

Scientific Literacy in Undergraduate Political Science Education: The Current State of Affairs, an Agenda for Action, and Proposed Fundamental Benchmarks

Kim Quaile Hill, *Texas A&M University*

Rebekah Myers, *Texas A&M University*

ABSTRACT

Political science is falling behind a broad movement in the United States that seeks to reform the teaching of scientific literacy in undergraduate education. Indeed, political science is far behind that movement because the discipline does not have a collective commitment to science education at the undergraduate level. This article discusses prominent efforts in this reform movement and assesses the state of science education in our discipline. The authors propose an agenda for action on this issue in political science as well as fundamental educational benchmarks for undergraduate political science literacy.

Numerous public and private organizations are promoting reforms for undergraduate science education in the United States—especially in the traditional physical science (i.e., science, technology, engineering, and mathematics) disciplines. These efforts have been advanced by private foundations, professional associations, the White House Office of Science and Technology Policy, the National Institutes of Health, the National Science Foundation, and other federal agencies.

A major goal of these efforts is to enhance *scientific literacy*, a term that has many definitions. An especially valuable definition, however, is that “People who are literate in science are not necessarily able to do science, mathematics, or engineering in a professional sense.... Such people are able, however, to use the habits of mind and knowledge of science, mathematics, and technology to think about and make sense of many of the ideas, claims, and events they encounter in everyday life” (American Association for the Advancement of Science 1993, 322).

Adopting the preceding definition, we could say that a person with political science literacy would be able to use the conventional logical, observational, and decision methods of science to reason

about the political behavior of individuals, groups, institutions, and nations. This person also would understand the limits and tentativeness of scientific knowledge. And why is political *science* literacy important? Prewitt (1983) argued 30 years ago that scientific advances that are ill understood by the general public may compromise their role in the democratic process. That is, scientific literacy may be a fundamental part of civic education. Further, social science research assumptions and methods have been widely adopted in the decision processes of business, government, and the nonprofit sector. Thus, our students may not be able to function as professional or civic leaders without knowledge of the science of the social sciences.

Yet, what is the character of undergraduate education for scientific literacy in political science, and how commonly might scientific literacy be achieved for our students? To answer these questions, first consider the most prominent educational goals of our discipline. We seek to educate students in the value of the humanities and liberal arts for understanding politics. We strive to enhance students’ capacities as active participants in the governing process. We also seek to educate students on why the discipline is a social science, the ways by which it pursues scientific knowledge, and the current state of that knowledge. In the latter respect, we could say that political science seeks to enhance social science literacy.

We assert, however, that the scientific-literacy efforts of our discipline are limited and fragmentary. Indeed, the discipline does not offer a systematic foundation in this type of education for

Kim Quaile Hill is the Cullen-McFadden Professor of political science at Texas A&M University. He can be reached at kimhill@tamu.edu.

Rebekah Myers is a master of arts student in political science at Texas A&M University. She can be reached at rmyers@pols.tamu.edu.

most of our undergraduate students. If this claim is correct, one reason is that political scientists disagree about the appropriate role and character of science education in our discipline. Many political scientists embrace this type of education, but many do not. Many members of our profession are skeptical about whether the social sciences are legitimate sciences and, derivatively, whether human behavior or the behavior of political institutions can be studied successfully in conventional scientific ways (see, e.g., Bevir 2008, 62–9).

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We especially address those in our profession who are sympathetic to the scientific study of politics. We assume that these individuals recognize the importance of this type of education for our students and share a concern for how to improve it. We also assume that the goal of political science literacy in undergraduate education is as important as the goals of grounding students in our liberal arts heritage and educating them for civic participation. Thus, this article discusses how the teaching of scientific literacy and the scientific study of politics can be improved. First, however, we consider the evidence for our critical conclusion about the current state of teaching political science.

EVIDENCE ON THE STATE OF POLITICAL SCIENCE EDUCATION AS REFLECTED IN APSA ACTIVITIES

The American Political Science Association (APSA) reflects in good part “who we are” as a profession. Its activities also suggest our educational and research priorities. However, those activities indicate that for us collectively, science education is not a high priority.

The APSA supports a number of activities relevant to the educational mission of the profession. None of them concerns how we teach social science per se. Neither of the two career guides for undergraduates published by the APSA—*Careers and the Study of Political Science* and *Political Science: An Ideal Liberal Arts Major*—highlights science education or literacy; neither do any of the instructional handbooks for teachers published by the APSA. APSA occasionally commissions task forces to study problems of concern to the discipline—typically, substantive political topics, such as the prospects for democratic governance in the contemporary world. Yet, no APSA task force has considered science education or literacy for our discipline.

EVIDENCE ON THE STATE OF POLITICAL SCIENCE EDUCATION IN THE TEXTBOOK LITERATURE

Textbooks reveal another important “face” of scholarly disciplines. They indicate the primary intellectual concerns of disciplines as well as the state of understanding of those concerns. They also demonstrate what each discipline expects students encountering the field for the first time to learn as fundamentals.

It is likely that every reader of this article already knows the most important observation to be made here: we do not have an introductory textbook literature for the discipline as a whole. Indeed, we do not commonly have introductory courses in which such textbooks would be important, the implications of which were well stated by Laitin (2004, 12), as follows:

There is no standard introductory course in political science across the country. In fact, most departments long ago abandoned the idea of a standard curriculum altogether. Rarely are there prerequisites for advanced courses, meaning that upper-division courses in political science have students who have had no formal introduction to the discipline. In most upper-division courses, professors have no expectations that their students have any common set of tools to address more advanced material.

Contrast the preceding situation with that in psychology, for which we reviewed 14 prominent introductory psychology textbooks—some of which were published as early as 2000, others as recently as 2011, and most of which had been published in multiple, revised editions.¹ All of these texts include three important content components. First, each text flatly defines psychology as a scientific discipline in the first chapter. Second, the first or second chapter explicates how the discipline uses the scientific method in its research. Third, scientific theory is defined as a goal in either an introductory or succeeding chapter on individual research areas (e.g., consciousness, learning, and personality). Thus, students who take courses that require these texts have an introduction to the scientific fundamentals of the discipline when they enter upper-level courses.

Political science undergraduate majors may acquire some scientific literacy if they are required to take a research-methods course. Yet, two circumstances indicate that these courses make only a limited contribution of the kind that a typical introductory psychology course does. First, Thies and Hogan (2005) reported that about half of political science degree-granting programs require a research-methods course for their undergraduates; however, this estimate may be representative of only those institutions responding to their survey. Of the programs surveyed, 58% did not respond, and a high proportion of those departments may not require such a course. Furthermore, the course is required by only a minority of PhD-granting departments (Thies and Hogan 2005, 294). Those departments include most of the large public institutions that educate the highest number of political science majors. Thus, research-methods courses may not reach many political science students.

Second, information on the scientific character of the discipline is modest in most of the popular texts for political science research-methods courses. Turner and Thies’s (2009) survey about the content of these courses indicated that more than 90% include as a topic the “logic of scientific reasoning.” However, a close reading of the texts used in these courses indicates that actual coverage of this topic often is minimal.

Only four of 22 basic texts used by any of Turner and Thies’s respondents discuss scientific research in ways that even approximate the content in introductory psychology books: Carlson and Hyde (2003), Hoover and Donovan (2008), Johnson and Reynolds (2012), and Shively (2011). Kellstedt and Whitten’s (2009) text, which was published after the Turner and Thies survey was in the field, has similar content.

Thus, only a minority of undergraduate political science students take research-methods courses that require any of the books with

the best coverage of fundamental scientific topics. Moreover, none of these texts duplicates the more extensive coverage of scientific principles in a typical introductory psychology course or, for that matter, in a full undergraduate-degree psychology program, as explained in this article.

Political science majors may learn about scientific goals and procedures in upper-level courses. Yet, there is no systematic or anecdotal evidence that such instruction is widespread or particularly rigorous. Laitin's (2004) observations quoted previously also suggest why such instruction would be a challenge for many instructors. Furthermore, the point is that the textbook literature in our discipline suggests that we do not have a collective commitment to educating undergraduates in political science.

EVIDENCE ON THE STATE OF POLITICAL SCIENCE EDUCATION AS REFLECTED IN OUR JOURNALS ON TEACHING

Most of the social sciences have a journal devoted to scholarship on teaching goals and practices. These outlets also reflect the concerns of these disciplines with undergraduate education. The *Journal of Political Science Education* and *PS: Political Science and Politics* publish this type of research. Yet, explicit attention to social science literacy and science education is rare in these journal articles. Typical articles focus instead on teaching strategies and techniques as well as civic education.

The APA has adopted a strong statement in support of social science literacy and a set of detailed guidelines for curricula to pursue that goal.

Indeed, neither the *Journal of Political Science Education* nor *PS: Political Science and Politics* published any article on the teaching of science or scientific literacy per se in the period 2011–2013. A few articles addressed the teaching of research methods (e.g., Centellas 2011) and critical thinking (Fitzgerald and Baird 2011). These topics are valuable for scientific literacy, but they would be most effective in curricula with an integrated approach to teaching such literacy.

EVIDENCE ON THE STATE OF POLITICAL SCIENCE EDUCATION IN GENERAL-PUBLIC ATTITUDES

It is regrettable that there exists no direct evidence on this topic; however, we can cite indirect and revealing evidence that is relevant to it. In 2008, the American Psychological Association (APA) sponsored an online Harris Interactive poll of the general public and a comparable poll of medical practitioners with substantial patient-care duties (APA 2011). Notably, more than 75% of the physician sample and almost 60% of the general-public sample reported having taken a psychology course in high school or college.

Yet, these surveys indicate that psychology has a poor scientific image in both groups (APA 2011). Only 33% of the general-public sample and 24% of the physician sample considered psychology to be a scientific profession. Other findings demonstrate that only modest minorities of both groups understood the applied-science relevance of psychology. If psychology has not made better progress in public opinion despite its strong commitment to science education discussed herein, then surely political science has an even weaker scientific reputation. Furthermore, this conclusion is supported by

evidence on the poor reputation of our discipline among members of Congress (Mole 2013) and journalists (Noel 2010, 1).

AN AGENDA FOR ACTION: ADOPTING THE MODEL OFFERED BY THE AMERICAN PSYCHOLOGICAL ASSOCIATION

Those who endorse the goals advanced in this article might seek to achieve them in various ways. There are opportunities, first, for individual faculty and departmental efforts. Individual faculty members can shape their courses to enhance scientific literacy, and individual departments can revise their curricula to this end.

Yet, a profession-wide effort that draws from the expertise of many faculty and many departments would be optimal. If the APSA supported such an effort, its prominence would be enhanced. Yet, individuals and departments that do not endorse these goals would not be obligated to adopt them, even if the APSA helped to advance this agenda.

A profession-wide effort could be substantially guided by the work of the APA. We reviewed the online undergraduate education descriptive and policy statements of every major social science professional organization in the United States.² Based on that review, the APA is the clear leader in its commitment to scientific literacy. No other American social science association even approximates the APA's work. The APA has adopted a strong statement in support of social science literacy and a set of detailed guidelines for curricula to pursue that goal.

The undergraduate curricular policies of the APA are the product of more than 20 years of work. We could say that they also are heroically detailed, perhaps as a product of considerable work over time, and include numerous learning objectives for students as well as related objectives for faculty, departments, and academic administrators. What inspires us about the APA policies, however, are their intellectual foundation and assumptions.

The most recent version of the *Principles for Quality Undergraduate Education in Psychology* (APA 2013b) summarizes the expectations referred to previously, and the *APA Guidelines for the Undergraduate Psychology Major* (APA 2013a) presents detailed student learning goals as well as objective outcomes and assessment indicators matched to those goals.

At the core of these curricular requirements is the statement that "Psychology as a scientific discipline is reinforced throughout the curriculum" (APA 2013b, 3). Undergraduate students also are expected to master much of the substantive subject matter of the discipline; the important scientific concepts, theories, and empirical findings; the scientific method generally; and the research methods common in the discipline. The APA requirements also imply that a satisfactory curriculum must include all of this content. Thus, for example, a strong emphasis on research methods would not be satisfactory if the other elements also were not present.

These APA objectives also are linked to a broad educational goal that comports with the definition of scientific literacy quoted previously: the APA curricular requirements provide "students with the workplace skills needed in this information age; a solid academic background that prepares them for advanced study in a

wide range of fields; and the knowledge, skills, and abilities that will enhance their personal lives” (APA 2013b, 2). To reiterate, we see the work of the APA as a general if not point-by-point model for what could be promulgated for political science.

FUNDAMENTAL STUDENT LEARNING BENCHMARKS FOR POLITICAL SCIENCE LITERACY

The *APA Guidelines*, however, do not address a significant challenge for social science literacy implied in the survey results summarized previously—that is, skepticism about whether the social sciences are legitimate sciences and, derivatively, whether human behavior can be successfully studied scientifically. Thus, as a foundation for a full set of learning benchmarks for political science literacy, we propose that students taking undergraduate courses in our discipline should demonstrate knowledge of the following topics.

The Subject Matter of Political Science

This discipline seeks to account for a variety of aspects of political behavior. One common research topic is *individual* political

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behavior—both what is called conventional behavior (e.g., voting in elections and other nonviolent actions to influence government policy) as well as unconventional political behavior (e.g., participation in demonstrations, riots, and other violent political acts intended to influence government policy or the security of the regime). Much research also concerns the behavior of individuals within informal and formal groups, as well as the groups themselves. Examples of the latter behavior include the activities of members of political parties and elected legislators, as well as the collective behavior of parties and legislatures as whole entities. Political scientists also study the behavior of entire political systems, such as nations; political subunits of nations, such as the American states; and cities within states. An example of this research is that which seeks to explain patterns of cooperation or conflict among nations.

The Origins of Political Behavior

Political scientists assume that the types of behavior outlined previously are naturally occurring. As Carlson and Hyde (2003, 26) stated, “Humans are part of the natural world.” Thus, we assume that individual, collective, and organizational political behavior can be studied in the same scientific way and with the same prospects for success as all other aspects of the natural world.

The Character of Political Behavior

Whether the types of political behavior outlined above are innately simple or complex is not known at present, although some political scientists assume that our subject matter is highly complex (e.g., Dahl 2004, 377). Many scientific disciplines, however, have succeeded in explaining highly complex natural phenomena. Thus, the apparent complexity of the subject matter of a science is not indicative of whether the discipline can create meaningful knowledge of it.

CONCLUSIONS

A broad-ranging effort exists today to enhance scientific literacy at all levels of education; however, political science is not participating in that effort. The members of our profession as an entirety would not endorse a primary definition of our discipline comparable to that adopted by psychology, yet many political scientists value our science-education goals. Furthermore, if our discipline is not considering how to improve undergraduate political science literacy, this is in part because those who especially value such education have not joined in an effort to enhance how it might be done.

There are feasible paths forward, however, and we outline in this article the one that would be the most comprehensive and prominent. There also are numerous reasons why such an effort would be valuable for our profession. The majority of first-year college students are not prepared by their high school education to understand the social sciences *qua* science. Thus, we must assume that burden to achieve scientific literacy for our discipline. Moreover, we are convinced that when undergraduates understand the creative character of the scientific study of politics, more of them

will be interested in careers as scholars. Indeed, this is part of the philosophy behind every major effort to enhance the teaching of science today. The most important question for our profession, however, is that if we do not take ourselves seriously as a science, why would we expect anyone else—whether the general public, members of Congress, or any other prominent social or political elite—to do so. ■

NOTES

1. Due to space limitations, the list of these books is available from the authors.
2. These organizations included the APSA, American Anthropological Association, American Economic Association, American Psychological Association, American Sociological Association, Association of American Geographers, and National Communication Association.

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