Chapter 1

Research Styles and the Internet

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Learning Objectives

1. Distinguish Internet- from Web-based educational research.
2. Define “research style on the Web.”
3. Distinguish “research style” from “stages of the research” and “research focus.”
5. Describe the identifying characteristics of an IBR and a DDR.
6. In a presentation software, develop an IBR Show & Tell for peer review.
7. In a word processing software, write an IBR Proposal.
8. In a presentation software, develop a DDR Show & Tell.
9. In a word processing software, write a DDR Report.

Abstract

This chapter aims to encourage you to write about your own online research interests. Two types of research are covered here, idea-based research (IBR) which usually takes the form of a proposal, and data-driven research (DDR) which usually takes the form of a report to a committee.
People doing educational research today sometimes use the terms “Internet” and “Web” interchangeably, as in, “my study is about teaching and learning on the Web,” or “I’m doing educational research using the Internet.” In fact, “the Internet” and “the Web” are not the same. “The Web,” also called “the World Wide Web,” is just one part of the larger entity called “the Internet.”

The term “Internet” is actually a contraction of two words, “international” and “network.” This international network or “Internet” can be described as the connection of computer smaller networks of computers around the world to one another through wires, phone lines, and satellites that encircle the Earth. We connect to this network of networks through an ISP (Internet Service Provider) which is connected to the Internet. Once your connection between your computer network and the Internet is established, your computer can communicate with any other computer also connected to the Internet. Strictly speaking anytime you connect more than one computer together, you have created a network. A school lab of “network of computers” consists simply of two or more computers connected together. For that reason, it’s perfectly acceptable in educational research to do your study on learning effects from using the network of computers in your classroom or lab. Alternatively, you might explore students’ learning processes as they utilize the resources in your classroom or lab network.

Networked computers communicate with one another using a “protocol,” similar to language. E-mail uses SMTP or Simple Mail Transfer Protocol (SMTP) which is the de facto standard for e-mail transmission across the Internet. E-mail also uses POP3 (Post Office Protocol version 3) to retrieve e-mail from a remote server to a local client over a TCP/IP connection. POP3 will allow users with intermittent connections such as dial-up connections to retrieve e-mail when connected, and then view and manipulate the retrieved messages without the requirement to stay connected to the Internet.

Before the Web browsers arrived, browsing was done on the Internet through Gopher, and retrieving files through FTP command. FTP (File Transfer Protocol) still around. FTP is a software standard for transferring computer files between machines with widely different operating systems. Released in 1993, Mosaic was the first graphical browser. It had a combination of text and graphics. Today we use Netscape or Internet Explorer to “visit” different locations of the Web, hence the term “Web site address.” Browsers use the HTTP protocol. The HTTP (HyperText Transfer Protocol) is a request/response protocol between clients and servers. An HTTP client, such as a Web browser, typically initiates a request by establishing a TCP connection to a particular port on a remote host. An HTTP server listening on that port waits for the client to send a request string which would request the default page of that Web server, followed by an e-mail-like message that contains some information in its header that describes the request, followed by an optional body of arbitrary data.
Since most of the educational research carried out today is conducted on and about the World Wide Web, most of the content in this book is a discussion of Web-based educational research.

**Research Style: What It Is**

A “research style” is a particular perspective toward conducting educational research, determined by the psychological or sociological context (not by personal preference). Some styles in the book will be familiar to you as “research methods.” These are: qualitative research, case study research, action research, correlational research, experimental research, and formative evaluation. Other “styles” in the book may be more familiar to you as the environmental setting or the “learning environment” and nevertheless determine the design of the research. These are: technology policy, technology adoption, virtual ethnography, and discourse analysis. Any or all of these “research styles” may be used separately or combined at different “stages of the research” to answer a “research focus.”

A “stage of research” is a step in a quest toward answering the research questions determined by the research focus. As you’ll learn through your reading and practice with the various styles, Web-based educational research usually demands several studies of different kinds that flow into one another. In the field of Instructional Design research for example, there are clearly three stages of research: Quality review, then small group, then (experimental) field test.

A “research focus” is a particular topic of immediate interest determined by the discipline. For example, an Ed Tech research focus (topic of immediate interest) is often different from that of Ed Psych. And that within Ed Tech, an Instructional Design research focus is different from a Computer Applications research focus. Similarly, an Ed Measurement research focus is somewhat different from an Ed Psych focus, and perhaps a Special Ed focus may be different from an Ed Psych focus.

**Factors Influencing Your Research**

In trying to determine and describe the factors that may influence the outcome of your research, remember to consider the variables in the DECL Model, shown in Figure 1. “DECL” stands for delivery, environment, content and learner factors that comprise student achievement. The factors are explained more fully in the chapter in this book, “Conducting Formative Evaluations of Online Instructional Materials.”
Write an Idea-Based Research (IBR) Proposal

Whether it's a qualitative or quantitative study you're thinking of doing, your Web-based educational research should be properly conceptualized as either an “IBR” or a “DDR.” If your study can be fairly characterized by an original idea and will be carried-out as with students or teachers in a classroom or lab, then it’s an “IBR” (idea-based research). If however, your Web-based study is characterized by data collected ex post facto (after the fact) such as student grades from last year saved in a database at the school board office, then its called a “DDR” (data-driven research).

There are three steps to developing an Idea-Based Research Proposal. First, read chapters in this book that interest you. Second, develop your IBR (Idea-Based Research) Slide-Show. Third, convert the bullets from each slide in the presentation software into a word processing or HTML document. Connect the dots, and then add syntax and grammar to make an essay with references.

Step 1: Read Chapters in This Book

Consider the chapters in this book, and others like it (Cohen, Manion, & Morrison, 2000; Gall, Borg, & Gall, 2003; Leedy & Ormrod, 2005; Mertler & Charles, 2005) to ensure your idea is related to Web-based educational research. This book in particular contains instruction, job aids and sample research and full-length articles in selected styles of Web-based educational research. Although the list of research styles in this book is by no means exhaustive, these chapters represent some of the most common research styles. It’s possible to run an experimental IBR on Web-based teaching or learning, a virtual ethnographic IBR of student discussions, an action research IBR of a Web tool, artifact, or learning object, or even a formative evaluation of Web-based instruction. Select a style from which to develop your own IBR (Idea-Based Research) slide-show.
Step 2: Develop an IBR Slide-Show

Using the procedure below as a guide, develop an original IBR (Idea-Based Research) slide-show in a presentation software (e.g., PowerPoint). Whether it’s a research proposal for school funding, for a project or thesis, or for a research course, the “educational value” of your initial idea is the key factor. Ideas for research proposal can stem from any source:

- An emerging theory (e.g., Cognitive Load Theory)
- An emerging trend (e.g., Web-based peer assessment)
- A new technology (e.g., audio conferencing software, mobile phone poetry).
- Completing an assignment
- Another student’s research
- Discussing an issue.
- Doing an experiment
- Reading some literature
- Reviewing historical data
- Success or failure of a product or a design
- Need (academic need, social need, etc.)
- Market research
- Watching a commercial
- A past experience
- Last night’s dream

Procedure: The Slides in Your IBR Slide-Show

After reading the chapters in this book and considering the issues, you should be able to construct your slide-show:

1. Provide a slide to describe the research question/problem
2. Provide a slide to describe the gist of the literature review, including the theoretical framework to support the questions, problem, or need
3. Provide a slide to describe the gist of the methodology, including:
   a. A slide for the participants [e.g., level, prerequisites, prior knowledge of the dependent variable under consideration, motivation to learn (intrinsic better job, etc.).]
   b. A slide for the materials in depth [e.g., online, tools, software utilities, workbooks, writing materials, verbal instructions, etc.]
c. A slide for the research design [e.g., hypotheses, sampling method] and variables [e.g., dependent, independent]

d. A slide for the instrumentation [e.g., written test, time stamping, dribble files, interview questions, written work, method of segmentating protocols, etc.]

e. A slide for the procedure [e.g., the procedure in this study followed those suggested in previous studies of this kind (reference)], and summary

4. Provide a slide to describe the gist of the results, including:

a. A slide for the method in collecting the data

b. A slide for the method used in analyzing the data

c. A slide for the assessment of prior knowledge

d. A slide for the description of results

5. Provide a slide for the:

a. Conclusions of the study

b. Contributing factors

c. Implications of the study

d. Limitations of the study

e. Recommendations, and a summary

6. Provide a slide for the references, using APA standard

**Step 3: Convert the Slide-Show into a Proposal**

Once you’ve considered the chapters in this book, selected a style, developed your own IBR (Idea-Based Research) Slide-Show, and received feedback from the instructor and peers, you can begin work on writing the research proposal. Remember to include your own informed consent form (in Appendix A).

**IBR Sample Topics**

- “Using Speech Recognition Technology to Improve Written Communication by Students with Learning Disabilities”
- “Effects of Animation and Visuals on Learning Vector Addition”
- “Effects of Peer-Moderated Online Collaboration in Problem Based Learning”
- “Concept Mapping Software Programs and Organizational Skills”
- “Effects of Telesat Communication on Student Performance in Mathematics”
- “Hypermedia vs. Hypertext for Web-Based Professional Development”
- “Pedagogical Agents and Personality: How They Affect Learning Computer Skills At the Intermediate Level”
The Data-Driven Research Report

If you’ve been thinking about analyzing existing data, you’re thinking of running a “DDR” (data-driven research). As before, there are three steps to developing a DDR Report. First, read the chapters in this book that interest you. Second, develop your DDR slide-show. Third, convert the bullets from each slide in the presentation software into a word processing or HTML document. Connect the dots, and then add syntax and grammar to make an essay with references.

Step 1: Read Chapters in This Book

Consider the chapters in this book to ensure your idea is Web-related to Web-based educational research. This book in particular contains instruction, job aids and sample research and full-length articles in selected styles of Web-based educational research, and select a style from which to develop your own DDR slide-show.

Step 2: Develop a DDR Slide-Show

Next, develop your original DDR (Data-Driven Research) slide-show in a presentation software (e.g., PowerPoint). Your DDR will report on data about events that have already happened, after the fact, or “ex post facto.” Also called “casual comparative research,” your data-driven study is pre-experimental, because you are unable to manipulate an independent variable as you would in an experiment.

One suggestion for developing a DDR would be to look at Web courses at your institution for attrition rates in subject areas. Look for patterns. Check the numbers on the Web site, for example. They may decline, move on to schools, colleges, boards, anywhere that education and computing occurs.

Similarly, if you are the chair of the committee or project in your college or school, then it will be your responsibility to do most of the organizing, writing and editing of that report. It will consist of a claim raised from some real data, summary statistics of the data, bar and line graphs, and a list of references.

Procedure: The Slides in Your DDR Slide-Show

1. Executive Summary
   a. Conclusions
   b. Recommendations
2. Terms of Reference
   a. Acknowledgments
3. Definitions of Terms and Concepts
a. Causal-comparative research
b. Content analysis
c. Discussion forum

4. Introduction

5. Background

6. Problems Addressed in This Report
   a. Problem statements
   b. Hypotheses

7. Methodology
   a. Procedure
   b. Selection of groups
   c. Research design
   d. Data collection
   e. Proposed analysis
   f. Ethical considerations
   g. Expected results
   h. Limitations of the study
   i. Recommendations for future research

8. Summary

9. Recommendations

10. References

Appendix: Informed Consent

Step 3: Convert the Slide-Show into a Proposal

Once you’ve considered the chapters in this book for a topic, selected a style, developed your own DDR Slide-Show, and received feedback from your instructor and peers, you can begin work on writing the report. Remember to include your own informed consent form.

DDR Sample Topics

- “Possible Effects of Course Participation Value on the Level & Quality of Graduate Student Contributions to Online Discussion Forums”
- “Computer Technology Education Enhances Quality of Projects for Junior High School Students Across the Curriculum”
- “Elementary Teacher Technology Proficiency Perceptions in Richmond, B.C.”
- “Pursuing Further Education and Employment of NSCC Graduates”

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In sum, your decision about whether to run an IBR or a DDR is different from the decision about whether to write thick descriptions about learning process (a qualitative study), or predict learning outcomes numerically (a quantitative study).

**Exercise**

Identify the following topics as either IBR or DDR:

1. “Behaviorist versus constructivist teaching of clinical algorithms using computer-based learning” ________.
2. “Does computer access affect senior high course grades?” ________.
3. “Cultural connections using the Internet to gain understanding of Francophone cultures” ________.
4. “Assessing the effects of node characteristics within concept mapping software” ________.
5. “Peer collaboration in Web-based community college programs” ________.

**Exercise Answers**

1. IBR
2. DDR
3. IBR
4. IBR
5. DDR
References


