SYMPOSIUM

Learning through Research: Using Data to Train Undergraduates in Qualitative Methods

Colin Elman, *Syracuse University*
Diana Kapiszewski, *Georgetown University*
Dessislava Kirilova, *Syracuse University*

We agree with Druckman's (2015) view that a liberal arts education should equip students with "the tools needed to address and resolve problems in a variety of domains" (Druckman 2015). We are also sympathetic to his related observation that for "social scientists, this means educating students so that they know how to apply the basic scientific method of asking questions, generating theories and hypotheses, collecting data, and analyzing results" (ibid.).

We anticipate students will acquire research skills most effectively when they engage in "active learning," rather than passively absorbing information.[1] The question raised by Druckman's call to integrate research and undergraduate teaching is to what extent active learning can or should take the form of direct involvement in faculty members' research projects. To be sure, significant benefits to such participation exist. Collaborative research can strengthen mentoring relations. It can also teach students about teamwork and group dynamics, about discipline and rigor, about listening and compromise, and about the rhythm and mechanics of carrying out social inquiry. Students may be able to acquire substantive knowledge about their subject area as well. And participating in faculty research can empower and inspire undergraduates to *want to* engage in research, an unquestionably positive outcome.[2]

Nonetheless, we believe that undergraduates can only meaningfully collaborate in a research project—and can only learn from doing so—if they first receive a solid grounding in the methods being used in the project. Collaborative research involves a range of individual research tasks at different levels of sophistication and with varying degrees of proximity to a project's underlying epistemology. Undergraduates with little or no methodological preparation can undertake simple tasks with straightforward scripts. Yet a research task is not by itself an act of social inquiry. It only becomes so by virtue of its placement in a project's larger methodological context. Moreover, simply undertaking research tasks does not allow students to grasp the methods being used in a project, or to understand their rules, why they must be followed, what it means to follow them, and what failing to do so implies for the resulting scholarship.[3]

In this brief article, we argue that undergraduate methods training acquired through coursework is a critical prerequisite for effective research and is beneficial in other ways. We consider what courses on *qualitative* research methods, which are rarely taught in undergraduate political science programs, might look like. We propose that instruction initially should involve specialized texts with standardized exercises that use stylized data, allowing students to focus on the methods they seek to master. Later in the sequence, research questions can be brought to the fore, and students can undertake increasingly complex research tasks using more authentic data.[4] To be clear, students following the path we suggest are still learning methods by using them. However, they are beginning to do so by executing research tasks in a more controlled context. Teaching methods in this way provides students with a suite of techniques they can use to effectively and meaningfully engage in their own or a faculty member's research. We also raise some challenges to using qualitative data to teach methods, and conclude by reprising our argument.[5]

LEARNING BY DOING?

At the root of the argument in favor of synthesizing undergraduate teaching and research is the claim that students learn best by doing. While we are in favor of active learning, we do not think that simply carrying out a research task, isolated from the research design and epistemological justification which motivated it, can teach students much about how to do social science.

Collaborative social science involves a team effort. Of course, it is not necessary for every team member to do the same task, and not every task requires the same level of skill. Table 1 suggests four ideal types, depending on combinations of two dichotomous conditions: whether the research task is simple or sophisticated, and whether the student has been trained in methods.[6]

With regard to the distinction between simple and sophisticated research tasks, even without a methodological grounding, with straightforward instructions undergraduate students can carry out simple research tasks—identifying a set of relevant newspaper articles or coding a set of documents, for instance. But without methodological preparation, in

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Table 1

Why Methods Training Should Precede Engaging in Research Tasks

	No methodological preparation	Methodological preparation
Simple research task	Rote behavior, teaches only the content of the activity.	Even simple tasks represent social inquiry from which students can learn.
Sophisticated research task	Cannot be undertaken.	Intellectual partnership: students consciously contribute to research effort and learn from doing so.

contrast to the *socialization* value we mentioned earlier, the *educational* value of conducting the task rarely extends beyond the immediate content of the activity: the necessary contextualizing knowledge remains buried beneath the project's tasks and practices, even as it drives them. By contrast, if students first have learned about the "how" and the "why" of the type of research being conducted, even the simplest of tasks is imbued with this additional meaning. To put it another way, *methods training converts even simple discrete research tasks into acts of social inquiry*. The distinction becomes starker when contemplating more sophisticated research tasks, which are likely to be completely beyond the reach of students with no preparation. In short, those who have been trained in methods can aspire to be full partners with their faculty mentors, and hence learn a great deal more from the experience.

Of course, we do not dismiss the possibility that faculty might try to teach students the underlying epistemology, requirements, logics, and rules of the methods they are using as students assist them with their research. However, it is unrealistic to expect faculty to continually halt forward motion on their projects to take the necessary time to do this. Moreover, even if they did, grasping those methods would be complicated for students who are struggling to understand complex new contexts, topics, concepts, and theories.

Another practical reason we are dubious about teaching undergraduates research skills by engaging them in faculty research concerns scale. Any individual faculty member can only involve a few undergraduates in research in a way that would be helpful for the faculty member and meaningful to students. In particular, the bigger the team, the less clear the intellectual payoff for the students. As such, even if undergraduates *could* learn research methods through participating in faculty research, only a few will have the opportunity to do so.[7]

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In short, it is very difficult for undergraduates to learn most research methods from undertaking rote tasks in a research project that uses them without engaging with the project's motivating epistemology. This engagement requires the *prior* attainment of the requisite methodological knowledge base through dedicated classroom instruction. This is an especially serious problem for qualitative methods because courses fully focused on qualitative research methods are rare at the graduate level, and even less frequently taught to undergraduate students.[8]

THE BENEFITS OF TRAINING UNDERGRADUATES IN RESEARCH METHODOLOGY

Training undergraduates in social science methods entails more than simply teaching them to carry out research tasks, use data-collection techniques, or use analytic tools. For each social science tradition, the potential value of research is defined by foundational theories of knowledge, which in turn imply a set of practices. More formally, ontological claims are bracketed by the epistemology (and associated prescriptive methods) that produced them. Scholarship is rule-bound for a reason: badly done social science produces misinformation, not knowledge. The purpose of research skills is to enable scholars to follow the rules of their tradition and to produce knowledge with the value added of the type promised by the underlying epistemology.

Accordingly, teaching methods implies conveying the rules by which a research tradition operates *and* why they must be followed. It involves explaining how social science knowledge is derived, how intellectual consensus forms, and how claims are contested and conventional wisdom overturned. It also entails discussing how correlation is established and causal inferences are made, and from what angles and with what advantages different types of observational and experimental methods can contribute to those tasks.

While this knowledge is a prerequisite for effectively engaging in social inquiry (and for learning from that experience), such training benefits all students. Methods courses help students to comprehend the empirical arguments invoked by instructors in their substantive courses and to be more active and sophisticated consumers of political (and other social) science scholarship. They do so by providing students with the building blocks of social science and by enhancing their "information literacy" more broadly

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(Marfleet and Dille 2005). Students trained in methods can identify concepts and make sense of how they were operationalized, comprehend and distinguish between different kinds of claims, understand the use of complex data, and interpret findings in various contexts. Most broadly, students who have been trained in methods are better placed to grasp the ephemeral, changeable, contestable nature of much social science knowledge (Bernstein and Allen 2013, 11; Clark 2011, 138).

well-regarded technique to overcome students' anxiety about methods (Bos and Schneider 2009, 381–82).

Using data to teach qualitative methods should produce similar benefits. We propose designing individual courses and multicourse sequences that involve two step-wise processes: (1) a progression from engaging in simple text-based exercises to engaging in real research tasks and (2) a more gradual transition from being taught and practicing research skills with stylized data to doing the same with authentic data.

Methods training converts even simple discrete research tasks into acts of social inquiry.

TEACHING QUALITATIVE METHODS TO UNDERGRADUATES: A PROPOSAL FOR AN ALTERNATIVE FORM OF ACTIVE LEARNING

While the need to train undergraduates seems uncontroversial with regard to quantitative methods, it is a new approach for qualitative research in political science. A first step, then, is to envision what such undergraduate qualitative methods classes might look like. While graduate-level courses offer some clues, the traditional model would require substantial revision to be effective at the undergraduate level. Instead, the quantitative tradition might provide a better paradigm for teaching qualitative research methods to undergraduates.

Graduate qualitative methods classes typically combine prescription and examples. The prescriptive literature lays out the epistemic justifications for a given method and details the steps necessary to achieve its desired results. Methods texts and instructors usually point to applications of the method as examples and seek to describe how authors used it to arrive at their conclusions. This turns out to be a less-than-ideal way to teach research methods. Although most qualitative scholars state their research design and discuss their data and analysis, the mechanics that underlie the analytic method frequently remain "implicit" (Mahoney 2007, 135): even authors of exemplary scholarship rarely fully describe how they arrived at their conclusions. Accordingly, using such exemplars to teach methods requires instructors and students alike to reverse engineer the procedures. While sub-optimal at the graduate level, this model is even less likely to succeed at the undergraduate level.

A more promising model for teaching qualitative research methods at the undergraduate level can be found in an established practice of the quantitative tradition. Teachers of statistical techniques have long held that students internalize methods more quickly and completely when they use them. Rather than begin with "real" research, however, statistics texts routinely include exercises linked to "pedagogical data"—common, stylized data specifically prepared for teaching purposes—that maximize student engagement with, and focus their attention on, the methods being taught.[9] This is still a form of "learning by doing," but the "doing" is structured by the texts and their exercises and data. That is, method is privileged over substance initially, with the balance shifting over time towards more authentic research tasks and data.[10] Teaching in a comparably progressive fashion is a

To give an abstract overview of the first transition, text-based exercises to "real" research tasks, after introducing students to the logic and rules of a particular qualitative analytic method, instructors illustrate the mechanics of the method through relatively simple research tasks, which students practice by doing exercises using pedagogical data. For instance, students may be asked to code a set of interview transcripts on particular dimensions, or to identify information in those transcripts that could be used to measure some concept. Over time, students can practice more complicated research tasks and skills or engage in more than one task at a time. For example, they could use process tracing to identify the steps and mechanisms in a causal chain using a series of archival documents. As they learn different methods (and how they fit in the broader research process), students can apply them to real social science problems, asking and answering substantive research questions (i.e., producing scholarship) relevant to their subfield interests.

The second transition, moving from pedagogical data to authentic data to learn and practice research skills, should occur more gradually. A "pedagogical data project," as we envision it, is a coherent aggregate of qualitative data, usually derived from research data but revised for teaching purposes, streamlined, simplified, and organized for instruction. Because pedagogical data are designed to help students to develop research skills, cutting the connection between the data and the social world is justified: doing so allows the data to be adapted to maximize their utility for teaching a particular research skill. Such data will be accompanied by standard documentation detailing the processes through which they were generated and simplified, and materials oriented toward instruction.[11]

As this sequence suggests, we are very sympathetic to the advantages of students *eventually* working with actual research data. Research data, with all their intricacies and idiosyncrasies, are *authentic*: they reflect empirical reality and the original research experience more faithfully than do pedagogical data. To the extent pedagogical data are inauthentic, their use by students cannot produce new knowledge. Authentic data are also more likely to be drawn from the instructor's own materials than are pedagogical data, allowing the instruction to be personalized in a way that is more difficult with data that are obtained elsewhere. Nonetheless, we believe it will usually be advisable to use authentic data

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only later in undergraduate methods instruction. Toward the beginning, students should work with data that were prepared for pedagogical purposes, allowing their attention to be tightly focused on the acquisition of research skills.

TEACHING QUALITATIVE METHODS THROUGH DATA: SOME CHALLENGES

Our proposal that qualitative methods be taught to undergraduates in dedicated courses using pedagogical data faces at least three major challenges. First, few texts are suitable for teaching qualitative political science research methods to undergraduates, and even fewer that invoke pedagogical data. Second, some pedagogical data will be derived from real research data, yet political scientists who generate qualitative data rarely share them. Third, even if qualitative social scientists did—or will—share their data, neither clear processes for converting research data into pedagogical data nor parameters for evaluating the pedagogical value of the resulting data have been developed. We discuss each challenge, and how it can be addressed, in turn.

Few texts teach qualitative research methods in the way we have proposed. Even the now near-dormant Sage blue books series may not have been sufficiently directed to an undergraduate audience. However, a new series recently introduced by Cambridge University Press may help to address this gap.[12] As planned, the series will comprise short, straightforward, and accessible "user guides" offering concrete instructions for using particular techniques for collecting and analyzing qualitative data. Each book will feature rigorous exercises to be conducted using associated pedagogical data (and their accompanying documentation). Each will also offer multiple references to exemplary articles and books that use the methods under analysis and, where possible, access to the data that underlie those studies.

The second major challenge concerns data availability. Pedagogical data can only be derived from authentic data if scholars share them. Unfortunately, norms and standards for doing this have been slow to emerge among qualitative political scientists. As a result, the discipline lacks a stock of data that could be modified for classroom use at anything approaching reasonable transaction costs. In part, this is because the ethical and legal challenges (related to human subjects and copyright in particular, see Bishop 2012) that attend sharing all data impact the sharing of "disaggregated" qualitative data more directly.[13] However, several initiatives are under way to develop strategies for addressing these significant concerns (see, for example, Lupia and Elman 2014).

A final challenge concerns our incomplete understanding of the desiderata for pedagogical qualitative data, and how to achieve them.[14] Teaching qualitative methods in the way we propose requires developing a clear understanding of how genuine research data and pedagogical data differ, and strategies and standards for deriving one from the other. This is a long-term project that we hope members of the qualitative methods community will embrace.[15]

These are not the only challenges to the approach we propose, of course. We can anticipate several additional misgivings, for instance, that undergraduates have just eight semesters (or 12 quarters) into which a great deal has to be fit; that political science undergraduate programs already struggle to teach students the basics of the world's increasingly diverse political systems; and that proposing and gaining approval for new (untried) courses can be difficult. Notwithstanding these challenges, students will only be able to effectively engage in research (and learn from doing so) if they have previously taken dedicated methods courses, including on qualitative methods.

CONCLUSION

This article advanced a three-step argument. First, because all social inquiry requires scholars to follow well-reasoned rules that are grounded in and prescribed by an underlying epistemology, anyone who wishes to conduct research must first understand the methods they will use. Second, because most people learn more effectively by doing, research methods should be taught in a "hands-on" fashion. Third, rather than jump straight to real research, undergraduate students will benefit from their initial "hands-on" experiences being with standardized exercises and stylized pedagogical data introduced in specialized texts used in dedicated methods courses.

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In the long-term, teaching undergraduates research methods benefits faculty as well as students, as doing so provides students with the skills and motivation to assist faculty with their research. Moreover, the border between "learning methods with data" in the way we propose and "conducting authentic research" is flexible. Pedagogical data will often be derived from authentic data, and the questions underlying the standardized exercises that we believe should structure early methods instruction may often map onto authentic research questions. Throughout the pedagogical sequence we propose students are engaging in active learning, and in its advanced stages they come very close to engaging in authentic research. Thus, learning methods and doing research, while distinct, are closely related and mutually reinforcing when productively sequenced. ■

NOTES

1. Broadly construed, active learning occurs through activities such as class and small group discussion, visual-based instruction, cooperative learning, drama, debate, think-pair-share activities, short written exercises, peer teaching, and participating in class polls (Bonwell and Eison 1991).

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2. It bears noting that faculty engaging students in their research, and teaching in their own area of substantive expertise, can benefit faculty as well. Students' intellectual contributions and energy can be enormous assets to a research effort, and the feedback faculty receive and ideas they generate as they teach can propel their research agenda. Teaching research methods may likewise help faculty be more self-conscious about their methodological choices and practices.
3. Of course, many scholars have advocated for research-based learning (as recommended in the 1998 Boyer Commission report), including through collaboration with a professor; for instance, Ishiyama (2002) finds that early participation in research benefits social science and humanities students.
4. We use the term "authentic data" to refer to actual research data collected or generated by a scholar in connection with a project; our aim is to contrast these data with the "stylized data" or "pedagogical data" into which authentic research data can be converted (by streamlining or otherwise simplifying them) for teaching purposes.
5. Because qualitative methods are infrequently included in undergraduate political science curricula, much of this essay is necessarily speculative. Nonetheless, we can and do draw inspiration from the way undergraduates are taught quantitative methods, from developments related to undergraduate pedagogy, and from the teaching of qualitative methods in fields such as sociology.
6. For ease of exposition, these dimensions are represented as dichotomous conditions. In reality they are more likely to be continua, and the outcomes described in the four boxes will be correspondingly less clear cut.
7. Highlighting a different drawback, Taraban and Logue (2012) conclude that not all students benefit from engaging in research due to interstudent inequalities.
8. A recent survey of undergraduate political science programs found that survey research, experiments, quasi-experiments, and quantitative analysis are included in at least 70% of foundational "scope and methods" courses; (quantitative) data sets are discussed in 80% of these courses; and more than three-quarters require the use of statistical software for assignments. By contrast, interview techniques and case studies are mentioned in about half of these courses, while archival research, qualitative analysis, and ethnographic research are mentioned in less than half (Turner and Thies 2009, 370).
9. The three most commonly used titles in the general undergraduate political science methods courses studied by Turner and Thies (2009, 369), collectively used by 38% of respondents, all include "ancillary" packages with statistical problem sets and answers.
10. An important question that we cannot address here is precisely to what extent research tasks and data need to be authentic for the gains of "learning by doing" to be realized; answering this question would require a longer treatment of the question of *why* students learn best by doing.
11. While space restraints require us to focus exclusively on teaching methods for *analyzing* qualitative data, teaching techniques for *collecting and documenting* qualitative data might be carried out similarly. For instance, toward the beginning of the methods sequence, students might evaluate the respondent-selection strategy described in the documentation accompanying a pedagogical data collection and hypothesize what effect that strategy had on the interviews that were obtained and the data that they generated. Toward the end of the sequence, they might try to discern the same from an authentic data collection and the actual scholarly output.
12. The new series, titled *Methods for Social Inquiry*, will be coedited by Colin Elman, Diana Kapiszewski, and James Mahoney.
13. We have discussed these important challenges elsewhere (see, e.g., Elman and Kapiszewski 2014).
14. While some pedagogical data resources can be found at data archives in Europe (and the U.K. in particular), to our knowledge there are few available for use in US political science classrooms.
15. The Qualitative Data Repository (QDR, www.qdr.org) at Syracuse University is actively encouraging the creation of pedagogical data collections.

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