



# e-Research

*Methods, Strategies,  
and Issues*

Terry Anderson  
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# e-RESEARCH

## Methods, Strategies, and Issues

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*This book is dedicated to e-researchers everywhere and especially to struggling graduate students with hopes that it provides at least one good idea that will make their task more productive, relevant, and easier. As well, we thank our ever-suffering spouses for their ongoing love, support, and encouragement.*

*There are two fundamental equalizers in life—the Internet and education.*

John Chambers, CEO, Cisco Systems Inc., 1999

*E-Research: Methods, Strategies, and Issues* is a guide and reference for both experienced and novice researchers. It assumes researchers have an interest in expanding their research skills by using the Internet in one of two ways. First, researchers may wish to study behavior that happens on the Net, such as activity that takes place in online schools or in virtual communities. Second, *e-Research* will be helpful for researchers whose interest and focus is activity that does not take place on the Net, but who wish to use the Net to improve the efficacy of the data collection, literature review, analysis, or dissemination phases of the research process. The increasingly wide variety of activity that can and does take place on the Net, coupled with the migration to and creation of research tools for the Net, creates conditions in which competent professionals and student researchers find the Net an indispensable aid to quality research activity and results.

## BOOK ORGANIZATION

We write this text as practicing academic researchers. We have structured the chapters based on a model of academic research that we commonly use with senior undergraduate, masters, or doctoral projects and/or theses. We trust that the model will be familiar to many readers. Chapter 1 begins with an overview of the Internet, its applications and the effect of the Net on the processes and products of academic research. Chapter 2, “What Is the Net?” overviews the Internet as a technology and describes ways to find information on the Net using various tools and search engines effectively and efficiently. Chapter 3, “Designing e-Research,” helps researchers define their problems and choose the type of research paradigm they will use to investigate the problem. Chapter 4 addresses the process of conducting a literature review online—finding out what others have discovered about both the problem and the proposed methodology. Ethics and the moral issues related to e-research are the focus of Chapter 5. Since research is ever more commonly undertaken by groups made up of researchers from various locations worldwide, we discuss ways in which the Net can be used to support multidisciplinary and distributed work teams in Chapter 6. Chapters 7 to 12 discuss ways in which qualitative and quantitative research is conducted on the Net and includes interviews, focus groups, consensus techniques, surveys, and content analysis. Research has little impact unless the results are disseminated; as such, Chapter 13 covers ways in which the Net can be used as an efficient means of disseminating research

results. Finally, Chapter 14 concludes with a brief peek into the e-crystal ball to glimpse the future of the Net.

*E-Research* need not be read sequentially; rather, you are invited to proceed directly to the section that most immediately meets your research needs. We hope the book both informs and entertains you, and that it provides a valuable aid as you undertake important research projects. We welcome your comments or suggestions on any components of this text.

We would like to thank the following reviewers: Andrew S. Gibbons, Utah State University; Greg Kearsley; Barba Patton, University of Houston—Victoria; and Thomas C. Reeves, The University of Georgia.

## ACCOMPANYING WEB SITE

We have created a supplementary Web site to this text that can be found at [www.e-research.ca](http://www.e-research.ca). On this site you will find chapter summaries and links to the sites, resources, and online papers referenced in the book. You will also find updates and additional links that we discovered after the book went to press. We also provide reviews and suggestions for ways in which the text may be integrated into university and college level courses. Finally, you will find feedback forums for your suggestions, comments, and questions. We hope you will explore this site and provide your suggestions for improving subsequent editions of *e-Research*.

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## INTRODUCTION

*Our Age of Anxiety is, in great part, the result of trying to do today's jobs with yesterday's tools.*

Marshall McLuhan

"The Net changes everything," the famous quote from Oracle Corporation, in a sense both understates and overstates the premise that guides e-research. The birth of the Internet (the Net), the first cost-effective, globally interactive communication medium, opened the door to modes of intercourse, transaction, and data gathering and dissemination that are as profound as any other invention in the history of humankind. The Net creates a new global context in which many fundamental aspects of our social, educational, commercial, and even spiritual existence is challenged, reshaped, and expanded.

This new context which operates at micro levels, impacts the means, applications, and frequency of our communications with family, friends, and coworkers. It also operates at macro levels, facilitating global commerce, restructuring the workplace (including educational systems), and fundamentally shifting political systems. Living in a wired world both allows and forces us to rethink pre-Net conceptions of time, place, access, affordability, interactivity, and decision making. However, as journalist Jeff Bradley (2000) noted, "As a rallying cry, 'the Net changes everything' conveys all of the potential promise and peril of entering uncharted territory. But, as an operating philosophy, it leaves much to be desired."

*E-Research* is both a conceptual guide to the creation of an "operating philosophy" for research using the Net and a practical guide for educational researchers. Making the most effective use of the Net challenges researchers to develop and practice their knowledge of research philosophy, ethics, and basic methodologies. Philosophically, the Net-enhanced researcher acquires an attitude of curiosity, a critical but accepting attitude towards technological tools, and a willingness to look at the world through new technological and communication lenses. The e-researcher realizes that a Net-based focus provides a new frame through which to study the world and the creatures that live in it. E-research does not preclude nor does it make obsolete the

older methods and techniques of research. Rather, it adds new arrows to the researcher's quiver. E-research operates under different economic, security, and ethical constraints than other investigative techniques, thus both restricting and opening the door to augmentation or even substitution of traditional research techniques. E-research also challenges the researcher's technical skills. Although it is not necessary to gain the skills of a network engineer, a computer programmer, or a systems analyst to effectively use Net tools, it is important to understand the basic operational features of the Net. Such an understanding allows e-researchers to be critical consumers of new tools and provides a background on which particular and relevant new knowledge can be acquired and built. Aiding the reader to understand, appreciate, and control the underlying economics, operating techniques, and ethical considerations of e-research is the primary goal of this book.

## WHAT IS RESEARCH?

Research is a natural human process that each of us engage in from earliest childhood to advanced age. As children, our research focuses on understanding and manipulating our environment, usually aided by toys and parents and later by friends and teachers. As adults, our research needs diverge to unique interests—often related to our occupation but also covering our family concerns and leisure activities.

The *Cambridge International Dictionary of English* defines research as a “detailed study of a subject, especially in order to discover (new) information or reach a (new) understanding.” Note that the “newness” included in the dictionary definition can apply on an individual or a societal level. Discovering something new for an individual, even if it is knowledge or information known to others, is a valid research endeavor even if it does not warrant distribution in learned journals.

As adults, the methods we employ in carrying out our research change over time as well. Through formal schooling we acquire the literacy skills that permit us to learn from the work of others. We also learn to conduct active tests by which our ideas are confirmed, refuted, and refined. We acquire the skills of reflection and intuition by which all parts of our mind and our experience are directed towards solutions to our research problems. We learn to apply our research in real-life situations to solve problems or further our practical understandings. Finally, and perhaps most importantly, we learn to communicate our ideas. Through communication our ideas are further developed and honed. From all of these processes we learn that good research, rather than providing simple answers, leads us to further questions and opportunities to increase our knowledge.

Thus, research has many characteristics and qualities and operates in many different contexts. One of the most important of these qualities is quality itself. How do we know that the research we engage in as ordinary citizens, students, or professionals is of high quality? To answer this question, we must first realize that perceptions of quality are themselves normative—determined by the community within which the research is distributed, applied, and evaluated. In the 1970s most researchers clung

doggedly to the belief that an unbiased scientific methodology guided and judged all our quality research. The scientific method purported to provide a set of principles and techniques with underlying assumptions of control, operational definition, validity, and reliability that, if followed diligently, provided measures and guarantees of quality. However the scientific method began to be questioned by many researchers in the 1980s and 1990s. It was argued that there is sufficient evidence that all forms of knowledge are socially constructed and thus depend, at least to some degree, on consensual agreement for their veracity. This agreement is socially and culturally defined, and thus our conception of quality relies on common understandings of context, tools, and language to be judged as quality. The divergence of opinion between quantitative research (the scientific paradigm) and qualitative research (the interpretive paradigm) practices continues today. Research paradigms are discussed further in Chapter 3.

Despite the differences in perception and the ontology of research, there are a few characteristics that define quality in research. First, quality research is important research. It addresses real concerns of importance to you, your colleagues, and to a wider social context. Second, quality research is adroitly focused on solutions to an important problem. It follows, then, that it addresses questions that are answerable. It constantly surprises us to carefully read the research questions drafted by beginning researchers, only to discover on close reading that answering the question is either logically, philosophically, or ethically impossible! Third, quality research is systematic. By this we mean that quality research involves more than “hit and miss” probes into a bewildering environment. Through careful planning, attention to detail, and reflection, the research process develops or adopts a structured approach that attempts to reveal as much as possible about the variables of context that affect the objects of our investigation. Fourth, quality research is transparent. From the extreme replication imperatives of the science laboratory, to the thick descriptions of the ethnographic researcher, quality research attempts to make the process of research as visible as possible so that it can be understood, if not replicated, by the interested observer. Fifth, quality research is made available to the public. Despite the growing practice of hiding research results to protect their commercial value, it is important that research be made visible, primarily so it can be validated within a social context. Research also needs to be made visible in order to contribute to the human condition. In an increasingly commercial world it sounds naive to be promoting free distribution of research results—yet we are reminded of Isaac Newton’s famous quote, “If I saw further, it is because I stood on the shoulders of giants.” We will not benefit from the view from others’ shoulders if the results of their research are hidden behind commercial or political barriers. Fortunately, the Net provides new platforms for making research visible, and is even underlying the popular (if multiply attributed) insight that “information wants to be free” (Clarke, 2000).

The use of the Net in itself adds little intrinsic value to enhancing the quality of research. However, like any useful tool in the hands of a skilled practitioner, the Net can provide opportunities and techniques that enhance many components of our research practice. In this book we attempt to illustrate through instruction, hints, our experiences, and examples the means by which the Net can be used to improve



research practice. This book also discusses some of the perils of conducting Net-based research. *While the Net provides many new opportunities to improve our research practices*, it also introduces new problems and challenges.

## WHAT DOES THE *e* IN **e-RESEARCH** MEAN?

We often joke that adding the letter *e* in front of every noun we use is an unfortunate distinction of the early years of this Internet technology era. We struggled with the stigma of trendiness that will mark and date a text referring to *e-research*. In fact we fear a visit from the “Society for the Preservation of the Other 25 Letters” when they see the effusive use of the *e* prefix used in this book! However, we think the term captures some of the excitement, breadth, and diversity offered by an ever-increasing and sometimes bewildering set of new Net-based tools and techniques. Only a few years ago *e* (as in *email*) meant a tool that was primarily text-based, operated on a relatively insecure communications link, and provided a wide variation in performance and quality of service. In education, *e*-applications focused on the lowest common denominators so that students and faculty could access contents with even the slowest and most dated of hardware. Convergence of audio, video, and multimedia channels to a Net-based platform, which is continuing to fall in price and rise in power has resulted in an explosion of applications in almost every domain. This has also resulted in a change of our connotations of the Net or the *e* word. Generally, the *e* prefix means that the activity or noun modified takes place on a high-speed, digital network that is available “anytime/anywhere.” Today that network is the Internet.

## WHAT EDUCATIONAL RESEARCH ACTIVITIES DOES **e-RESEARCH** ENCOMPASS?

The Net now supports a wide variety of communication modes and information processing tools. As such, it is becoming easier to define the subset of behaviors that cannot be researched on the Net as opposed to those that can be the subject of research. Notwithstanding the dangers of missing novel ways of using the Net, we list below some of the most obvious manifestations of *e-research*.

- Distribution and retrieval of text-based surveys.
- Open-ended or structured text-based interviews conducted via email or computer-mediated conferencing.
- Focus groups using real-time Net-based video or audio conferencing.
- Analysis of Web logs and other tracking tools for measurement and synthesis of online activities.
- Net-based telephone interviews.
- Analysis of text transcripts of learning or social activities.
- Analysis of social behavior in virtual reality environments.
- Online assessment and/or evaluation of performance or knowledge.