. With their future weighing in their minds, the stakes certainly could not be higher. Not only do grade twelve standardized exams determine success or failure for students, undeniably by extension, they also are perceived to indicate the quality of the instructor. Staffrooms in every school are often filled with the moans of teachers stressing about their students’ test performance and, by extension, the image that it will relay on their methodologies. Testwiseness also forces teachers to tiptoe the precarious line of morals and ethics while preparing students for exams. As a result, teaching testwiseness to students may run the risk of spoon feeding information to our students, or simply teaching to the test. Ultimately, because of high stakes exams teachers feel constricted to “lock down” the curriculum and feel unable to explore areas of interest that do not directly apply to the content of the exam. As aforementioned, there are definite problems that arise from issues that pertain to testcoaching and testwiseness.

The focus of this study then, is to attempt to affect positive academic improvement upon grade 12 social studies students through providing them with moral and helpful testwiseness tips. Students must be reminded on a continual basis of the importance of writing an exam with a critical mind. Often, as classroom teachers, we mention these skills in passing somewhere at the beginning of the semester. Or worse, we assume senior high students have already acquired the aforementioned test taking cleverness. Why not provide students with reminders of these skills on the day of the exam? Why not revisit these skills without the subject becoming overburdened or obtrusive upon the students? Through the comparison of student performance on the exact same exam before the implementation of an “improved testwiseness workshop” and after it, this study will correlate test writing skills with achievement.

The purpose of this study is to determine if providing a testwiseness reference sheet for use during the examination will elicit significant improvement in students’ test scores. If students are refreshed of these test-wise skills immediately before writing an exam, the hope is that it will better serve them in experiencing future success. Will the current class of students who have received the testwiseness intervention perform significantly better than their past counterparts who did not receive it all?
As an administrator on our school’s instructional leadership team, looking at collaboration has become the driving force of our team’s conversations. We have found that, as a staff, we need to find the time for collaboration. Collaboration is a difficult goal to achieve because our staff must perform a myriad of diverse activities in a challenging working environment. Our challenging working environment is a function of the combination of the logistics of the large building we work in and our teaching assignments that necessitate working in many department areas. Finding opportunities for collaboration will require both sound planning and a commitment from all staff members.

Before proceeding to clarify the definition of collaboration, some background information about our school will be helpful. Our school is an elementary and junior high school (grades 5 to 9). We have approximately 300 students, 15 teaching staff and five teaching assistants. Our front office consists of two administration assistants, an assistant principal and a principal. Our school offers students four programs: a Community Learning Skills Program that works with mentally handicapped students; a Logos program that is an alternative Christian program; a Strategies program that provides support for students who have learning disabilities; and a regular academic program that provides students with a strong academic emphasis. Within these programs we offer students a variety of complimentary courses. Clearly, our school programs cover a wide spectrum of areas demanding a diverse assortment of expertise from our staff members.

Four years ago, based on the influence of our Superintendent, each school developed a team of lead teachers that made up an Instructional Leadership Team. This group of lead teachers has the responsibility of leading the rest of the staff through a variety of best practices. The lead teachers on the team are department heads, rookie teachers, experienced teachers and any keen staff members that want to enhance the best practices of our staff members. The team is made up of five teachers. My role on the Instructional Leadership Team is a lead teacher representing the school administration. An example of a best practice pursued is teaching strategies that help improve reading comprehension skills of our students in keeping with our school instructional focus on reading comprehension. Our focus emerged by interpreting the Provincial Achievement Test Results to target specific needs of our students.

For the last three years, we have worked very hard at developing these best practices for teaching reading comprehension skills. Now our staff is at the next stage of this process that includes looking at student work and reflecting on this process. Our Instructional Leadership Team recognizes the importance of these two tasks and that staff collaboration needs to happen in order for this process to be successful.
CHAPTER 2

Collaboration is not a precise area of study. For the dual purpose of completing this research project and supporting the work of our staff members, my part will be to work with the Instructional Leadership Team to further staff awareness of the importance of and benefits gained from collaboration. Also, considering the conversations that our instructional leadership team had at our year-end retreat, I will be looking at the comfort level of the Instructional Leadership Team in fostering collaboration among the teaching staff. We will be able to engage successfully in collaboration if the staff does not become caught up in the traditional style of individualistic teaching and focuses instead on cooperative teaching. The success of our effort to foster collaboration will be enhanced if our teaching staff respects the initiatives of the Instructional Leadership Team. If the staff buys into the initiative of our leadership team, collaboration among teaching staff will grow. How comfortable is the Instructional Leadership Team in fostering collaboration among staff members in our school?

DEFINITIONS:

I decided to use da Costa & Riodan’s (1998) definition of collaboration: “work done among two or more teachers in a climate of trust and openness to scrutiny and criticism” (p. 3)

Instructional Leadership Team is a group comprised of teaching staff representing various curricula areas or specialized areas that role is to provide leadership in the area of instruction.
EXAMPLE 3 (REPRINTED WITH PERMISSION OF STEVE COLKITT)

A LOOK AT EIGHTH GRADERS' ATTITUDES AND ACHIEVEMENT IN MATHEMATICS

CHAPTER ONE: INTRODUCTION

American Psychologist Professor William James once said, “It is our attitude at the beginning of a difficult task which, more than anything else, will affect its successful outcome.” As a mathematics teacher I enjoy math and learning in general. I like to discover, explore things, and work with numbers. However, I know that not all my students share this same enthusiasm for education and particularly mathematics. In the classroom I commonly hear students mumble (and occasionally yell in frustration) about how “stupid” math is and how much they dislike math. In turn, some students become very frustrated and decide to give up on whatever task we are trying to work on or accomplish.

Many school districts across the United States are reforming their mathematics curriculum in an attempt to help students see the applications of math in the real world and focus more on higher thinking skills rather than rote memorization of algorithms. Programs such as Connected Mathematics, Investigations, and Everyday Mathematics are based on the idea of showing students the usefulness of math in life, getting them to discover how it is used, and encouraging students to link concepts and ideas together. My school district has restructured the K-8th grade math curriculum to incorporate these problem-solving based curricula in hopes of raising state test scores and helping students stretch their thinking and problem solving skills. This is the fourth year the school I work at has used the Connected Math Project (CMP). The 2004–2005 school year was the first year where substantial growth occurred at the eighth grade level at the school I work at since the school-wide implementation of CMP in 2002–2003 school year. Roughly 15 percent more of eighth grade students passed the Oregon State Assessment Test (OSAT) than the previous year by meeting the eighth grade benchmark score set by the Oregon Department of Education.

Despite the growth that occurred with last year’s tests results, over half of the 8th grade students at the school in which I teach have below average math skills (according to RIT scores based on Oregon State Assessment Tests), and roughly 35 percent of math students in my class receive a quarter grade of D (59 to 69 percent) or F (58 percent and below). I am interested in analyzing students’ interests, successes, and failures in mathematics to give me a better picture of where they are coming from and use the information collected to help improve their chances of succeeding in my classroom. The information will also give me help with how I should alter the current curriculum to better meet the needs and desires of my students. I also hope to use my research findings to help me apply for various math, science, and technology grants that will allow me to integrate more technology and classroom projects into the curriculum.
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The purpose of this study will be to discover what my eighth grade students’ attitudes towards mathematics are and if those attitudes are related to achievement in mathematics. It is hypothesized that there is a positive correlation between attitude and achievement in the area of mathematics. If a correlation is discovered between attitude and achievement I can look for ways to improve students’ attitudes towards mathematics as a pathway to help increase students’ math scores. If a correlation does not exist, I can analyze other aspects of my math pedagogy and focus on those areas to help increase student achievement in mathematics.