The Kettering Foundation is a nonprofit, operating foundation rooted in the American tradition of cooperative research. Kettering’s primary research question is, what does it take to make democracy work as it should? Kettering’s research is distinctive because it is conducted from the perspective of citizens and focuses on what people can do collectively to address problems affecting their lives, their communities, and their nation. The foundation seeks to identify and address the challenges to making democracy work as it should through interrelated program areas that focus on citizens, communities, and institutions. The foundation collaborates with an extensive network of community groups, professional associations, researchers, scholars, and citizens around the world. Established in 1927 by inventor Charles F. Kettering, the foundation is a 501(c)(3) organization that does not make grants but engages in joint research with others. For more information about KF research and publications, see the Kettering Foundation’s website at www.kettering.org.
2  An Experiment Studying Experiments  
   David Mathews

15 Leaderful Communities: Exploring Citizen-Leaders  
   James (Ike) Adams and Erin Payseur Oeth

21 Historic Decisions: Looking Deliberatively at the Past  
   Joni Doherty

29 The Issue Guide as a Pedagogical Tool  
   Samantha Fried

35 From Opinions to Judgments: Insights from the First 40 Years of the National Issues Forums  
   Jean Johnson and Keith Melville

42 The Library as Community Hub  
   Marie Pyko, Lissa Staley, and Debbie Stanton

49 Faith and Democracy  
   Elizabeth Gish and Ekaterina Lukianova

55 COVID-19 Community Response and the Appetite for Civic Engagement  
   Michele Archie

62 In It Together: Opening American Education  
   Damien Conners

67 Deliberation in Everyday Conversation  
   Wendy Willis

73 Deliberative Democracy Institute 2020: An Opportunity to Innovate and to Reinvigorate Networking  
   Maxine S. Thomas

79 With the People: Connecting Campuses and Communities across the Country  
   Betty Knighton and Kara Lindaman

85 The Citizen Workers of Democracy  
   Harry C. Boyte
Traditionally, science and politics are taught separately—rarely in the same classroom. There is a fear, I have observed, that if we admit too readily that scientific matters and political matters are not distinct from each other, these hybrids will proliferate, to invoke language used by Bruno Latour in his book, *We Have Never Been Modern*. Once this hybridized and politicized science exists in the world, it will be impossible to make decisions, to come to conclusions, and to seek out the kind of fair and objective truths we imagine science will bring us.

However, as Latour predicts, it is the denial of these hybrids that causes them to multiply in ways that feel out of control. In order to reckon with the world as it really is, we must acknowledge that science and

The Issue Guide as a Pedagogical Tool

By Samantha Fried

For several years now, the Kettering Foundation has pursued research on the role of public judgment and public work in questions of science that cannot be solved by the power of science alone. The civic science initiative at Tufts University has been a significant partner in this work.
In order to reckon with the world as it really is, we must acknowledge that science and political matters—civic matters—are intimately connected. And then we must find a way to teach them together.

That is the crux of college courses such as Science and Civic Action. Courses like this one provide a path toward our reckoning with the science/politics hybrids as they really are. Such a course knows that teaching only the technical issues surrounding gene editing (for example, how do cuts in DNA strands work?) or just the social implications and reactions (for example, who is the imagined patient for gene editing procedures, and how do actual people feel about it?) is not enough. Rather, both must be taught simultaneously, for the technical choices and the social and political interests surrounding them are impossible to disentangle. Science and Civic Action is aware of this and seeks to foster in students an appreciation for both, together.

In addition, it is appealing to me to teach such a course because it fosters particular kinds of thinking in the classroom—thinking that I strongly believe is necessary in our current political climate. One is the notion that knowledge is important but does not exist in a vacuum. The notion that people perceive or take up knowledge in certain ways is just as significant as knowledge creation. Another is that technocratic, top-down solutions are overwrought, and students looking to make positive changes in the world need to develop alternative values. That is to say, Science and Civic Action aims to teach a kind of scientific mind-set that is attuned to the needs, values, and lived experiences of people in the world.

**CIVIC SCIENCE IN ACTION**

In fall 2019, as part of my Civic Science Fellowship at Tufts University, I joined Dr. Jonathan Garlick in teaching his course Science and Civic Action. The goal of this course, as we state in the syllabus, is to “explore the ways in which science practice and knowledge can serve as tools of empowerment for science literacy,
respectful dialogue, collective deliberation, social action, political advocacy, and community revitalization on science issues that are important to our lives and our communities.”

As part of this exploration, our course centered on the development of issue guides. Students worked in groups of six and developed an issue guide about one of four controversial science topics: sports-related traumatic brain injuries, nuclear vs. renewable energy, gene editing, and opioid addiction. In a course that develops civic skills, the goal was for students to use these issue guides at a public forum they would convene at the end of the semester.

First, students heard expert presentations on each of the four topics. After each presentation, students engaged in discussions with these experts about the issue at hand to become grounded in the most up-to-date information on each topic. We introduced the students to the format and purpose of the issue guide and explained its relevance in the context of key readings on public deliberation. Students began to think about what the issue guide meant to the creation of productive deliberative venues.

We sent them on their way to gather concerns outside of class. They spoke with family members and friends and became aware of the limitations of the concern-gathering process at the university. However, a couple weeks later, the students
arrived back in the classroom with a hefty array of concerns. During class, students broke into their topic-specific groups and then embarked on the process of “grouping like concerns.” The exercise provided us—students and instructors alike—with more clarity about the structure of each of these four scientific controversies and the framing devices that allowed us to unpack the complex, uncertain, and polarizing aspects of scientific controversies in community-based settings.

After creating options, consequences, and trade-offs linked to the major themes underlying their collections of concerns, each group created its issue guide. Garlick and I were impressed with how these turned out and particularly with how thoughtful and clarifying they were. Two-thirds of the way into the semester, we held a deliberative conversation around the issue guides during class. Our goal, of course, was to pick an issue guide around which to plan a deliberative forum. However, after each group presented its guide, the students had another idea. They decided that they would rather choose a forum topic based on the strength of a single question rather than an issue guide in full. This was an astute choice. The students then spent the rest of the time mining the guides for a single framing question upon which an entire forum could hang. They continued this process outside of class and on Canvas, our virtual course site. Ultimately, the students developed nearly 100 possible forum questions in person and virtually.

During our 12th week of class, Garlick and I hung all of the students’ questions around the room on giant sheets of paper. We provided students with colorful stickers, each color representing a different point value, ranging from one to four points. Students walked around the room, carefully reading each potential question. When they thought one
was an especially good candidate, or perhaps even the best candidate, they placed a sticker of corresponding value next to that question. Garlick and I added up all the point values and then eliminated all but a handful of the highest-scoring questions. The students then voted once more to choose their winning question: “How can we draw the line between uses of CRISPR gene editing for enhancement vs. uses for therapy to cure disease?”

We held the forum on the last day of class. The students expressed, as we planned the forum, that they wanted participants to sit in groups and discuss the question at hand with a smaller number of people. Participants included the students, of course, but they were also encouraged to bring friends, which they did. A small stack of gene editing issue guides produced by our students sat on each table, and attendees used them as a helpful guide to their question on enhancement vs. therapy.

**REFLECTIONS ON THE EXPERIENCE**

In contemplating the role of the issue guide as a pedagogical tool, a couple of things have emerged for me.

1. *Knowledge is an outcome of community.*
   
   The issue guide is an effective tool for encouraging collectively produced thinking rather than individually centered thinking in the classroom. An academic system based on final papers and tests, all with the purpose of boosting one’s scores and/or forwarding one’s career trajectory, de-emphasizes the importance of collective thought and of community-produced scholarship. The issue guide, with its focus on framing issues for public use and its necessarily community-based workflow, asks us to rethink success in the classroom, redefining it toward community-centered purposes.

2. *Knowledge is process driven.*
   
   The issue guide is not just a final product; it is also highly valuable as an example of process-oriented scholarship. The slow, semester-long process—of learning about scientific controversies, gathering concerns, grouping concerns, framing concerns in terms of overarching values,
and then imagining which framing devices will provoke the best kind of public discussion—de-emphasizes public knowledge as finite. Rather, public knowledge is ever-changing— influenced by communities, circumstances, and choices. The process of understanding how this happens is an important takeaway for students, perhaps as important as holding a physical document. In a final reflection of the year, one student wrote the following:

It was not until the issue guide project that I really learned not only the value of the collaborative process but also that my own success actually depended on the help from and input of my group members. The larger lesson I learned during this experience, one that also happens to underlie the purpose behind an issue guide, is that dialogue and deliberation really do go hand in hand. Group work frees students to build a foundation of trust on which meaningful discussions can occur and from which actionable outcomes are not only possible but practical.

Another student shared:

Putting together an issue guide allowed me to take ownership in this process of creating our forum. I ultimately found it really valuable to do the qualitative data analysis of figuring out what people care about. Not only did it help with the general skill of qualitative data analysis, but listening to people’s concerns was such a compassionate way of conducting research. Bringing compassion into science and politics has made me view medicine through an entirely different lens.

These values of knowledge as both an outcome of community engagement and as a thing driven by process, upheld by the issue guide as a classroom fixture, are also values that reinforce the spirit of a civic science mind-set. The course syllabus outlines what such a mind-set could look like: that it “is intended to create an environment for an exchange of ideas through inclusive discourse that can best prepare citizens to participate in productive conversations and make informed choices on issues that connect science to daily choices we face.” The focus on collective, process-oriented reflection on controversy, as introduced by the issue guide, reinforces our commitments to prepare students for inclusive discussions and collective decision-making.

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