

Maximizing Research Methods Instruction

BRYAN E. DENHAM

Teaching undergraduate students about scholarly research methods can be a daunting task. A teacher often must dispel several myths about the course before academic content can be addressed effectively. Many students are convinced that communication study should not involve numbers—or worse, formulas—and thus they may be quite anxious about empirical approaches to discovery. But if a teacher can get students past the initial reservations they bring to the classroom, research methods can be among the most gratifying courses to teach, as students learn to examine social phenomena with greater rigor and to be more careful about making all-inclusive, sweeping statements regarding the steps of a process or the significance of a relationship.

In terms of broader institutional goals,

communication programs can demonstrate centrality to a university mission by requiring the methods course, just as political science, psychology and sociology do. Few trustees, presidents and provosts question the importance of the social sciences, and when assertions about “professional training” arise, communication administrators must be able to articulate how curricula produce *educated* students, not simply able practitioners. At a time when state universities are cutting faculty and classes, as well as increasing tuition and fees, programs that fail to demonstrate their respective worth may face drastic funding reductions, and in some cases, outright elimination.

From a pedagogical standpoint, Lee C. Bollinger, president of Columbia University, recently addressed the fu-

Bryan E. Denham (BDENHAM@CLEMSON.EDU) is an associate professor in the Department of Communication Studies at Clemson University.

ture of journalism education there, focusing on the need for students to develop more than fundamental journalism skills during their time in a university environment.¹ "To pit the teaching of craft against the teaching of intellectual capacity," Bollinger argued, "is to pose a false choice. The questions are what part of doing journalism should be used for educational purposes and how should the integration with other forms of learning occur."²

The goal of this essay is to offer some insights on how to maximize the research methods course, such that students will take from the course a meaningful learning experience—as opposed to a short-term exercise on memorizing terms—and, ideally, administrators who review the course will recognize communication as an academic discipline rich in theory and methodology.³ The article builds on earlier work by the author,⁴ as well as on other works discussing methods instruction⁵ in addressing how the fundamental tenets of empiricism and classic thought on the philosophy of science can be used as a backdrop for teaching an effective course in communication research methods. It proceeds from the assumption that while building a research vocabulary is central to the mission of an undergraduate education (methods students should indeed understand the difference between reliability and validity, for instance) so too is appreciating how abstract ideas apply to life outside the methods classroom. What students learn in a methods course, in short, can substantially impact how they will perform in their chosen professions and how they will come to make decisions in the years following formal education. How rigorous, for example, will students be in distinguishing science from cleverly

worded pseudo-science? Will they be educated about the manipulation of numbers for partisan gain? Will they ask important questions about causality before composing news articles or assembling organizational reports that simply assume its presence? Will they learn to make sound ethical judgments about conducting and reporting the results of research studies?

Given these kinds of questions, it behooves a methods instructor to consider the class from a macroscopic standpoint, teaching students about the nature of knowledge gain through consistent application of scientific methods and the search for evidence.⁶ The course then will build on itself as the term progresses, with the instructor describing for students the linkages between subjects addressed in separate book chapters. In a metaphorical sense, an instructor might equate the methods course with the output of a musical group, as the final product should exceed the sum of its parts—which is why the term "maximizing" appears in the title of this article. Students may not recall the precise definitions of all terms covered in the course, but they should always recall the broader lessons learned.

To this end, many communication scholars, as well as social scientists in other disciplines, have written methods texts,⁷ and texts also have been written that describe in broad terms how mass communication phenomena have been studied,⁸ and how scholars of such studies locate information for research projects.⁹ Academic journal articles have appeared periodically, as Keyton, for instance, described how to incorporate an effective service-learning component into the methods course,¹⁰ while Poindexter proposed a

model for effective instruction.¹¹ Jackson and Wolski addressed effective methods instruction as well, focusing on how web technology, specifically online argumentative dialogue, can help to break down learning barriers.¹²

Along with these scholars, in addition to others who have written about methods instruction,¹³ as well as those who have identified critical thinking skills and other requisites for success in professional journalism,¹⁴ the author suggests that students majoring in all areas of communication should be *required* to complete a class in social science research methods, as outlined in Table 1.¹⁵ Too many communication professionals have little or no training in the fundamentals of academic research and basic statistics, and as a result, the numbers that appear in press reports, for instance, frequently mislead news audiences.¹⁶ Students should learn how to identify dubious statistics and the manipulation of numbers for self-serving purposes, and they can do so by (a) learning specific computations,¹⁷ and (b) gaining a broader appreciation for the tenets of social science. With respect to the latter, students need to understand why scholars build theoretical frameworks to guide formal research investigations, and how scholars use such frameworks to predict and test for the presence of relationships.

The importance of theory

While often taught in a separate course, communication theory needs to be related to research methods early in the term, because students need to understand why putting a theory to the test is far more rigorous and beneficial than a post-hoc, after-the-fact explanation of a process, or cause and effect. Many phenomena can be “explained”

once they have occurred, as the explanation can not be proven wrong, but as the late philosopher of science Karl Popper observed with respect to Marx’s theory of history, Freud’s psychoanalysis, and Alfred Adler’s “individual psychology”:

I found that those of my friends who were admirers of Marx, Freud, and Adler, were impressed by a number of points common to these theories, and especially by their apparent *explanatory power*. These theories appeared to be able to explain practically everything that happened within the fields to which they referred. The study of any of them seemed to have the effect of an intellectual conversion or revelation, opening your eyes to a new truth hidden from those not yet initiated. Once your eyes were thus opened you saw confirming instances everywhere: The world was full of *verifications* of the theory. Whatever happened always confirmed it ... A Marxist could not open a newspaper without finding on every page confirming evidence for his interpretation of history, not only in the news, but also in its presentation—which revealed the class bias of the paper—and especially of course in what the paper did *not* say.¹⁸

Throughout his career, Popper addressed the “problem of induction,” a phrase referring to the collection of supportive observations with no end in sight nor any prospect of falsification.

Drawing from Hume's refutation of inductive inference, Popper explained that "(A)n attempt to justify the practice of induction by an appeal to experience must lead to an *infinite regress*. As a result we can say that theories can never be inferred from observation statements, or rationally justified by them."¹⁹ Popper argued that confirmation could be found for almost any theory if researchers looked *only* for confirmations. Citing Einstein and the theory of gravitation opposite those of Marx, Freud and Adler, he observed that Einstein's theory could have been refuted through direct observation, whereas the others appeared to explain even the most divergent behaviors.²⁰

Kuhn questioned falsification,²¹ and Wittgenstein once engaged Popper in a legendary philosophical argument,²² but for purposes of this article, the practice of putting a theory to the test, risking being wrong, and considering evidence in its entirety could not be closer to the heart of a liberal education. The basic refusal to consider other ideas, after all, is characteristic of the most ignorant members of a society, who engage in a perpetual search for "confirmation" of narrow and rigid beliefs. "(D)ogmatic thinking," Popper observed, "an uncontrolled wish to impose regularities, a manifest pleasure in rites and in repetition as such, are characteristic of primitives and children; and increasing experience and maturity sometimes create an attitude of caution and criticism rather than of dogmatism."²³ That observation is central to the teachings of social science research methods and is consistent with educating future journalists and communication professionals about balance, completeness and the need to be aware of and keep in check personal biases when assembling reports.

To demonstrate to students the importance of broadmindedness and a willingness to consider *all* information, one can discuss Berelson's widely cited definition of content analysis, which he described as "a research technique for the objective, systematic, and quantitative description of the manifest content of communication."²⁴ A systematic technique means, of course, that *all* data are to be coded and analyzed without bias but with a willingness to allow genuine patterns to emerge, thus supporting or not supporting a given expectation. Ideally, from such an approach will come the most accurate and credible report of research findings.

As an example of how a specific method can enlighten students about race and gender issues in communication, an instructor might assign students to read content analyses that explore mediated portrayals of white and black athletes, as well as male and female athletes (in separate research contexts).²⁵ Often, commentators praise black athletes based on perceived "natural" athletic ability, while white athletes are praised for their perceived leadership skills and ability to overcome seemingly insurmountable odds to achieve their athletic stature. Such portrayals undermine the work black athletes have to put in to reach the elite ranks, as they are "expected" to excel athletically. In addition, female athletes often are portrayed more for their appearance than for their athletic skill, and students who one day might work in the media should understand the message commentators send by referring to male athletes by their surnames and female athletes by their first names. Students also might realize the difference in connotations between a male "sophomore from Kingsport" and a fe-

male "blonde-haired sophomore from Kingsport." Examples of content studies thus can heighten students' awareness of ethnic and gender stereotyping in mass media.

These kinds of subjects also allow instructors to introduce to students feminist and critical approaches of inquiry, focusing on concepts such as hegemony and what male hegemony, in particular, means for social institutions and historically marginalized groups. While the undergraduate methods course, as traditionally conceived and described in texts, does not allow instructors to spend a great deal of time on critical approaches, instructors nevertheless can expose students to fundamental concepts and theoretical overviews, encouraging them to pursue the approaches in more detail at the graduate level.

An instructor can link the importance of theory to research methods when lecturing about survey techniques as well. As an example, as Chaffee and Hochheimer noted, several decades passed between the time Paul Lazarsfeld and his colleagues via survey research first identified opinion leaders as a primary information source for voters and the time at which their findings were openly scrutinized.²⁶ While select articles did appear,²⁷ seldom did scholars explore the post hoc—or at least *ad hoc*—findings of the Erie County studies. Had they done so, the shift from "powerful" to "limited" media effects may have been portrayed quite differently in contemporary communication texts; in fact, the shift might not have been portrayed at all, for it may not have existed. As Chaffee and Hochheimer pointed out, the Lazarsfeld studies used voting decision as the sole criterion, and had the scholars examined other subjects of political communication at

the time, they likely would have reached different conclusions. Even with respect to voting decision, more than two-thirds of respondents mentioned newspapers or radio as a helpful source in deciding for whom to vote, compared to less than one-half who mentioned a personal source. Additionally, Chaffee and Hochheimer revealed that more than one-half said radio or newspapers had been the most important source of information, while less than one-quarter said a personal source. Yet, as many articles and books in the years since have suggested, the Erie County studies pointed to the "limited" effects of media. Had the field, at that time, contained stronger theoretical frameworks, perhaps more accurate research findings would have been reported and more stable assumptions established for studying interpersonal and mass communication.²⁸

Rogers has noted that Lazarsfeld did not favor the use of inferential statistics in the early survey projects he and his colleagues conducted, as the projects were, in effect, exploratory.²⁹ The researchers sought to gather information that would inform the development of formal hypotheses at a later point; however, as described above, their data actually came to underlie the two-step flow of communication and "limited" effects paradigm—despite the lack of empirical support. Methods instructors can draw upon the Lazarsfeld studies in discussing with students the nature of inductive and deductive approaches to discovery, pointing out that while knowledge must originate at a certain point—and in that sense, the Lazarsfeld survey projects certainly can be considered benchmark—a lack of additional testing and possible refutation should preclude academic studies from serv-

ing as cornerstones for entire paradigms.

"Always look for a physical model underlying the data being analyzed," wrote van Belle. "Assume that a statistical model such as a linear model is a good first start only."³⁰ Van Belle cautioned researchers about locating linearity or, more generally, "statistical significance," and drawing conclusions without considering a theoretical framework for why a perceived relationship exists. For students, this caution facilitates the development of critical thinking skills as well as an understanding that even the most accurate numbers do not *explain* a process; they *fit* a process. Only a precise understanding of the facets involved in a process, which is to suggest their plausible sequence and respective causalities, allow one to explain, or legitimately model, an occurrence or event. Without a theoretical framework and explanation of key terms, a researcher uses little more than "brute empiricism" in identifying an alleged relationship, and if one makes a habit of identifying many relationships via statistical associations only, sooner or later the researcher will begin "explaining" chance occurrences.

The nature of chance

While the romantically inclined often suggest that "everything happens for a reason," students should appreciate that most occurrences happen simply by chance. Inferential statistics, and more specifically, the null hypothesis, are grounded in the randomness of events, with the alternative hypothesis suggesting a meaningful difference between observed and expected values.

One way of demonstrating the nature of chance to students is to discuss how dramatic news reports sometimes

give the appearance that an epidemic is occurring when it most certainly is not. During the past two years, for instance, media have focused on select cases in which children in affluent neighborhoods have been kidnapped, implying that doors and windows in every neighborhood across the country should have deadbolts and electronic alarms to keep families safe from the criminal masses. But have kidnapping numbers actually risen of late, and if so, have they risen beyond chance expectations?

In large part, journalists perform their duties and support themselves by reporting chance occurrences in everyday life, and if one asks a journalism educator with significant news experience why he or she departed the profession for the classroom, the answer may involve the monotony that comes from writing what seem to be the same stories over and over. Of course, the thrill of major investigative pieces can make the more mundane aspects of professional journalism less tiresome, but as Taleb noted in a book about randomness, "If there is anything better than noise in the mass of 'urgent' news pounding us, it would be like a needle in a haystack."³¹ As examples, one might consider an evening interview program that features an "exclusive" every night of the week, or a market analyst who "explains" random fluctuations every morning. Some evenings, sports segments appear to have been extracted from a random number table. The news is repetitive, and only when great pieces of journalism are assembled do general expectations of what is likely to happen get replaced by reports that exceed the ordinary. Aspiring journalists should appreciate this blunt fact; that is, while

great journalists write great stories, they also spend a lot of time filling the news hole with routine reports.

Academicians who teach research methods and thus help to educate aspiring journalists and other communication professionals also should keep randomness in mind, based on what the academy often regards as "meaningful" research. Academicians are taught, or socialized, to value only those relationships that are beyond chance occurrences. Yet, in statistical terms, failing to reject the null hypothesis, while perhaps not as desirable as locating a tight relationship between variables, is at least informative and consistent with the tenets of the scientific method. "The problem is that a finding of absence and an absence of findings get mixed together," Taleb lamented. "There may be great information in the fact that nothing took place."³²

Indeed, be it a lack of training in statistics or an adherence to "tradition," many educators consider the coefficient .05 a rigid indicator of success or failure in quantitative research. It is not. Given the crudities associated with social research, throwing out a relationship with a significance level of .064, for instance, is to risk throwing out potentially meaningful information. At a minimum, social researchers should consider relationships at 90 percent confidence, and in certain projects, perhaps even 85%. Students should understand that there is nothing magical about a certain coefficient, in this case .05. It simply indicates that only five times in 100 would the relationship identified not be present.³³

In general, then, students should understand the nature of chance, which is to suggest the inherent problems with data searching, post hoc theoriz-

ing and the reason why prediction enhances rigorous thought and analyses. As Taleb explained, "It is impossible to assess the quality of knowledge we are gathering without allowing a share of randomness in the manner it is obtained and cleaning the argument from the chance coincidence that could have seeped into its construction."³⁴

If they can reach this level of awareness, students will take from the methods course an appreciation for how "the news" develops in somewhat random fashion, and how statistics inform scholars whether the relationships under study are greater than chance occurrences.

Covariates and ecological fallacies

As most in academe realize, statistically significant correlations do not alone imply the presence of cause-and-effect relationships. Many social phenomena tend to vary in similar patterns, and students should understand that more than A and B may be at work when a Pearson Product Moment Coefficient, for instance, shows significance. While A may appear to predict B, one might observe similar predictive power for C, which, if continuous, can be used as a covariate in an analysis of covariance (ANCOVA) procedure.³⁵ As Nunnally and Bernstein explained, "This logic is nothing else than a hierarchical (incremental) approach to eliminate the effects of variables of lesser interest ... Putting the covariate in first may eliminate a source of variance that would have been part of the experimental error had it been ignored."³⁶

While students probably will not employ ANCOVA in undergraduate research projects, its frequent use in

psychometrics and other fields underscores the importance of considering the many factors that can affect the behavior of a dependent variable, thus bringing to light criteria necessary for a cause-and-effect relationship. Traveling back to Mill and *A System of Logic*, causality may be present if (a) one variable consistently appears before the other, (b) the two variables vary together in systematic fashion, and (c) there are no alternative explanations—such as a third variable driving the relationship.

Another problem, an ecological fallacy, can arise when group attributes are mistakenly used to explain the attributes of individuals within the groups. As Babbie explained, “Although the patterns observed between variables at the level of groups may be genuine, the danger lies in reasoning from the observed attributes of groups to the attributes of the individuals who made up those groups when we have not actually observed individuals.”³⁷ Babbie mentions as an example a report indicating that crime is higher in cities with relatively high concentrations of African Americans. While some might draw inferences about African Americans and crime from such a report, a smarter observer would inquire as to who, on the level of *individuals*, is responsible for committing the most crime in these cities. As another example, Babbie mentions an election in which a candidate narrowly wins, thanks to a precinct with a substantial block of young voters. But what if it was the older citizens in that precinct who actually voted the candidate into office?

Ecological fallacies are ubiquitous, and aspiring journalists should be aware of their presence in the news. Such

fallacies, if left unchecked, can perpetuate stereotypes and lead to finger pointing. At the same time, it should be mentioned that individual exceptions—perhaps a conservative advocating what appears to be high level of government intervention—should not lead one to throw out reliable group patterns, such as years of survey data revealing that fiscal conservatives tend to favor a more “hands off” approach. Again, caution and precision are essential for studying social phenomena and drawing conclusions based on all of the data gathered.

About average

Many students, as well as some instructors, draw conclusions based on “average” scores in a data set before examining each measure of central tendency, and, in especially small data sets, extreme outliers. Central tendency is an important component in the methods course, for the numbers describing the “average,” and perhaps more importantly, dispersion about the “average,” can lead to more abstract generalizations. As an example, while one might use a series of five-point Likert statements to measure political attitudes, and the attitudinal means for items on abortion and NAFTA may be identical, their standard deviations may be quite disparate, leading one to conclude, perhaps, that respondents had stronger views about one of the two issues (usually abortion). Before discussing with students the importance of standard deviations, however, an instructor should first review how “average” scores can be deceiving.

First, an instructor might discuss how the “average” annual income in a given neighborhood is \$100,000, despite the fact that nine of the 10 indi-

viduals who live there earn no more than \$50,000 per year. Since the tenth resident earns \$550,000 per year, it appears all have six-figure incomes. Or, turning to a sporting example, an instructor might address how a mode score of 11 might mischaracterize the "common" performance of a basketball player who has scored 24, 17, 11, 29, 28, and 11, respectively, in the last six games.

Taleb explained, further, how a median value also can be deceiving.³⁸ He discussed a situation in which writer and scientist Steven Jay Gould had been diagnosed with a deadly form of cancer, one that destroys the stomach lining. Gould learned that the median survival period for those afflicted with the disease was approximately eight months. Taleb continued:

(F)urther research by Gould uncovered a very different story to the information he had initially been given; mainly that the *expected* (i.e., average) survival was considerably higher than eight months. It came to his notice that expected and median do not mean the same thing at all. Median means roughly that 50% of the people die before eight months and 50% survive longer than eight months. But those who survive would live considerably longer, generally going about life just like a regular person and fulfilling the average 73.4 or so years predicted by insurance mortality tables ... There is asymmetry. Those who die do so very early in the game, while those who live go on

living very long. Whenever there is asymmetry in outcomes, the average survival has nothing to do with the median survival.³⁹

Based on his experience with medians, Gould wrote a poignant article titled "The Median is Not the Message." As those who have studied numbers in interpersonal contexts and in press reports undoubtedly have realized, they can prove deceiving and can be reported devoid of context and qualification, often because those who report them are themselves not qualified in mathematics and statistics—adding further justification for offering the undergraduate course in research methods.

Parsimony

"Since theory is the goal of science and theory's task is to explain as large a slice of reality as possible in the form of predictive generalizations," Westley observed, "it should not be too surprising that science values parsimony. *The parsimonious explanation is the one that accounts for the most variance with the fewest propositions.*"⁴⁰ Similarly, Woelfel and Fink observed that "Every scientific theory should be thought of as a process tending toward objectivity, simplicity, and lawfulness."⁴¹

In statistics, a rule known as Ockham's razor suggests that in a collection of models, the simplest model is the preferred model, other considerations being roughly equal. "The word *parsimony* incorporates the basic thrust of Ockman's Razor," van Belle observed. "The rule is the basis of Einstein's statement that explanations of scientific phenomena should be as simple as pos-

sible, but not more simple.”⁴²

Thus, while multivariate statistical techniques often prove useful in social research, the most economical explanation of a process may not contain each and every variable considered. Taleb warned: “The more data we have, the more likely we are to drown in it,”⁴³ and the same warning can be applied to the methods used to analyze data. As a rule, scholars at all levels should be able to explain why they chose a certain research method for a study, and be able to discuss the assumptions associated with that method.

In parametric statistics such as regression analysis, one can look to increases in the r-squared coefficient to evaluate whether a given variable helps to explain the behavior of a dependent measure.⁴⁴ In nonparametric tests, such as logistic regression analysis, one can look to changes in the -2 log likelihood score in evaluating the most parsimonious fit of a model.⁴⁵ Just as writing a short, parsimonious paper is more difficult than writing a lengthy report saturated with nonsense, then, fitting the most parsimonious model to the data under study requires careful testing based on sound theoretical frameworks. Established procedures need to be followed, and the steps taken need to be justified.

In addition, students should be encouraged to let nouns and verbs tell the tale in research reports, just as they would be advised to do when writing news stories. Both types of reports seek truth, and a surefire way to clutter an article and cloud the facts is to insert adjectives and adverbs wherever they happen to fit. Given that science is an inherently skeptical process, hyperbolic language should be avoided. No one expects *A Streetcar Named Desire*

to emerge from the pages of a social science research journal, just as no one would expect Stanley to ask Stella about the assumptions of parametric statistics.

Journalistic sourcing — and “public opinion”

As Sigal observed, news sources define the news for mass audiences, and thus the accuracy of a report can depend on those who provided information and under what set of circumstances they did so.⁴⁶ If certain sources with perceived credibility make themselves available to journalists, many of whom are confronted with deadlines to meet, a relatively narrow band of sources may define an issue throughout its coverage, and their contentions may be assumed to represent popular, or public, opinion. Pritchard and others have explained, in fact, that in the absence of accurate public opinion data, policymakers sometimes use press coverage of an issue as a surrogate.⁴⁷

In examining the potential impact of press coverage on public and policy agendas, one can look to the more than 100 published studies grounded in agenda setting and agenda building theories, which suggest, of course, that journalists can have an impact on what members of the public, as well as policymakers, think about and place on their respective agendas.⁴⁸ Indeed, the pen can prove mightier than the sword when it comes to placing items on public and policy agendas, and aspiring journalists should appreciate the power reporters can exercise—and potentially abuse. When people do not have statistical representations, they frequently look for anecdotal ones, but as seasoned researchers often tell themselves when such an urge strikes, “An

anecdote is an anecdote; many anecdotes are not data."

While many instructive books have been written about public opinion, the undergraduate course in research methods can prove particularly useful for educating students about manipulation in opinion polling. Students who may go to work in the media should understand the difference between attitudes measured from systematic random sampling and attitudes expressed by a chosen few. One approach is to review with students partisan questionnaires distributed for the sole purpose of concocting numbers in support of a platform. As veteran reporters and educators may appreciate, such numbers take on a life of their own if repeated often enough, becoming, in some instances, prophetic.

Sometimes dubious numbers are not even necessary, as Robert Dole perhaps could have explained following the 1996 election year. Magazine covers paid homage to Dole's experience as a senator but, at the same time, asked in bold type whether American voters could get past "the problem" of his age. In point of fact, the only people who may have had "the problem"—at least prior to publication—were those responsible for putting together the magazine covers.

Another, more insidious example for students to consider is the modern-day push poll. Here, a "communications" firm is hired to call hundreds, if not thousands, of likely voters in the days just before an election and ask respondents for whom they plan to vote. If the push poll is being conducted to benefit Candidate A and a given respondent intends to vote for Candidate B, the caller will ask a "question" such as this: "If I told you that

candidate B once had ties to the Mafia, was a known cocaine dealer and even tried to bribe a judge, would you be more or less likely to vote for that candidate?" The response, of course, is irrelevant, for the seed has been planted in the voter's mind, perhaps changing his or her vote. Relying on the word "if" to avoid legal trappings, push polls are not polls at all, and academic societies such as the American Association for Public Opinion Research (AAPOR) have put in place official statements denouncing the use of such tactics during election campaigns. Still, overzealous candidates, or their supporters, hire firms to make the telephone calls in mass.

By the end of a methods course, students should be skeptical of survey reports in mass media. They should be able to identify demand characteristics, prestige bias, double- or even triple-barreled questions and dubious response options. They should understand that legitimate survey items are those that *maximize* the variance of responses, such that predictor variables might be tested for explanatory power. Students also should understand that many forms of nonprobability samples, while certainly of use, cannot be generalized to the larger population.

Ethics

Ethics components should be factored in to nearly every course in communication, including the undergraduate course in research methods. Spending time on the need for Human Subjects Committees, for instance, teaches students that research is more than just requesting that people fill out a survey form. The discussion instills in students the need to respect participants in an academic study, and by exten-

Table 1
SAMPLE COURSE OVERVIEW WITH SELECT POINTS OF EMPHASIS

<u>Unit</u>	<u>Subjects</u>
1	Introduction to research and the tenets of science Theory and research Empiricism and evidence Cause and effect Covariates and ecological fallacies
2	Research fundamentals Structuring an academic study, defining the terms Types of methods used in communication studies Probability and nonprobability sampling techniques Inductive and deductive reasoning Reliability and validity in academic research Error as an academic term
3	Qualitative research Asking the central question: "What's going on here?" Uses of focus groups in academic and professional settings Triangulation as a research technique
4	Content analysis Berelson definition Steps of the process Reliability issues with multiple coders Research applications
5	Survey research Brief history, beginning with Lazarsfeld studies Questionnaire design, response options that maximize variance Uses of telephone, mail and Internet surveys Uses and abuses of opinion polling
6	Experiments Answering research questions in a controlled setting Doing the right thing in an experimental situation Ethics issues in measuring effects of violence, pornography
7	Introduction to statistics in communication studies The nature of chance occurrences Measures of central tendency and deviation about the mean Fundamental parametric and nonparametric tests Parsimony and the explanation of relationships Recognizing limitations, considering future studies
8	Beyond the basics Research methods class as the gateway to graduate school What lies ahead in learning about academic research

sion, news sources in professional journalism.

In addition to treating research participants with respect, students must learn to treat other scholars with respect. All too often, literature reviews contain inaccurate summaries of existing studies, which may lead to false premises and dubious expectations. Students should understand that the good names of others are at stake in a literature review, again extending a lesson from research methods class to a professional setting. Students must not overstate the research findings of others, and they should learn to report their own findings in the appropriate context. An approach the author uses is to point to one brick in the classroom wall as a metaphor for the contribution of one study to the overall body of knowledge. Students thus learn to keep primary research projects contained to what they, themselves, can discuss about the research.

In some ways, political correctness has made it difficult to report factual information that may not reflect Utopian ideals. As an example, in social research, standard demographic items are routinely the strongest predictors of dependent measures involving government spending. If one performs secondary analyses on election data provided for scholars by the National Election Studies (<http://www.umich.edu/~nes/>), age, education, gender, income, race and religion all have appreciable predictive power, based on the spending initiative mentioned. Yet, depending on the ideals of the person in charge of a newsroom, the blunt facts may not be as welcome as they probably should be, given the ideals of journalism itself.

Polarization does exist in American society, across several lines, and re-

search methods instructors might hold a class discussion about reporting numbers that may prove unsettling. Students should realize that the proverbial messenger does not always escape the wrath of those offended in such situations; in fact, the messenger is sometimes the first to be verbally flogged. How do communication professionals manage such situations? How do they deflect personal insults and put misplaced anger in its proper context? In survey research, one approach is to teach students to report all information about a poll, as suggested by AAPOR (e.g. the sample size, the margin of error, etc.). Even if some of the methodological information is cut (and it often is), at least the reporter—the messenger—can take some solace in having filed as complete a report as possible.

Summary

Apart from assisting an academic department with demonstrating centrality to a university mission, the real benefit of an undergraduate course in research methods is the broad-mindedness it instills in those students who make the effort to learn. The course demonstrates how putting a theory to the test and risking falsification increases intellectual rigor, and its fundamental grounding in empirical means of discovery encourages students to seek evidence before making assertions. Prior to completing the methods course, many students are perfectly willing to accept tenacity, authority and intuition as general ways of knowing, but after a semester spent learning the procedures of social science research methods, they will ask more informed questions and perhaps be more inclined to gather primary data

themselves. A few might express heightened interest in attending graduate school.

Using the philosophy of science as a backdrop throughout the semester builds continuity and demonstrates for students how the information covered in separate book chapters is all part of knowledge gain; namely, the steps one must take to acquire meaningful knowledge — and just how difficult doing so is in social science research.

Endnotes

¹ Bollinger chaired a task force on journalism education at Columbia. The group of practitioners and educators met six times between October 2002 and March 2003. His April 2003 statement can be downloaded in full at www.jrn.columbia.edu.

² Bollinger, task force statement.

³ For the audience of this journal, in particular, program administrators seeking accreditation from the Accrediting Council on Education in Journalism and Mass Communication (ACEJMC) must demonstrate to an on-site team that faculty are pursuing active programs of scholarship, in addition to demonstrating that curricula are consistent with what a university—not a trade school—requires. ACEJMC approves programs grounded philosophically in the liberal arts (as opposed to programs driven largely by credit hours in the major), and thus one can expect both internal and external program reviewers to look most favorably upon programs that afford students the chance to explore fields beyond their own. As Bollinger suggested, university students have at their disposal experts in virtually all fields of study, and through formal education, students can take with them to a newsroom or corporation an appreciation for political and philosophical thought, a sense of values and an ability to reason intelligently when ethical dilemmas arise.

⁴ Bryan Denham, "Teaching Research Methods to

Undergraduates," *Journalism & Mass Communication Educator* 51 (Winter 1997): 54-62.

⁵ For example, Don Stacks and Mark Hinson III, "The Communication Investigator: Teaching Research Methods to Undergraduates," *Communication Quarterly* 39 (4 1991): 351-357.

⁶ This does not disparage qualitative approaches to research. Triangulation, for example, has proven valuable in many areas of communication research, and the author has used the approach numerous times. At the undergraduate level, however, students must be exposed to the language of science and the manner by which numbers can be used to inform and enlighten, as well as misused to manipulate or deceive. Academicians should remember that many students do not go on to graduate school, and thus many of the decisions they make as adults will be based largely on the knowledge they gain while undergraduates.

⁷ John E. Hocking, Don W. Stacks and Steven T. McDermott, *Communication Research* 3rd edition (Boston: Allyn and Bacon, 2003); Earl Babbie, *The Practice of Social Research* 9th edition (Belmont, CA: Wadsworth, 2001); Joann Keyton, *Communication Research: Asking Questions, Finding Answers* (Mountain View, CA: Mayfield, 2001); Roger D. Wimmer and Joseph R. Dominick, *Mass Media Research: An Introduction* 6th edition (Belmont, CA: Wadsworth, 2000); Paula M. Poindexter and Maxwell E. McCombs, *Research in Mass Communication: A Practical Guide* (Boston: Bedford/St. Martin's, 2000); Robert N. Bostrom, *Communication Research* (Prospect Heights, IL: Waveland, 1998); Michael Singletary, *Mass Communication Research: Contemporary Methods and Applications* (New York: Longman, 1994).

⁸ Barrie Gunter, *Media Research Methods* (Thousand Oaks, CA: Sage, 2000).

⁹ Rebecca B. Rubin, Alan M. Rubin and Linda J. Piele, *Communication Research: Strategies and Sources* 5th edition (Belmont, CA: Wadsworth, 2000).

¹⁰ Joann Keyton, "Integrating Service-Learning in the Research Methods Course," *Southern Communication Journal* 66 (Spring 2001): 201-210.

¹¹ Paula M. Poindexter, "A Model for Effective Teaching and Learning in Research Methods," *Journalism & Mass Communication Educator* 52 (Winter 1998): 24-36.

¹² Sally Jackson and Stacy Wolski, "Identification of and Adaptation to Students' Preinstructional Beliefs in Introductory

- Communication Research Methods: Contributions of Interactive Web Technology." *Communication Education*, 50 (July 2001): 189-205.
- ¹³ Rick Rodrick and Linda Dickmeyer, "Providing Undergraduate Research Opportunities for Communication Students: A Curricular Approach." *Communication Education* 51 (January 2002): 40-50.
- ¹⁴ Bollinger, task force statement; Betsy Medsger, *Winds of Change: Challenges Confronting Journalism Education* (Arlington, VA: The Freedom Forum, 1996).
- ¹⁵ The purpose of Table 1 is to show where the points emphasized in this article might fall during a one-semester class. Instructors will vary, of course, in terms of (a) when they cover a certain topic, and (b) how much time they commit to it.
- ¹⁶ Sarah Cohen, *Numbers in the Classroom: Using Math and Statistics in News* (Columbia, MO: Investigative Reporters and Editors, Inc., 2001); John Allen Paulos, *A Mathematician Reads the Newspaper* (New York: Basic Books, 1995).
- ¹⁷ Kathleen Woodruff-Wickham, *Math Tools for Journalists* (Oak Park, IL: Marion Street Press, 2002).
- ¹⁸ Karl Popper, *Conjectures and Refutations: The Growth of Scientific Knowledge* 5th edition (New York: Routledge, 1989), 34-35. See also, Karl Popper, *The Logic of Scientific Discovery* (New York: Routledge, 2002).
- ¹⁹ Popper, *Conjectures and Refutations*, 42.
- ²⁰ With regard to prediction, Shaw and Costanzo observed that "Although understanding is the major goal of science, prediction is nevertheless important because it is the process which permits verification of empirical and theoretical generalizations." See M.E. Shaw and P.R. Costanzo, *Theories of Social Psychology* (New York: McGraw-Hill, 1970), 7. Westley also addressed the importance of prediction: "It is instructive to compare the use of instances in argumentation and in scientific 'hypothesis testing.' The arguer typically sets forth a general proposition and then marshals concrete observations as instances in its support. But as long as the number of possible instances is infinite and there is no assurance that the instances cited are representative of all possible instances, no number of such citations can amount to verification. Verification is possible only under conditions of genuine prediction. Repeated demonstration that a proposition successfully predicts events (under specified conditions) by methods available to others is what is meant by verification." See Bruce H. Westley, "Scientific Method and Communication Research," in *Introduction to Mass Communication Research*, ed. Ralph O. Nafziger and David M. White (Terre Haute, IN: Indiana State University Press, 1963), 245. It should be noted that, given the importance of prediction, Westley did view the scientific method ultimately as a synthesis of inductive and deductive approaches, a process he and others described as *hypothetico-deductive empiricism*.
- ²¹ Thomas S. Kuhn, *The Structure of Scientific Revolutions* 3rd edition (Chicago: The University of Chicago Press, 1996).
- ²² Ludwig Wittgenstein, *Tractatus Logico-Philosophicus* (New York: Routledge, 2001); David Edmonds and John Eidinow, *Wittgenstein's Poker: The Story of a Ten-Minute Argument Between Two Great Philosophers* (New York: Ecco Publishing, 2002).
- ²³ Popper, *Conjectures and Refutations*, 49.
- ²⁴ Bernard R. Berelson, *Content Analysis in Communication Research* (New York: The Free Press, 1952), 18.
- ²⁵ See, for example, Bryan E. Denham, Andrew C. Billings and Kelby K. Halone, "Differential Accounts of Race in Broadcast Commentary of the 2000 NCAA Men's and Women's Final Four Basketball Tournaments," *Sociology of Sport Journal* 19 (3 2002): 315-332; Andrew C. Billings, Kelby K. Halone and Bryan E. Denham, "'Man, That was a Pretty Shot': An Analysis of Gendered Broadcast Commentary of the 2000 Men's and Women's NCAA Final Four Basketball Championships," *Mass Communication & Society* 5 (3 2002): 295-315.
- ²⁶ Steven H. Chaffee and John L. Hochheimer, "The Beginnings of Political Communication Research in the United States: Origins of the 'Limited Effects' Model," in *The Media Revolution in America and Western Europe*, ed. Everett M. Rogers and Francis Balle (Norwood, NJ: Ablex Publishing, 1985); Paul F. Lazarsfeld, Bernard Berelson and Hazel Gaudet, *The People's Choice* 2nd edition (New York: Columbia University Press, 1948).
- ²⁷ Elihu Katz, "The Two-Step Flow of Communication," in *Mass Communication*, ed. Wilbur Schramm, (Urbana, IL: University of Illinois Press, 1960).
- ²⁸ Moreover, as Reardon and Rogers argued, the terms "interpersonal" and "mass" may themselves imply a rigid dichotomy that actually does not exist. See Kathleen K. Reardon and Everett M. Rogers, "Interpersonal versus Mass Media Communication: A False Dichotomy," *Communication Research* 15 (2 1988): 284-

- ²⁹ Everett M. Rogers, *A History of Communication Study: A Biographical Approach* (New York: The Free Press, 1994).
- ³⁰ Gerald van Belle, *Statistical rules of thumb* (New York: Wiley Interscience, 2002), 3.
- ³¹ Nassim N. Taleb, *Fooled by Randomness: The Hidden Role of Chance in the Markets and in Life* (New York: Texere Publishing Limited, 2001), 52-53.
- ³² Taleb, *Fooled by Randomness*, 141.
- ³³ For more on the nature of chance, see Peter L. Bernstein, *Against the Gods: The Remarkable Story of Risk* (New York: John Wiley and Sons, 1996).
- ³⁴ Taleb, *Fooled by Randomness*, 44.
- ³⁵ Fred N. Kerlinger, *Foundations of Behavioral Research* 3rd edition (New York: Holt, Rinehart, Winston, 1986).
- ³⁶ Jeb C. Nunnally and Ira H. Bernstein, *Psychometric Theory* 3rd edition (New York: McGraw-Hill, 1994), 203.
- ³⁷ Babbie, *The Practice of Social Research*, 100.
- ³⁸ Taleb, *Fooled by Randomness*.
- ³⁹ Taleb, *Fooled by Randomness*, 85.
- ⁴⁰ Westley, "Scientific Method and Communication Research," 249.
- ⁴¹ Joseph Woelfel and Edward L. Fink, *The Measurement of Communication Processes* (New York: Academic Press, 1980), 5.
- ⁴² Van Belle, *Statistical Rules of Thumb*, 11.
- ⁴³ Taleb, *Fooled by Randomness*, 113.
- ⁴⁴ John Neter, William Wasserman and Michael H. Kutner, *Applied Linear Statistical Models* (Homewood, IL: Irwin, 1990).
- ⁴⁵ Bryan E. Denham, "Advanced Categorical Statistics: Issues and Applications in Communication Research," *Journal of Communication* 52 (March 2002): 162-176.
- ⁴⁶ Leon Sigal, *Reporters and Officials* (Lexington, MA: D.C. Heath and Company, 1973).
- ⁴⁷ David Pritchard, "The News Media and Public Policy Agendas," in *Public opinion, the Press, and Public Policy*, ed. J. David Kennamer (Westport, CT: Praeger, 1994).
- ⁴⁸ Maxwell E. McCombs and Donald L. Shaw, "The Agenda-Setting Function of Mass Media," *Public Opinion Quarterly* 36 (1972): 176-187.