

The Social and Behavioral Sciences in K-12 Education: Past, Present, and Future

Proceedings of a Workshop—in Brief

The ability to meet many of society's challenges requires an understanding of human behavior. From health to education to business to homeland security, the social and behavioral sciences (SBS)—which include psychology, political science, economics, anthropology, and sociology—contribute to solving important problems for individuals, organizations, and society. Although they are taught widely at the university level, they have far less presence in K-12 education where students' core knowledge is shaped.

To better understand contemporary efforts and to build upon earlier National Academies efforts to explore the presence of SBS in K-12 education, the Roundtable on the Communication and Use of the Social and Behavioral Sciences of the National Academies of Sciences, Engineering, and Medicine held a meeting on November 17, 2016. The event brought together representatives of leading SBS organizations and leaders in science and social studies education to explore common interests in K-12 education and consider opportunities to work together to achieve shared goals. Participants included representatives of SBS organizations, roundtable members, and advisory committee members and staff of the National Academies' Division of Behavioral and Social Sciences and Education.

SETTING THE STAGE

To provide context for the day's discussions, roundtable chair Arthur Lupia noted that in developing a strategy for increasing the presence of SBS in K-12, more focus is essential on the required, practical constraints, and goals of stakeholders rather than on the interests and goals of the SBS community. Any proposed changes to the curriculum should be responsive to the needs of and desired outcomes for students, he said, and should also consider the practical constraints, such as limited time in the school day, that face stakeholders. With the understanding that comes from listening to parents and educators, the reasons for teaching SBS in K-12 can be better articulated, Lupia said. Those reasons might include equipping students with knowledge that can help them make better decisions in civic, personal, community, work, and family contexts or teaching scientific methods that produce better understanding of human and social phenomena. One approach is to develop curriculum modules for teaching SBS subjects to minimize the burden for teachers.

PUBLIC PERCEPTIONS OF SOCIAL AND BEHAVIORAL SCIENCES

Lupia stressed that the public is a key stakeholder group in K-12 education, and people's beliefs affect what they demand for their children's education. Consequently, it is important to understand public perceptions of SBS. To that end, roundtable member Sheri Roder presented survey research that compared public knowledge

and attitudes toward the natural sciences and social sciences in a representative national sample of 1,000 adults.¹

When survey respondents were asked about their thoughts and feelings about science in an open-ended way, people spoke spontaneously about natural science and connected their ideas to some larger meaning. When asked about social science, respondents' thoughts were less clear, Roder said. Prompted with a list of attributes, respondents associated the natural sciences with important innovations and life-changing discoveries; in contrast, they more often associated the social sciences with offering different and better perspectives on the world.

The respondents associated science and technology disciplines more with logical reasoning and problem solving, but they associated SBS more closely with understanding people and wider points of view. Interestingly, respondents said that the study of SBS was less likely than the study of the natural sciences to be associated with having a well-paying job, but that it was more likely than the study of natural science to be associated with having a more fulfilling job and one that benefits society.

Roder suggested that people's perception that there are more well-paying jobs related to computer sci-

ence and mathematics compared to SBS may be partly driven by "a very literal definition of careers you can have if you study social sciences," she said. However, a psychology degree is not simply preparation for a career as a psychologist; rather, psychology majors pursue a wide range of careers. Perhaps, she suggested, the very fact that social and behavioral sciences offer so many options contributes to confusion about the career paths available. Whereas the path from a computer science degree to a computer science job is more straightforward, the path from a psychology degree can lead in many different directions.

When asked when different subjects should be introduced to children in school, Roder reported, more than 30 percent of respondents thought mathematics and science education should begin in elementary school or earlier: see Figure 1. In contrast, only 15 percent thought SBS education should begin that early. One potential explanation for these responses may be respondents' views on what subjects they see as important for later success: more than 80 percent of respondents said mathematics and computer science are extremely or very important subjects for future success, while the natural sciences and social sciences were seen as less important: see Figure 2. Respondents with SBS in their own educational backgrounds saw SBS as more important to education than those without such backgrounds.

¹The survey was conducted online over 4 days in 2016, and the sample was balanced in terms of age and gender.

WHEN SUBJECTS SHOULD BE INTRODUCED, ADULTS 18+

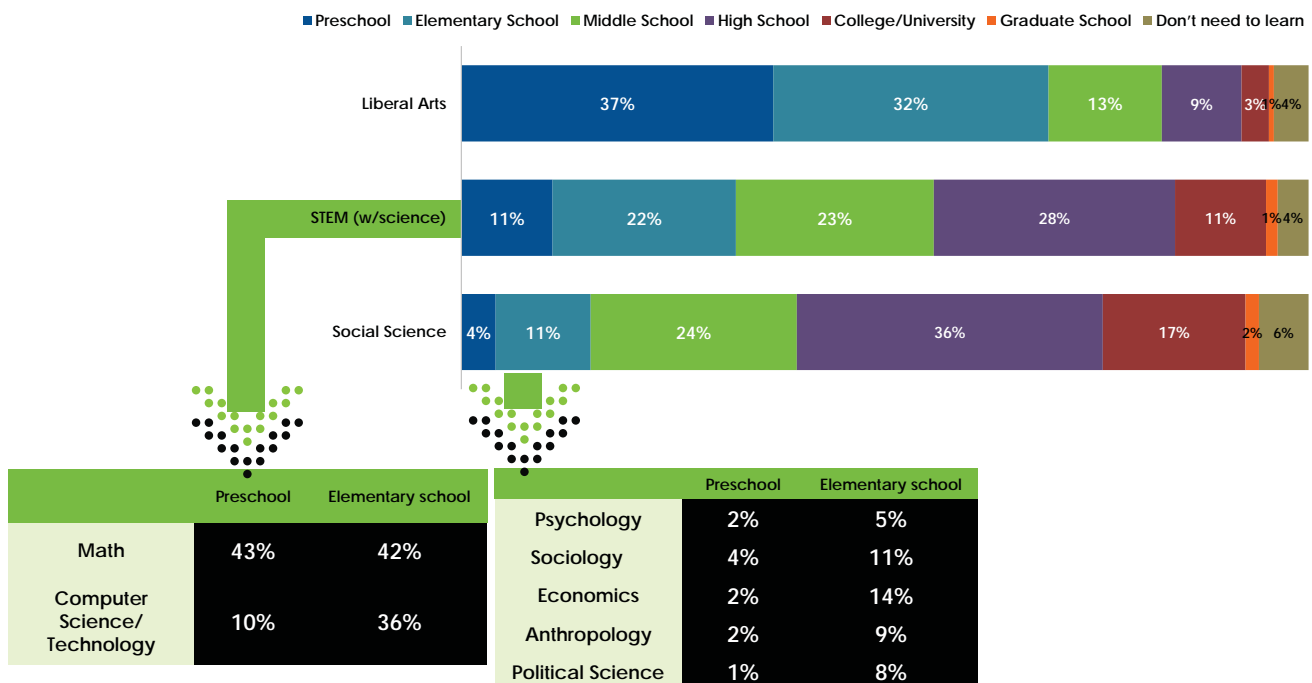


Figure 1 Public perceptions about when a person's education subjects should be introduced. Source: Roder, S. (2016). *Public Perceptions of the Social and Behavioral Sciences*. Horizon Media Finger on the Pulse, June 2016. Presented at Teaching the Social and Behavioral Sciences: Past, Present, and Future. Available <http://nas.edu/SBS-in-K-12-Education-Seminar>.

Roder said these preliminary results offer a starting point for exploring public perceptions of SBS in greater depth and considering their implications for K-12 education. Potential next steps include increasing public awareness of the many jobs, including well-paying ones, to which SBS degrees can lead and sharing stories that convey the common ground of social and behavioral sciences and their relevance to society and people’s everyday lives. She suggested that SBS “ambassadors” could also have an important role to play in helping SBS to be better understood. For example, popular culture includes science ambassadors like the astronomer Neil de-Grasse Tyson, but the social and behavioral sciences have no such cultural spokesperson.

THE SBS DISCIPLINES AND SBS IN K-12

Leaders from professional organizations of psychology, sociology, economics and anthropology shared perspectives on teaching their disciplines across the K-12 curriculum that included their rationales, goals, challenges, successes, standards, and approaches.²

ANTHROPOLOGY

Edward Liebow, executive director of the American Anthropological Association (AAA), said that AAA believes anthropology education helps to prepare

²Due to a presenter’s illness, political science was not covered in this session.

students for global citizenship by increasing cross-cultural awareness and sensitivity and helps them develop critical thinking skills. The organization’s efforts are also driven by the belief that learning about anthropology increases awareness about human origins and linkages among biology, culture, and behavior.

Describing the current presence of anthropology in K-12 education, Liebow said that although AAA has supported a limited high school presence for anthropology—such as curriculum modules, books, and Websites for teaching about race and human migration—it has put more focus on informal learning environments outside of schools, especially museums. For example, he said, “we have a traveling museum exhibit on human biological variation and its cultural constructs called ‘Race, Are We So Different?’” that has been very popular.

Increasing the teaching of anthropology in K-12 education faces some practical challenges, Liebow said. One is aligning with the curriculum objectives of biology, social studies, world history, and literature because anthropology crosses all of them. Another is finding teachers who are either interested or qualified. In addition, grade-level appropriate materials are in short supply.

Liebow described five AAA strategies for increasing teaching of anthropology in K-12: (1) integration of anthropology in science education (discussed in the AAA-authored appendix to the College Career and

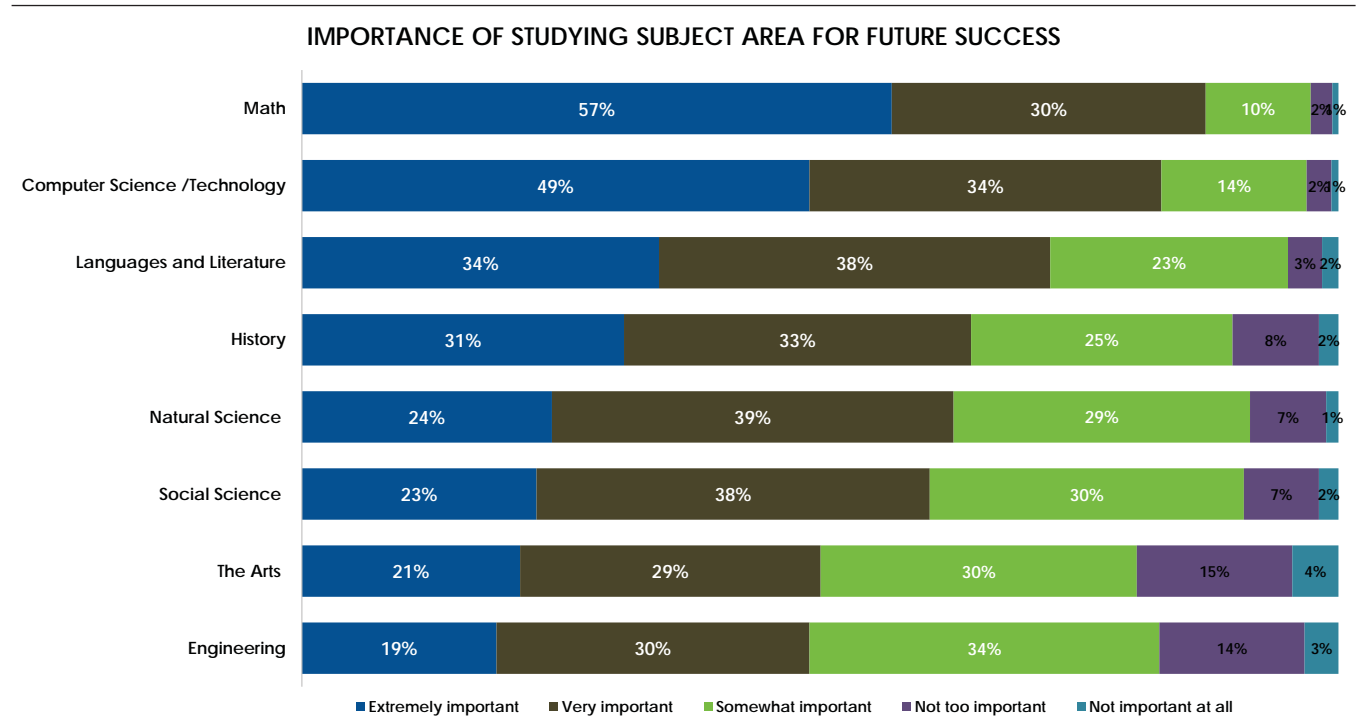


Figure 2 Public perceptions of the importance of studying subjects for future success. Source: Roder, S. (2016, November). *Public Perceptions of the Social and Behavioral Sciences*. Horizon Media Finger on the Pulse, June 2016. Presented at Teaching the Social and Behavioral Sciences: Past, Present, and Future. Available <http://nas.edu/SBS-in-K-12-Education-Seminar>.

Civic Life (C3) Framework for Social Studies State Standards;³ (2) compiling directories and resources for teaching anthropology in K-12; (3) raising funds for a prize for excellence in teaching at the high school level; (4) preparation of a new traveling exhibition with a target audience of K-12 students and their families—World on the Move—about the past 100,000 years of human migration; and (5) sponsorship of the successful National Anthropology Day, in which undergraduates engage with students in high schools and elementary schools.

ECONOMICS

Stephen Buckles, principal senior lecturer in economics at Vanderbilt University and senior advisor for programs for the Council for Economic Education (CEE) described the progress of CEE toward its goals for K-12 education. Those goals are broadly based in national welfare, he explained. The assumption behind the inclusion of economics education in K-12 is that better economic understanding leads to better personal and professional decisions and better economic policy.

CEE has worked to incorporate the introduction of economic concepts beginning at the kindergarten level. It has also focused on having a separate economics course in high school, creating national standards in economics education, supporting the establishment of state and local standards and developing assessment instruments to encourage evaluation. The group also supports the creation of advanced placement (AP) courses and exams in the subject, and the training of teachers at all levels, as well as the production and dissemination of curriculum materials for teachers.

All 50 states include economics in their education standards, which CEE views as a major success, explained Buckles, but only some of them have standards that mirror guidelines directly from CEE or its contribution to the C3 Framework. State requirements for economics coursework in high school also vary: 20 states, accounting for 61 percent of the student population, require an economics course in high school.

The “delivery network” for the organization’s efforts is 41 nonprofit state CEEs, some of which are formal divisions of their state’s department of education. In addition, 200 university-based CEEs train teachers and, in some cases, develop curriculum materials. About 55,000 teachers every year are engaged in the CEE’s professional development efforts. Buckles said that these local efforts, especially those related to teacher training, have been critical to the prog-

ress CEE has made in achieving its goals. CEE’s Web-based core economic curriculum materials attract more than 1 million unique visitors a year.

The biggest challenge to further progress, Buckles said, is teacher preparation, because few economics majors become elementary or secondary school teachers. As a result, teacher preparation in economics is nearly always an inservice activity. A second significant challenge is competition from other subjects in a crowded curriculum, especially science, technology, engineering, and mathematics (STEM) subjects. To meet this challenge, CEE has developed economically informed material for use in the teaching of other subjects, such as mathematics.

PSYCHOLOGY

Jim Diaz-Granados, executive director for education at the American Psychological Association (APA) said that APA’s primary goals for K-12 education are to promote high-quality teaching of high school psychology and to increase recognition of psychology as a science. APA also aims to strengthen psychology as a bridge between science and social studies since psychology is most often a part of high school social studies departments, he explained.

Psychology has a large presence in high schools, but no formal presence in K-8 education, Diaz-Granados said. The APA’s Center for Psychology in Schools and Education estimates there are 8,000-10,000 high school psychology teachers in the United States; and according to the National Center for Education Statistics, each year nearly 30 percent of graduating students—2 to 3 million—have earned credits in a psychology course.

Approximately 8,400 schools offer AP psychology classes; and in 2016, nearly 300,000 students took the AP psychology exam, up from only 3,900 in 1992, he reported. This places psychology as the third most-taken AP exam among the sciences. He also noted that the Medical College Admission Test (MCAT) now includes an SBS requirement, which may attract more students to psychology before college.

APA supports high school psychology teachers in a number of ways: an annual professional development workshop for 25-30 teachers; grants to support regional teaching networks; and national standards for teaching, which have been adopted by seven states. The organization also provides materials for secondary-level teachers, including online lesson plans like “Biological Bases of Behavior” and an online psychology laboratory, where students can experience concepts and methods directly.

Diaz-Granados identified four main challenges for

³The C3 Framework is produced by the National Council for the Social Studies: see <http://www.socialstudies.org/c3> [March 2017].

K-12 education: (1) identifying who is teaching high school psychology; (2) exposing more students to psychology in high school because psychology is always an elective course; (3) addressing what APA believes are inaccurate public perceptions of psychology; and, (4) improving teacher preparation. The fourth challenge is especially daunting: some psychology teachers have never taken an undergraduate psychology class.

In July 2017, the APA will sponsor a week-long Summit on High School Psychology Education, Diaz-Granados said, to examine eight “strands”: (1) conveying psychology as a science; (2) teaching skills through psychology that promote well-being; (3) promoting national standards; (4) promoting assessment of content and skills learned in psychology classes; (5) credentialing teachers; (6) fostering professional development of psychology teachers; (7) promoting diversity; and (8) promoting online learning and other effective uses of technology.

SOCIOLOGY

The American Sociological Association (ASA) seeks seamless integration between SBS and the STEM disciplines, explained Margaret Vitullo, ASA’s director of academic and professional affairs. ASA sees sociology as a STEM discipline, a view she sees bolstered by the inclusion of sociology in the MCAT exam. Important rationales for teaching sociology in K-12 education come from ASA’s research with undergraduates showing that sociology tends to attract minority students and exposes students to ways of scientifically studying social issues of interest to them. Today, 25 to 30 percent of U.S. high schools offer sociology classes, she said.

Vitullo summarized the ASA’s efforts in K-12 education, primarily in high school: grassroots efforts to connect with and learn from sociology teachers; an appendix to the C3 Framework document; and new standards for high school sociology. ASA is also creating an editorial board of high school teachers to provide peer-reviewed materials for other high school teachers.

Sociology has faced a number of challenges related to K-12 education, Vitullo noted. First, earlier generations of sociologists lacked interest in K-12 education. Second, “we also had a bad habit of not listening to sociology teachers themselves,” she said, so that elaborate plans for teaching the subject were created almost entirely by postsecondary faculty. Third, the 1990-era standards for teaching sociology in high school were extremely complex and not widely adopted. Moreover, an ASA-developed AP course was not adopted by the College Board; however ASA remains committed to developing an AP sociology course.

In addition to continuing its outreach to high school sociology teachers, ASA also plans to use data from a longitudinal study of high schools to learn more about students who are taking sociology. The incoming president of ASA has also expressed her commitment to the development of K-12 sociology programs.

PERSPECTIVES FROM SCIENCE AND SOCIAL STUDIES EDUCATION

A SCIENCE EDUCATION PERSPECTIVE ON SBS IN K-12

Matt Krehbiel spoke in his capacity as associate director for science at Achieve, Inc., which focuses on supporting implementation of the Next Generation Science Standards (NGSS). He offered some “lessons learned” from the development of a framework and standards for science education in K-12 and considered how these might apply to approaches to greater inclusion of SBS in K-12.

The vision of science education that guided the development of the K-12 science framework⁴ and the Next Generation Science Standards focused on what was important for all students to know and be able to do in school and in their later lives as adult members of society, he said. It should (1) prepare future citizens to be able to explain the world around them; (2) prepare students to be able to engage in public discussions on science-related topics; (3) prepare students to be critical consumers of scientific information related to their everyday lives; (4) foster an appreciation that scientific understanding has a history, with hundreds of years of creativity and endeavor; and (5) equip and motivate students to continue to learn about science throughout their lives.

The NGSS, developed using the framework as a guiding document, consist of three dimensions: disciplinary core ideas, science and engineering practices, and cross-cutting concepts. When people in SBS fields look for ways to connect social science material to K-12 curricula, he said, they tend to think only about disciplinary core ideas. However, science and engineering practices and cross-cutting concepts are “probably the best place(s) for synergy [between STEM and SBS],” he said. In the life sciences, for example, many practices can connect to social and behavioral science.

“All of the things [in the NGSS] are based on and connected to that research base about how we know that students best learn science,” Krehbiel said. Research also informed the NGSS’s learning progressions for science education from the earliest grades through high school. It is not possible to draw on

⁴See <https://www.nap.edu/catalog/13165/a-framework-for-k-12-science-education-practices-crosscutting-concepts> [February 2017].

a similar base of research for SBS since these disciplines are not often taught, especially in K-8. Demonstration projects could be undertaken to bolster this research base, suggested Heidi Schweingruber, director of the National Academies' Board on Science Education. The engineering field used demonstration projects to provide important examples to underpin their inclusion in the NGSS, she said, and engaged in an extended campaign at national, state, and local levels to explain why the field should be included in K-12 education.

Krehbiel also suggested that there may be opportunities for links between SBS and existing standards for science education and other subjects. For example the current NGSS are aligned with standards for math and English in part because those subjects are taught by the same teachers at the elementary school level. He suggested looking for connections between SBS and the current standards in these other disciplines and then identifying concepts or practices that SBS sees as essential for all students. "There is a real problem with pushes for coverage and limited time at the K-5 level with the press on math and reading achievement," he noted.

Krehbiel also offered lessons for SBS about implementation. First, working closely with teachers, academics, and businesses and having broad coalitions at local levels was important. Having input from all stakeholders also made the standards better, he added. Second, he said, building capacity in the system at all levels to support implementation of NGSS meant "supporting what we know that teachers need, what we know that communities need, and what we know that students need to move forward. Third, all efforts were rooted in the vision for science education described in the K-12 science framework.

A SOCIAL STUDIES PERSPECTIVE ON SBS IN K-12

Lawrence Paska, executive director of the National Council for the Social Studies (NCSS) focused his remarks on the potential for collaboration among SBS disciplines in "social studies," noting that is a term not often used outside the U.S. education system.⁵ The NCSS-developed C3 Framework provides "a

⁵NCSS defines social studies as "the integrated study of the social sciences and humanities to promote civic competence. Within the school program, social studies provides coordinated, systematic study drawing upon such disciplines as anthropology, archaeology, economics, geography, history, law, philosophy, political science, psychology, religion, and sociology, as well as appropriate content from the humanities, mathematics, and natural sciences. The primary purpose of social studies is to help young people make informed and reasoned decisions for the public good as citizens of a culturally diverse, democratic society in an interdependent world": see <http://www.socialstudies.org/standards/execsummary> [February 2017].

guiding post for our states and our districts around the country to think through what social studies education looks like," he said. The inquiry-based approach it espouses is well suited to teaching children how different experts see and come to understand the world, he explained. Because social scientists "work together,...solve problems, and they engage in inquiry together," Paska suggested that there may be a natural path for increased SBS engagement with social studies.

Paska described a number of challenges for social studies in K-12 that NCSS plans to address as the organization seeks to implement the vision of the C3 Framework: (1) translating standards into classroom practice; (2) reducing emphasis on specific content; (3) increasing emphasis on the inquiry process; (4) developing consensus about the focus and outcomes of social studies; and (5) developing more support for and a systemic approach to professional development.

In a recent survey, Paska noted, NCSS members cited concerns about lack of funding, an emphasis on high-stakes testing, larger class sizes, marginalization of the subject as increasing time is spent on English language arts and math, and lack of time to collaborate among teachers.

Despite these challenges, Paska said, the "inquiry arc" described in the C3 Framework affords opportunities to increase the presence of SBS in the curriculum: see Figure 3. He noted in particular the emphasis across subject areas on students' understanding of informational texts, writing from original sources, and text-based evidence: these are the skills that social studies teaches. He also noted that surveys show students believe that they gain important skills from social studies—developing informed opinions, critical thinking and analysis, and the ability to evaluate concepts and ideas—that are relevant to their lives.



Inquiry Arc

- **Dimension 1:** Developing Questions and Planning Inquiries
- **Dimension 2:** Applying Disciplinary Tools and Concepts (Civics, Economics, Geography, and History)
- **Dimension 3:** Evaluating Sources and Using Evidence
- **Dimension 4:** Communicating Conclusions and Taking Informed Action

Figure 3 C3 Framework inquiry arc.
Source: Paska, L. (2016, November). *SBS in Social Studies*. Presented at Teaching the Social and Behavioral Sciences: Past Present and Future. Available <http://nas.edu/SBS-in-K-12-Education-Seminar>.

Implementing this vision also requires teachers to “embrace the fact that real inquiry is not about the correct answer; it is about an answer informed by a perspective. If I am willing to accept that my student’s answer is not necessarily my belief, but it is a belief informed by evidence, then I have done my job as a social science educator,” explained Paska. Grassroots and teacher-led efforts have been integral to implementation, he said, as has been noted by other presenters. Paska pointed to a website developed for teachers in New York to share their ideas for inquiry-based lessons consistent with the C3 Framework.⁶ NCSS has also partnered with the Center for Literacy Education to develop a broader toolkit for administrators, policy makers, and scholars to use the C3 model. “Let’s look at how the C3 inquiry arc might be a resource that all of us as associations could think through together and develop materials around,” said Paska.

NEXT STEPS

Throughout the workshop, participants identified several challenges that the SBS community faces in trying to determine the best approaches for inclusion in the K-12 curriculum. One is simply the need for SBS to clarify its identity and clearly communicate its relevance. Another is increasing its recognition as part of STEM and teaching SBS as science even if the subjects are in social studies departments.

On a more practical level, many participants noted that the time available in the school day is limited. In addition to the pressures this places on teachers and students, this competition for time creates tension among the disciplines, both within and outside SBS. Vitullo, Liebow, and Buckles all noted that collaborative efforts may be seen by some as a threat to the curricular space, the progress of, or “exceptionalism” of a particular discipline. However, they all expressed their desire to continue to work toward common ground. Krehbiel reiterated that there are many points of overlap between SBS and the current K-12 curriculum, adding that the C3 Framework overlaps with many existing standards and approaches in science, English language arts, and math education.

The representatives from the SBS disciplinary orga-

nizations expressed their desire to collaborate. “We have, I think, an opportunity here to be bound together and have a bigger voice than five, six separate voices,” said Diaz-Granados, “I think we need to find the areas of intersection, of overlap and shared passion and shared vision, and work together.” One important benefit of such collaboration, said Vitullo, could be interdisciplinary education that provides students with multiple lenses and tools for addressing real-world issues.

The workshop included a brainstorming session in which the workshop participants identified what they saw as the most important core values related to education shared by the SBS disciplines. Several participants identified teaching the nature of SBS evidence and inquiry—defining a question that can be answered with SBS methods for gathering evidence and evaluating relevant facts—as an area of commonality. Other examples included teaching SBS content that develops an appreciation for differences among people, for others’ different perspectives, and for the ways that people interact with the physical and technological world. A number of participants said that any approach to teaching SBS in K-12 needs to be relevant to people’s lives.

Many participants suggested that one approach might be to work for the inclusion of SBS in math, reading, science, and other curricula, rather than attempting to carve out a separate SBS territory in the school day. Another approach, several participants suggested, could be to emphasize the variety of tools that SBS offers to solve problems that concern and interest students and teachers. A SBS curriculum could show how different fields contribute to answering students’ questions.

Roundtable member Felice Levine closed the workshop with an overview of the day’s work and a look at possible future next steps. Levine pointed to growing recognition among social and behavioral scientists that SBS education is worthy of their attention and effort. And as they work for the inclusion of SBS in K-12 education, Levine suggested, it will be important for them to recognize the common ground that exists among SBS fields and between SBS disciplines and the natural sciences: “There is nothing more concrete for learners, especially challenged learners, than the world around them.”

⁶See <http://www.c3teachers.org/newyork/> [February 2017].

ROUNDTABLE ON THE COMMUNICATION AND USE OF SOCIAL AND BEHAVIORAL SCIENCES

Arthur Lupia (*Chair*), Institute for Social Research, University of Michigan; Brian Baird, 4Pir2 Communications; Karen Bogenschneider, School of Human Ecology, University of Wisconsin–Madison; Erin Fitzgerald, Minerva Research Institute, Office of the Secretary of Defense; Camille Gamboa, SAGE; Ralph M. Garruto, Graduate Program in Biomedical Anthropology, Binghamton University; Howard Kurtzman, Science Directorate, American Psychological Association; Tom LaForge, Culture Agency; David Lam, Institute for Social Research, Department of Economics, University of Michigan; Felice J. Levine, American Educational Research Association; Olivia Morgan, Common Sense Media; Sheri Roder, Horizon Media Inc.; Tobin Smith, Association of American Universities; Robyn Stryker, School of Sociology, University of Arizona; and Barbara L. Wolfe, Institute for Research on Poverty, University of Wisconsin–Madison.

PLANNING COMMITTEE: Arthur Lupia, Institute for Social Research, University of Michigan; Howard Kurtzman, Science Directorate, American Psychological Association; Felice J. Levine, American Educational Research Association.

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REVIEWERS: To ensure that it meets institutional standards for quality and objectivity, this Proceedings of a Workshop—in Brief was reviewed by Lorraine McDonnell, Department of Political Science, University of California, Santa Barbara, and Lawrence Paska, Executive Director, National Council for the Social Studies. Patricia Morison, National Academies of Sciences, Engineering, and Medicine, served as review coordinator.

SPONSORS: The workshop was supported by the Spencer Foundation. Additional sponsors of the Roundtable on the Communication and Use of Social and Behavioral Sciences include the American Educational Research Association, the American Psychological Association, the Institute for Social Research, National Academies Presidents Committee, SAGE Publications, and Westat.

For additional information regarding the meeting, visit <http://nas.edu/SBS-in-K-12-Education-Seminar>.

Suggested citation: National Academies of Sciences, Engineering, and Medicine. (2017). *Principles and Practices for Federal Program Evaluation: Proceedings of a Workshop—in Brief*. Washington, DC: The National Academies Press. doi: <http://doi.org/10.17226/24774>.

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