

Research-Based Communication to Policy as a Strategy for Science Education Improvement:

The Case of the Strengthening Science Education in
California Initiative's *High Hopes—Few Opportunities*
Report

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INVERNESS
RESEARCH

April 2012

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Introduction

The S.D. Bechtel, Jr. Foundation funded the Strengthening Science Education in California Initiative (SSEC) for the purpose of generating research-based communication that could alert state policy makers to the conditions of K-12 science education in California and could motivate policy-centered efforts to strengthen science education. SSEC brought together policy think tank, research, and communications groups to work in partnership. Inverness Research (www.inverness-research.org), an education evaluation firm, was contracted to study and evaluate SSEC. The major focus and purpose of Inverness's work was to document SSEC as a case of a distinctive approach to improving science education.¹ This report is the product of that effort. Our intention as observers and evaluators is to make the SSEC approach, the work, and the assets that contributed to the work visible so that it can serve as a model for others with similar goals. We hope that both grant-makers and operating organizations can learn from and make use of the model, the particular strategies it entails, and the lessons learned.

Section I stands as a summary of SSEC.² It explains its genesis and aim, defines the model and its core strategies, introduces the partners and their roles, and summarizes the results, impact, and lessons learned. Section I also offers our reflections on this project, which we see as an example of political rhetoric that recalls the Aristotelian tradition and stands in contrast to the noisy self-promotion of typical 21st century politics.

Section II delves into the tactics involved in making the model work—the phases of activity and the expertise and strategic thinking driving them. The purpose of this detailed section is to provide enough behind-the-scenes insight that others with similar goals might learn from and replicate this model in their own context.

¹ Early in the initiative Inverness also served in a critical friend role, asking “hard questions” about the design of project components. Data collection included documentation of project activities (meetings, conference calls, advisory group meeting, meeting with funder, briefings in Sacramento) and document development, as well as individual interviews with partners, funders, and key policy audiences in Sacramento.

² In this paper we focus on the elementary component of the SSEC project, omitting the middle school component. The elementary component was the most fully formed and best representative of the model instantiated.

I. SSEC Strategy, Results, and Lessons Learned

Genesis

The SSEC initiative followed on the heels of a successful 2007 study, the *Status of Science Education in Bay Area Elementary Schools*, funded by the Gordon and Betty Moore Foundation, along with the Bechtel Foundation and the Stuart Foundation, with research conducted by The Lawrence Hall of Science (known as the Hall) and WestEd. The Bay Area study received tremendous press coverage and public attention with a number of discouraging and startling findings, for example, that 68% of teachers had received less than six hours of professional development in science over several years, that teachers reported being unprepared to teach science, that 80% of teachers spent less than 60 minutes per week teaching science, with 18% spending no time at all on science. The groups involved in the Bay Area study saw both need and opportunity to conduct a similar study at a statewide level to raise awareness more broadly among the public, the philanthropic community, and especially policy makers. When approached with the idea for a statewide study, Bechtel invited a proposal and contributed to the formulation of what became the SSEC.

The Center for the Future of Teaching and Learning (CFTL, or the Center), SRI International, Belden, Russonello, and Stewart (BRS, now called Belden Russonello Strategists), and Stone's Throw Communications had forged a working relationship over more than ten years of work related to *Teaching and California's Future*, a major long-term initiative focusing on workforce-related issues.³ They had developed a unique approach to combining expertise in policy, research, and communication for the purpose of informing the development of state policy. The hallmark of the Center's approach was strict adherence to unbiased research combined with general advocacy of high quality education. Center staff members do not lobby, nor do they develop or advocate for specific legislation or agency policies. Rather, they use research to define problems in education and bring them to policy-makers' attention through communication, including publications and invited presentations and testimony. Having contributed to the 2007 Bay Area study, the Stone's Throw group, together with the CFTL, saw the potential of applying this model to the area of science education throughout the state of California. Thus was formed a new and expanded partnership for SSEC that included the CFTL, BRS, SRI, Stone's Throw, and the Hall.

³ Funded primarily by the Stuart Foundation and also by Bechtel.

The SSEC model: A research- and communication-based approach to informing science education policy

The problem: How to improve science education

Even though science is widely recognized as critical to individual, social, national, and global development, there is perennial concern about lagging achievement in the U.S. In California there is particular concern about declining competitive edge. For example, California’s students consistently perform at lower levels of proficiency on the National Assessment of Educational Progress (NAEP), known as the “Nation’s Report Card.”⁴ There are many ways to target efforts to improve science education; for example, initiatives can aim to strengthen the educational infrastructure (e.g., curriculum, resources), build human capital (e.g., teacher preparation and development), or enrich the improvement ecology and infrastructure (e.g., through school-university partnerships). The SSEC targeted its effort primarily at the improvement of *science education policy*, with an emphasis on elementary grades. Specifically, SSEC sought to develop a research-based, statewide portrait of science education—and of the public’s interest in science education—for the purpose of raising awareness within the public and, especially, among state policy makers about the current status of elementary science education in California.

The SSEC: Logic model and strategy

The goal of the SSEC initiative was to provide policymakers with research findings that could inform the development of policy. The assumption behind this approach is that policy makers often lack access to unbiased information, conveyed in clear and usable formats, that will help them define and understand problems and make sound policy decisions. The model exemplified through the SSEC initiative has a tripartite “three-legged stool” structure. One leg involves research work: developing unbiased information through rigorous research. A second involves communications work: forming messages that can effectively and powerfully convey that knowledge to those who can use it to strengthen policy. Informing those strategies—particularly communications—is the third leg, policy work: learning about the issues policy makers care about, the policy options available to them, and their needs for information.

The information–development strategy in this case involved three strands of work: public opinion polling (surveys and focus groups), research on professional practice and perspective in elementary science (teacher and administrator surveys), and exemplars of elementary science programs and practices (illustrative case studies). Statewide public opinion polling enabled the funders to ascertain, “Is there an

⁴ See <http://www.cde.ca.gov/ta/tg/nr/documents/naepsc09srg4a8.pdf> for 2009 NAEP results, which show that California’s average scores run more than ten points lower than the national average.

appetite for science education out there among the public?”⁵ before deciding how to focus the research and define the audience for it. The public opinion poll demonstrated that the general public believes science is not only an important subject in and of itself, but is also a critical foundation for a solid, balanced, and whole curriculum. Furthermore, polling showed that the public believes that science, as a rapidly evolving field, requires more frequent teacher professional development, updated training and resources, and more investment in materials, than other subjects do. The public opinion polling thus generated not only findings to report but also information that helped frame the research and communications agenda. The surveys and case studies then aimed to define and illustrate the phenomenon of interest to the SSEC project: the current status of science teaching in California elementary schools. Surveys of teachers, principals, and district leaders were intended to present a comprehensive quantitative portrait of the state, while case studies provided qualitative grounded descriptions of schools that showed promise of offering high quality science learning opportunities.

The importance of strategic communication in this model cannot be overemphasized, as it creates a bridge that connects the data and findings of the research in meaningful and comprehensible ways to the interests, needs, and responsibilities of the primary audiences for the research, including policy makers, the general public, and the philanthropic community. SSEC’s communications strand aimed to formulate messages that accurately reflected the data and would be compelling to policy makers; part of the strategy was to put those messages into formats and communication channels that make the message both highly visible and also usable. The model includes only on direct communication to policy makers, but also communication to the public—both for the purpose of advancing public understanding and to stimulate policy makers’ interest in public opinion.

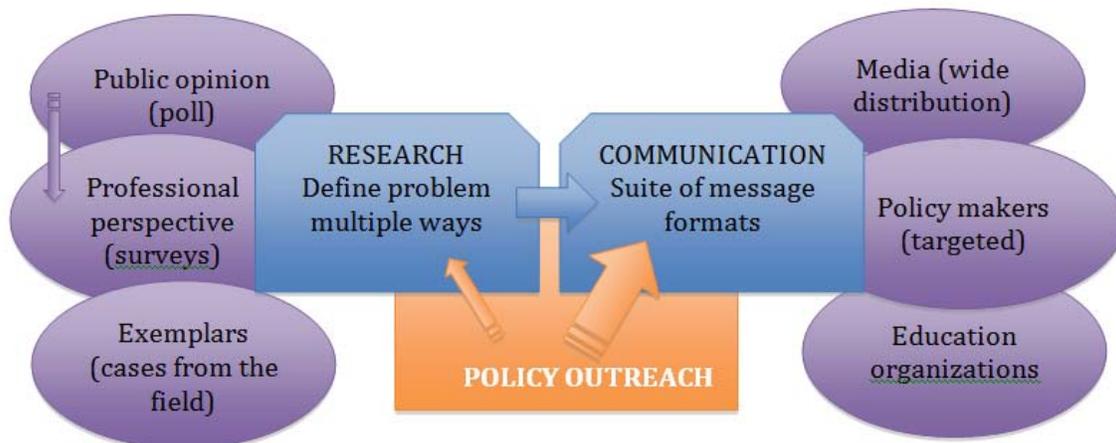
Policy work, which occurs throughout the process, involves keeping abreast of developments in state policy and working with key stakeholder organizations and policy actors. A key component of the SSEC project was to convene an advisory group with members representing multiple policy perspectives and key science education stakeholders, and to have them discuss key findings and consider their implications for policy development. Another component was to provide pre-publication briefings for key actors in state policy. Both components served multiple purposes: to draw attention to and build stakeholder interest in the issue at the heart of the research (in this case, elementary science education), to gain insight into the relevance of the research findings and recommendations for policy so as to target the communications effectively, and to ensure that policy makers would be prepared for (and not surprised by) the messages of the reports on release.

⁵ All quotations in this report are from field notes, interviews with partners, email correspondences, or written comments on earlier drafts of this report.

Underlying the policy work is the knowledge that policy makers are more apt to attend to and make thoughtful use of research results when they feel well informed about them.

The following diagram portrays this approach, which we refer to in shorthand as “research-based communication to policy.”

Figure 1. SSEC Logic Model



The partners: Their expertise and roles

This project brought together a major Bay Area philanthropy, the S.D. Bechtel, Jr. Foundation, and the expertise of five organizational partners: the Center for the Future of Teaching and Learning (CFTL or the Center); Stone’s Throw Strategic Communications; the Lawrence Hall of Science (the Hall); SRI International; and Belden, Russonello, and Stewart (BRS).

Founded in 1957 by Stephen D. Bechtel, Jr., the S.D. Bechtel, Jr. Foundation is a grant-making philanthropy that “supports the work of nonprofit organizations and initiatives that demonstrate the potential to address critical challenges to the health and prosperity of California” (from www.sdbjrfoundation.org). STEM education (Science, Technology, Engineering, and Mathematics) is one of four of the foundation’s funding areas. Bechtel’s vision for STEM is “to strengthen educational systems to develop STEM-literate Californians and an innovative and competitive workforce.” Among Bechtel’s STEM initiatives are the California STEM Learning Network (CSLNet), a statewide group that coordinates multi-institutional STEM assets and funds state STEM initiatives, as well as a CSU initiative aimed at strengthening teacher preparation in science.

The Center for the Future of Teaching and Learning is a non-profit dedicated to supporting and strengthening the teacher workforce, with particular attention paid to teachers of economically disadvantaged children of color. Currently housed within WestEd, CFTL was an independent entity at the onset of the SSEC partnership. CFTL's roles were to guide the process and monitor the project timeline, to help shape the messaging and communications strategies, to design and publish the report, to liaise with key personnel in Sacramento, and to serve as a knowledge resource to state policy makers following the report. See <http://www.cftl.org/>.

Stone's Throw Communications has expertise in strategic communications planning and media relations. Stone's Throw helps its clients articulate their goals and target audiences, and develop a plan for how to reach those audiences with actionable messages. Before SSEC, Stone's Throw has worked with CFTL for about 15 years, playing a critical role in shaping and disseminating messages to the press and policy communities. The role of Stone's Throw in the SSEC project was to facilitate the partnership, keep the goal of effective communication in sight throughout all phases of the project, liaise with the news media, and design and execute the messaging and communications strategies. See <http://www.stonesthro.com/what-we-do.html>.

The Lawrence Hall of Science (the Hall) is a premier informal science education institution and research center for K-12 STEM education at the University of California Berkeley. The Research Group (formerly known as the center for Research, Evaluation, and Assessment) specializes in research and evaluation that investigates science and mathematics learning and leads to increased high quality learning experiences. The Hall was a major partner on the Bay Area elementary science study; their experiences and expertise in surveying teachers, schools, and districts was a foundation for the SSEC project. See http://lawrencehallofscience.org/services_and_expertise/rea

SRI International is an internationally known non-profit research and development organization known for its rigorous methodologies and highly respected work in education. SRI's Center for Education Policy researches the impact of education programs and initiatives with an eye toward communicating results to policymakers. SRI conducted the case studies that complemented The Hall's surveys. For the SSEC project, SRI analyzed secondary data sets, conducted case studies, and brought their own expertise to bear from the Teaching and California's Future initiative. See <http://policyweb.sri.com/cep/>

Belden, Russonello, and Stewart (BRS, now called Belden Russonello Strategists) is a national research and communications LLC located in Washington D.C. BRS conducts public opinion research on a variety of societal issues, including biodiversity preservation and civil liberties, as well as education reform. BRS

conducted the public opinion polling for the SSEC project and reported the findings in Sacramento in November 2010. See <http://www.brspoll.com/>

The result: High Hopes—Few Opportunities

The elementary school component of the SSEC Initiative resulted in the publication of *High Hopes—Few Opportunities: The Status of Elementary Science Education in California*. Actually a “suite” of written products (this is part of the communications strategy, described more fully in Section II), the *High Hopes* report included a 76-page research report authored by researchers from the Hall and SRI that detailed findings from the surveys and case studies, with multiple references to the public opinion poll results; a 24-page summary that explained the findings of greatest import and offered recommendations for policy; and a press release that summarized the major messages of the project and quoted key partners.

These two paragraphs taken from the summary report state the major results of the project:

The research revealed that while educators and members of the public strongly believe that science education is important, it is not a priority in California’s elementary schools because of the pressures of existing accountability systems, which are focused on English language arts and mathematics. Children rarely have the opportunity to engage in high-quality science because the conditions that would support such learning are rarely in place and because very little support infrastructure for science education exists in the state’s schools and school districts. The research also showed, however, that a small number of elementary schools have found a way to provide a high-quality science program—an effort that requires commitment, expertise, partnerships, and resources.

California can fulfill the high hopes that many have for making science education a priority in our state and nation, but this will require real commitment to revise the accountability systems that have pushed science education out of California’s classrooms. The state needs a new road map for supporting science education in public schools to ensure that all students have the chance to participate in high-quality science learning opportunities that are crucial to their success and to the future of our state.

Released on October 25, 2011, the *High Hopes* report reached staff in all state agencies responsible for education (e.g., the governor, the State Board of Education, Assembly and Senate education leaders and committee members, the California Department of Education, and other agencies), as well as traditional media outlets in California, online media outlets across the nation, and state and national science education institutions and groups.

Impact: Entering policy and professional dialogue

A research-based communication approach to policy improvement is what we call an “upstream” approach to educational improvement, targeting actors working at a far distance from the classroom. Ultimately, the strategy aims to have an impact on policy, which can range from changes in statute at the state level to changes in

interpretation and enactment at the local level. In the case of the *High Hopes* report, impact on policy at any level would involve movement toward more and higher quality elementary science. It is difficult to trace the impact of this kind of investment, particularly in the short term, for obvious reasons: myriad forces influence policy actions at all levels, including multiple and ongoing streams of information and argument. In fact, the funders did not expect a direct and observable impact on policy, commenting:

*It is still worthwhile if we are informing the field in some ways...we think it is a contribution no matter what, and I am not sure whether it will ever affect policy.*⁶

Like the other partners, the funders carefully avoided identifying a bill, lawmaker, or committee they hoped influence, given rules against lobbying. Rather, it was important to them that the report reach a wide audience and generate “street buzz” in the state capitol and in the science education field.

Following release of this report we learned that the major message of the report quite immediately entered formal dialogue about state education policy. On December 6, 2011, about 6 weeks after the release of the report, California Senate Pro Tem Steinberg—for whom education is a major emphasis—sent a letter to Governor Brown, with copies to the State Board of Education president, referring to “recent research by the Center for the Future of Teaching and Learning” about the need to “re-invigorate science instruction at the elementary level.” The letter refers to the need to re-think and change the state accountability system so that it does not continue to undervalue science.

On January 18, 2012, the Sacramento Bee published an article about Governor Brown’s desire to reduce testing and make other changes to California education. The article included this:

A study last year by the nonprofit Center for the Future of Teaching and Learning at WestEd found that 40 percent of California elementary school teachers said they teach an hour or less of science each week. The study concluded that elementary students lack access to “high-quality” science education, blaming it on state and federal testing systems that focus mostly on English and math.

The article cited Sue Burr—Executive Director of the State Board of Education and identified as the governor’s “top education advisor”—as suggesting the governor wants to shift state testing away from those two subjects, citing science as one of several other subjects that can’t be ignored.

⁶ The quotes in this report have been lightly edited for clarity without changing the intended meaning of the speaker.

Interviews with senior staff to key policy makers following the release of the report indicate that the report served the important purpose of using non-biased research to define a problem that policy makers suspected but could not substantiate before this. The report also made recommendations staff saw as relevant to current policy discussions. We learned that key staff members carried copies of the report to informal cross-agency meetings and referred to them in discussions about policy options. It is not clear, of course, what the ultimate outcome will be, but it is clear that the message emanating from the SSEC project has entered the informal and formal political dialogue about education in California.

Beyond this direct link to policy dialogue, we know⁷ that the report circulated among science education advocates in California and across the nation. Just as one example, John Fensterwald, much-read blogger on education (“Educated Guess”) picked up the report, discussed it at length, and linked it to other California STEM initiatives, including some funded by the Bechtel Foundation. In turn, Fensterwald’s blog was picked up and re-distributed on countless other websites of general education reform and science education-related groups. In all, data from a web distribution site indicates that the report was cited on over 200,000 web pages. The SSEC funders describe this as the kind of “crossover” that they had hoped to see. The messages of the report have thus become available for entry into dialogue in any corner of the education ecology, having potential to lend substance to a wide range of arguments about strengthening the quality and amount of elementary science instruction.

And finally, while it is too early to assess, it is conceivable that the report may have some impact in local school districts. In the words of the funders, with its cases of districts that have managed to offer high quality science programs in the face of obstacles, the report “is fodder for the cannons in districts that want to do science.” One strand of follow-up work the partners planned was to highlight this potential impact of the report in ongoing conversations with the California Department of Education, which could encourage districts to raise the priority of science.

Lessons learned

The case of the SSEC brings into clearer focus and verifies key principles and features of the model that the CFTL and its partners created and have honed over time for this kind of work. Additionally, the way the project unfolded yielded additional lessons learned for the partners; these will add to their wisdom as they pursue future projects. In this section, we discuss both well-known principles and new lessons.

⁷ From multiple emails citing mentions of the report and recommending/referring the report to others in professional networks.

The SSEC verifies important principles

- Integrity is the key to success. If the funder or the partners were to lose their reputation for promoting high quality, unbiased research in the service of better science education for California, the senior policy makers who are their primary audience would lose their access to a source of information they can use with trust. To have integrity, the messages need to fully and fairly reflect the research findings. Also, while funders must be expected to care about the quality of the work they put their name to, they cannot be invested enough to undermine the integrity of the research. The funder and all partners in this case upheld this principle.
- Know the audience, individually and philosophically. These partners respect their audience's intelligence and aspirations to strengthen education. The partners have invested in outreach to policy: have taken the time to know key policy makers and staff members, to understand what they need to do their jobs, and to know what issues they care about and are working on. They have also invested in relationships with educational journalists and opinion makers, knowing what they need—and when—to do their jobs. To be effective, messages need to be carefully crafted from this knowledge of audience.
- Research, policy outreach, and communication occur in sustained relationship to one another. It is important that the groups with special expertise have the autonomy to play the roles they know how to play, and that they maintain boundaries that respect the professional standards and practices linked to particular roles. However, the collaboration across the partners is vitally important to an outcome that optimizes the work of all—where the sum is greater than the parts. For example, those whose roles are primarily to understand the policy scene and formulate messages do not wait until the research is complete, but rather, thread their attention to them throughout the project, beginning with formulation of research foci.
- Create multiple products with a coherent message. Readers in different places have different attention spans and needs for information, and they also bring genre expectations to written documents. Multiple forms of communications are needed—but they must flow from the research findings and adhere to the imperative of internal consistency of evidence and message.

New lessons from the SSEC

- Previewing findings with key policy actors helped sharpen recommendations. Prior projects have always involved pre-publication briefings with key state policy actors to alert them in advance to the findings and recommendations. The SSEC project, however, included the extra step of previewing findings with key policy actors at the state level before the written products were in final form. These conversations enabled the partners to sharpen the

communication products so they addressed more directly the issues that policy makers were facing. This extra stage-setting step both strengthened the recommendations included in the written products and increased anticipation for them.

- Multi-partner projects require special efforts and timeframes. The various partners entered the SSEC with a fund of mutual respect already established and with various degrees of experience working together. This familiarity was a great advantage. At the same time, because there were some new combinations of groups involved in SSEC, the collaboration was not seamless. The partners learned that it is vitally important to carefully define expectations for role, process, and product—even among friends—so as to avoid unnecessary surprises and delays, and to build in extra time for the inevitable complexities of multi-partner work.

Reflections on *High Hopes—Few Opportunities*: Aristotelian rhetoric for the 21st century

We see the SSEC model of research-based communication for the purpose of informing policy as a fundamentally rhetorical model. That is, the model aims—through research-based communication—to provide content for civil discourse aimed at policy development and decision-making. In this age of “oppo” research, biased journalism, negative campaigning⁸, and lobbying as advocacy, the term “rhetoric” usually equates with a lack of substance and trustworthiness, as in “that’s just empty rhetoric.” In the classical Aristotelian tradition, however, rhetoric has a different connotation and purpose.

Aristotle's treatise, *Rhetoric*,⁹ defines rhetoric as "the faculty of observing in any given case the available means of persuasion." While Aristotle included *pathos* (emotional appeals) in his scheme, he emphasized the use of *logos*, logical reasoning, using statistics and other forms of knowing that involved objectivity. Like the Roman rhetorician Cicero, who was concerned with the orator's being “a good man” as well as knowledgeable, Aristotle also emphasized the importance of the character and credibility of the speaker. This set him apart from the Sophists, accused rightfully by Plato of using rhetoric for deceit of the masses, much like much of what we consider typical political rhetoric in modern times. Aristotle characterized civil rhetoric as having three purposes, of which “deliberative”

⁸ The presidential campaign has unleashed a new torrent of not just “negative rhetoric” but outright lying, which in turn has provoked a number of commentaries about the role of lies in political discourse and what to do about them. See for example, <http://www.theatlantic.com/politics/archive/2012/01/why-newspapers-often-dont-call-out-politicians-for-lying/251365/> and <http://thecaucus.blogs.nytimes.com/2012/01/19/charleston-s-c-debate-fact-check/>.

⁹ Aristotle's full *Rhetoric* can be read online at <http://rhetoric.eserver.org/aristotle/index.html>.

concerns determining future courses of action, particularly law making. Finally, Aristotle's rhetorical art included appealing to the interests of the listeners, which required knowing what the listeners regarded as "good.

We see the SSEC as a 21st century example of this type of rhetoric: the partners took care to maintain their credibility as communicators while applying their expertise; they knew their audience's interests and values and appealed to them; they formed an argument for high quality science education that was grounded in reliable, accurate information (knowing that in the 21st century, rigorous scientific research is considered the primary source of such information) and well-founded reasoning; and they produced artful communications products aimed at promoting understanding and providing a reasonable basis for judgments about public policy. In sum, SSEC served civil deliberation through well-crafted and persuasive arrangement and presentation of facts and logic.

Aristotelian rhetoric stands out as reflecting a democratic moral philosophy. What is the place of such rhetoric in today's policy environment? The early 21st century could be characterized as exceedingly "noisy." The Internet and multiple digital tools give voice not just to statesmen, but to anyone who wants to speak. Just as voices continually rise in a crowded room until everyone is shouting to be heard (and until no one can be heard), our airwaves and inboxes are jammed with a cacophony of data, opinion, and argument—noisy both in its sheer volume and, in the case of politics, with an increasingly aggressive tone and disregard of facts. Rhetoricians in the Sophist tradition are more evident. How does one detect a different kind of signal amidst this noise? In particular, how do those responsible for formulating public policies—and who want reliable, unbiased information—detect and gain access to the information they need? In the case of the audience for the *High Hopes* report—policy makers addressing problems of California education—they tell us that they seek these attributes: a messenger that has established trustworthiness, information that they are confident is accurate (scientific and unbiased), and messages that are compelling in their clarity, value, and utility. The SSEC model serves to generate and deliver communication products that meet these criteria.

The SSEC model is a fundamentally optimistic model. It assumes there are opinion makers, policy makers, education advocates, philanthropists, and a general public that seek unbiased information, and that there are researchers, policy experts, and communications experts willing to produce it. Our study of SSEC suggests that the optimism is, at least to some degree, well founded. In fact, the partners' evident integrity and general advocacy for a stronger education system lent their work the credibility that enabled it to be heard and to be applied to civil deliberation. We don't mean to be naïve by ignoring the power of many other forms of persuasion and forces that can seat and unseat legislators and thus strongly influence their judgments. Nonetheless, evidence from our study of SSEC suggests there is still

some appetite for this form of rhetoric, and that it can make a positive contribution to public discourse.

II. The Anatomy of Research-Based Communication for Policy Improvement

One partner characterized the SSEC model as:

the combination of real objective research...coupled with strategic outreach to policy folks to help frame what the data are saying in the context of the work of policy makers, and then that very intentional targeted, communication strategy.

To be effective, the project needed to succeed both as a rigorous research project that generated sound information and also as a communications project that spoke compellingly to a significantly large and influential audience. In this section we narrate and analyze the strategic thinking, activities, and expertise used to enact this model. We identify the phases of activity involved, explaining the rationale, the tactics involved, the values that underlay those tactics, and the specialized knowledge and expertise required. We also discuss particular challenges the SSEC project presented to the partners. While we overlay some interpretation in specifying the model, we draw heavily from interviews with the partners¹⁰ to convey the perspectives they brought to their efforts. We hope this behind-the-scenes detail will be helpful to those who wish to invest in or carry out improvement initiatives based on this model.

Multiple intertwining phases of strategic activity

The partners who developed this approach have never formally explicated their model, though they have honed it in practice over time. Through our observations and interviews, we deduced the seven-phase model that we portray below¹¹:

1. Initial conception and planning: Defining the research questions and data collection strategies that will help define a problem in ways that are significant to policy makers
2. Data gathering: Using rigorous research methods to collect data that is sound, unbiased, and useful to policy makers
3. Analysis/Meaning-making: Deriving findings from multiple data sources that will illustrate the problem and substantiate the message

¹⁰ We also draw from our extensive field notes from meetings and partners' conference calls.

¹¹ When we initially observed five phases and checked them with the partners to see if they resonated with their experience, they agreed with those five and added two more (stage-setting and follow-up); thus, we outline the model as involving seven phases.

4. Message formation/Writing: Developing a storyline that reflects the data and findings, developing a strong and persuasive message about the implications of that story for policy development, and preparing a suite of written products for specific audiences and uses.
5. Stage-setting: Testing audience receptivity to the storyline, and creating greater anticipation for the story among the multiple intended audiences
6. Publication/Release: Releasing the story in a visible way and distributing it as widely as possible
7. Follow-up: Keeping the spotlight on the message and actively pursuing its use among policy audiences

Phase 1. Initial conception and planning

A strong planning phase was essential, given the multiple partners involved and the need to honor both the research and communications roles and to link them well.

Selection of research partners to maintain integrity. Maintaining integrity and a reputation for rigorous, non-biased research is paramount to the CFTL's ability to serve its mission. One partner explained the importance of selecting the research partner, whose role it is to generate the data that would form the basis of the communications pieces:

[The Hall and SRI] had impeccable reputations for sound and reliable data, which goes into the messaging... The Center is only as good as the integrity of its last report, no matter how many years it has been in the business. The integrity of the data determines the continuing success of the organization.

A comment from a long-time, high-level state legislative staff member—a key audience for this work—amplifies the importance of CFTL's protectiveness of the integrity of the research-based information they communicate to policy-makers:

their [CFTL] reputation is for thoughtful non-partisan analysis and policy recommendations on the issues that they look at. ...if there was some report on science education that came from [two conservative advocacy groups], I wouldn't even give it a second thought, because... everything that they do is aimed toward a particular point of view [and] I don't pay any attention to them... When the Center puts out something like this, I think it has credibility... regardless of which side of the aisle we are on.

Collective formation of strategic research plan. The planning discussions included all partners from the beginning so that the research design could yield information that would serve the intended purpose and appeal to the intended audiences. All partners felt that the collective development of the research plan was very important to creating a strong plan: formulating the right research questions and methodologies, parsing out roles and responsibilities, and sharing ownership and

commitment to the process and to the end product. For example, the funders weighed in on the importance of comparing public opinion about science education to the actual conditions of science education in the schools, and on the need to find positive examples for the purpose of seeding policy solutions. CFTL and Stone's Throw shared what they expected policy makers and news media to want or need to learn about, and why. The Hall asserted the need to address not only the priority of science in the schools, but also the quality of science learning experiences. SRI weighed in on what secondary datasets were available or could be gathered and the extent to which questions were actually answerable with data. As research partners, the Hall and SRI, in particular, devoted considerable time to working together to refine the fairly broad questions advanced by the large group to more nuanced and focused questions that could guide the development of their data-gathering instruments.

Balancing scientific rigor with sensitivity to audience needs. In planning their data collection, the SSEC partners anticipated their policy and media audiences' interests and needs for information. For example, because the earlier Bay Area study had revealed that much less science was being taught than most people assumed, some SSEC partners were concerned that this study—conducted in a climate of even scarcer funds—might well produce a distressing portrait about the state of science teaching state wide. Thus, as part of the study, the partners wanted to make sure the study included examples of effective science programs. The research partners framed the purpose of the cases as providing “proof positive” that districts facing the same pressures as others could, in fact, support elementary science, and as providing examples of what high quality programs can look like. The policy and communications partners framed the cases of effective science programs as helping to provide a clear path toward remedy that might emerge from the study. The policy experts, in particular, were sensitive to policy makers' distaste for a steady diet of bad news with little realistic direction for policy development, particularly at a time when the state's deficit budget hampers financial investment. We came to refer to this as the “spoonful of sugar” method of policy communication: policy makers are more open to hearing the bad news that research can produce when it is accompanied by a spoonful of good news that provides both cause for hope and hints about where they can improve policy to improve conditions more broadly.

To develop an accurate statewide portrait of elementary science education, the researchers took great care to survey the state's teachers and administrators using rigorous sampling statistics. The policy and communications team members, while relying on the researchers to uphold professional research standards, saw a need to represent segments of the state that would resonate with important media audiences. One partner explained to us why it is important to involve the communications experts early, as the research is being designed, rather than involving them after the data are in:

[communication] starts from the very beginning with the researchers to make sure that we have demographic pockets for the media...From the very beginning he has been thinking about how to pitch it to reporters before we ever had any data.

Building a timeline and release date that honors research and serves policy. There are inherent cultural differences between research organizations and policy-oriented organizations *vis a vis* forming timelines for research and publication. While research organizations prefer internally driven timelines that permit adherence to professional standards and practices for data quality and analyses appropriate to the research design and purpose, commissioned research frequently pushes them against an externally driven timeline. The pressure to make results public prematurely makes researchers exceedingly uncomfortable. Policy communication organizations work to a different time line: the calendar by which policy makers develop, debate, and decide on policy initiatives. If those doing the communicating miss a window of opportunity, they risk losing a full annual cycle of policy makers' attention to that issue—regardless of the quality of the communication—and when a year has gone by, the information is older and less compelling. Ideally, the multiple partners can jointly establish the timeline for a research-and-policy communication effort. In the case of the SSEC, the policy and communications partners set the release date for September 25, a date they thought would “take advantage of the media’s focus on ‘back to school’ stories” but would not detract from the December release of the CFTLs annual report on the status of the teaching profession in California, timed to reach the legislature just before the beginning of a new budget cycle. Based on past practice, the research partners felt the timeline—which involved data collection in late winter and analysis in late spring—would work for them.

Phase 2. Data gathering

The data-gathering phase is vitally important, of course, because it generates what will become the substance of the communications and policy outreach. Here, both the quality and integrity of that substance rested on the research teams' application of rigorous professional standards and methods to identify informants and gather data from them.

Building on the strength of differentiated expertise. The data-gathering phase, like the others, involved all partners at the conceptual level and then involved selected partners with specific expertise at the tactical level. One partner more involved in policy and message development described the differential roles this way:

“If you select the right [research] partners who have the knowledge, expertise, and credibility, you trust them completely to do the data collection...the data gathering phase of it was just essentially the Center receiving and Lawrence Hall of Science and SRI in essence, they just did their work...we had group meetings, with SRI or Lawrence Hall or on the phone

regularly, to see how that was going. We didn't just punt, we stayed in touch with the research team as they went about their own work."

In complementary fashion, one of the research partners explained the importance of the policy experts' role in understanding the "black box" of how data links to policy:

Typically, researchers just assume that if we give [policymakers] the information, that they will make decisions and change their policies or practices, but [policy making] is a black box for us. I think it took awhile to figure out that this research, this whole project was very much about that black box and that was the role that Stone's Throw and the Center for Future of Teaching and Learning was playing.

Importantly, while the research partners recognized the importance of the policy partners' expertise, the researchers never felt pressure to alter their data collection to fit a pre-conceived expectation related to policy influence. The same researcher said,

It was definitely not something where I ever felt that there was pressure at all to ...there was no pressure at all for us to ask the survey questions in such a way that [CFTL] would get what they wanted. And to be honest, I am not sure I could have told you even after the first 6 months what it is that they wanted to say.

Both research partners budgeted time to advise or work with the other on data collection issues, regardless of how they divided specific data collection tasks. While they had not collaborated to this extent before, they entered the project with a foundation of familiarity and mutual respect, which facilitated both delineation and sharing of expertise.

Ensuring high quality data amid obstacles. The reality of data collection, when practiced with rigor, is that high quality data depend upon cooperation by voluntary unpaid informants, and upon the actual existence of the envisioned (hoped-for) phenomena that can provide answers to research questions. Both the surveys and the case studies presented unexpected problems for both research teams, and these problems ultimately put pressure on the ambitious timeframe of the study, creating stress for all the partners.

To reflect the statewide teaching force and principals, the surveys required a high response rate: the Hall aimed for 60%. Attaining that rate took many weeks longer and more resources than the Hall staff anticipated based on their past experience with Bay Area surveys, primarily because of the demand to secure comparably high response rates in all regions of the state to fully represent statewide status.¹² With

¹² The Hall staff attributed this challenge to two issues: (1) the fact that, while teachers and principals in the Bay Area are familiar with the Hall and thus more willing to respond to a survey from them, teachers beyond the Bay Area have less personal relationship with the Hall and are
(footnote continued)

the survey forced to extend several weeks beyond the envisioned deadline, the researchers had difficulty working through a systematic, iterative data analysis process that ensured quality results before the communications partners wanted the results for their own process of crafting the storyline.

The case study process was also difficult to complete as designed because identifying schools that both met the rigorous criteria¹³ and also agreed to participate were much fewer and far between than the partners had anticipated. One partner described the difficulty of locating potential sites:

The biggest challenge was the nomination process. It was really difficult to find those schools. First of all, the secondary data that we had was 5th grade test scores and that was basically the only thing that we had to go on, because there isn't a database that says, 'these are good places doing science in elementary school'. ... We scoured grant programs that were going on in the state and federal grant programs. We contacted something like 60 organizations and individuals asking them for nominations and we got a lot of people coming back and saying, 'I really wish somebody was doing science in our county, but they are not'. It was really hard to get a list of places.

The funders were surprised that it was so time-consuming to find schools that both met the criteria and would participate. And while some schools the funders nominated met the researchers' criteria, the funders were somewhat disappointed that others they expected to have high quality science programs did not. Given the funders' desire to include strong cases of science teaching in the final report, one task that fell to the research team was to respond to the funders' concerns.

Challenges with data collection meant that later phases of the project were less sequential, more concurrent, than were laid out in the original timeline and which would have been closer to optimal. One person described the squeezing together of phases as a "train wreck" with the schedule:

"What would be interesting would be to put this on a calendar and I think what you would find is that [phases] 3, 4, 5 and 6 got squeezed into a very short period of time and that 1 and 2 took quite a long time. So data was collected by June, and cleaning the data, which is the beginning of the analysis process and then analysis really didn't start until July and then by the end of September, we had the report written, we had been to Sacramento, and we had done the messaging and all of that stuff was done. So if you were to sort of sketch this out on

thus more likely to ignore a request to do a survey—especially in the spring, when both state assessments are underway and the pressure of the end of the year looms and (2) the stress and strain on teachers and schools was much higher in 2010 than it had been when the Bay Area Study had been conducted.

¹³ Case selection criteria: had reputations for high quality science programs, actually offered consistently high quality science learning opportunities for their students across the whole school, had reasonably high science scores on the state assessment, and represented the diversity of the state.

a timeline, you would have a whole lot of these activities taking place, simply on top of one another... we always saw a bit of a train wreck coming with the schedule.”

Ultimately, the domino effect of extended data collection, combined with later delays around reviews of draft documents, pushed the timeline back more than a month.

Phase 3. Analysis/Meaning making

The three-part research, policy, and communication strategy of this model means there is more to the analysis and meaning-making phase than there is in a singular research strategy. Furthermore, the press of time to begin the messaging process (Phase 4, described below) within the initial timeline meant that data analysis and meaning making began before data collection was finished. Observing the partners work under this time pressure brought into sharp relief key practices and challenges of analysis and meaning making in this kind of project.

Multiple perspectives on analysis and meaning making

Deriving findings meaningful to the project’s goal. Analysis and meaning-making for this project involved two distinct sub-processes, according to a partner with long experience with research-based communication to policy work: 1) *technical analysis*, which is the purview of the research partners and involves both methodological rigor (described more below) and the capability to conduct iterative series of analyses in response to questions to bring important findings to the surface; and 2) *“lay-perspective analysis,”* which involves translating technical findings into statements of results that can be made clear to a broad audience. The CFTL and Stone’s Throw partners played the role of the lay-perspective readers, essentially standing in as the first test-audience for the research findings. One partner described it this way:

We want to put this information out there in a way that creates a clear picture of what the issues and concerns are and so, that is where the Center can come in with a question and say, ‘help me understand this aspect of this work, help me understand the responses of these teachers in high needs schools, and help me understand why it is so difficult to find a school district that is exemplary’. We would say, ‘how hard could that be to find an exemplary district? There ought to be good science going on’. So the way that SRI and the Hall explained or made accessible the data analysis to us was very important.

Involvement of all partners in discussing what findings might signify. The involvement of policy and communications partners in early and ongoing discussions of possible findings distinguishes this model from a typical research-only project. In the words of one partner:

Getting peeks into what the topline data reveal gives the partners the chance to refine the analysis...as well as identify gaps in the data collection that may or may not be remedied. It

is more organic that many research organizations have patience for, but allows the policy partners to better match current context and interests with the data collection and analysis.

The public opinion polling conducted by BRS involved collective meaning making at the time of data collection because some partners directly observed focus groups around the state. Meaning-making of data from case studies and teacher/principal surveys, on the other hand, progressed through multiple phone conferences among all the partners that focused on key findings, on how confident the researchers were of the findings, on how important or interesting the findings would likely be to various audiences, and on what new questions the key findings raised that their audiences would likely raise. Hall staff conducted series of secondary analyses to answer questions that partners asked when they began looking at early findings. For example, how did “Program Improvement” (underperforming) schools compare to others? A finding that surprised everyone was that, while conditions were somewhat worse for schools with poorer children (not unexpected), the negligence of science instruction and the lack of quality in science instruction pervaded the state. The inattention to science affected children even in many higher SES schools. Here the policy partners realized the message they would be taking to the state was perhaps more dire than what might be anticipated.

The search for answers to what media and policy makers would want to know. As teacher/principal survey results came in, partners discussed how they stood in juxtaposition to public opinion polls. They anticipated these data would suggest a storyline related to what the public wanted *vs.* what schools were offering, and the data matched their expectations. California public felt very strongly about the importance of science instruction for children, and parents of color were especially adamant that science instruction was vitally important to their children’s economic future. In contrast, survey findings showed that even though principals and teachers agreed that science should be taught, they were devoting little time to teaching science, felt less confidence about teaching science than they felt about other subjects, and had too few resources and professional development to support quality science teaching. There was a stark contrast between what parents hoped for and what their children were receiving. Here, again, the partners began to discern an important story.

The partners looked at what the case studies were revealing in terms of promising practices that could form the basis for hope and for proposed solutions. Here they hoped especially to find examples of low-cost ways to strengthen science learning opportunities, knowing that high-cost solutions would fall in deaf ears in severely cash-strapped California. Here their searches were not as rewarding as hoped: even the good examples of science programs lacked consistency or replicability in different contexts, and most of the solutions involved intensive and quite idiosyncratic efforts to seek funding and other resources through a wide of local

variety partnerships. In short, while a few schools offered more science than most, no obvious solutions came to the surface.

Most prominently, partners agreed that the findings quite starkly showed that very little high quality science learning opportunities were available, and that districts' increasing attention to mathematics and reading had pushed science nearly out of the school schedule. Survey and case study informants attributed the erosion of science largely to unintended consequences of the state and federal accountability systems. These findings were the first indicators of potential implications for policy.

Protecting rigor against the timeline

Because of the pressing demand for survey results¹⁴, Hall staff began sharing preliminary findings with partners informally, while surveys were still open, knowing all analyses would need to be re-done and finalized when the surveys closed but anticipating that the general results would change minimally.

Conducting thorough analyses and ensuring validity in the face of time pressure.

One piece of survey analysis took special time and effort because of the complexity of the construct—"high quality science instruction"—and the potential that controversy could arise around the finding about it. The construct "high quality science teaching" was not defined and measured by a single survey item, but rather involved multiple survey items that combined to serve as an indicator of quality instruction. On first analysis, it appeared that only 10% of the elementary students in the state were regularly engaging in quality science learning experiences. In the words of one analyst, this low figure would have been a very "bold" finding in this high-profile report. Even with the time pressure, researchers from the Hall conducted extra sub-analyses and consulted with additional experts to ensure that the analysis was statistically sound and results valid before sharing it with the group and publishing it in the report. This is an example of the rigor that the SSEC partnership relied upon, and what distinguishes this as a research-driven communications project as opposed to an ideology- or advocacy-driven communications project.

The price and payoff of collaborative technical analysis. Technical data analyses also took longer than expected simply because the researchers from the Hall and SRI, while they had great respect for one another, had not collaborated deeply enough before to be familiar with one another's data analysis habits and practices. While the researchers worked out these "kinks" without rancor, it made the data analysis process somewhat more complex and thus time-consuming than if just one group were involved. Yet, as is the hope with collaborative projects, the

¹⁴ Particularly because the communications people needed to begin summarizing results as part of the message formation process.

complication paid off in the insights and quality that emerged from engaging in conversations from multiple perspectives.

Phase 4. Message formation and writing

The purpose of the project—the reason for the funder’s investment—was to convey sound and unbiased information to policy makers in such a way as to influence them to recognize a problem worthy of attention and to inform them as they make decisions. Thus the message formation phase was vitally important because this is where the results of the research became fully explicated by the researchers, and also translated by the policy and communications partners from information to an argument for better science education.

The work of the project became more complicated and stress-filled in this phase. The time crunch caused by the challenges of data collection and analysis meant that the fairly lengthy process of developing a coherent message for the policy audience had to begin while findings were still being formed from preliminary data. Multiple written pieces (the “suite of products” described below) were being drafted, reviewed for feedback, and revised all at once, and all of this began while data were still being finalized and while the results and the story they told were being discussed and clarified. The two research teams, each of which have internal practices for drafting research papers, not only had to write one research paper jointly, but also had to try to blend survey and case study data before both types of data were in final form.

Moreover, it turns out that the funder and the partners had somewhat different expectations about what each key product would contain; these had not been explicitly defined in advance. Further, the partners and the funder had not spelled out ahead of time the process for involving the funder in review and feedback on draft written products. These communication gaps resulted in some misunderstandings and discomfort, as well as required major revisions to written products later in the process than the authors had planned. And finally, the involvement of two research teams as co-authors of one lengthy research report, with a third partner responsible for scheduling the editing, formatting, and publishing of multiple products, magnified the normal challenges of finalizing a lengthy, high-stakes study report. The demands of carrying out the writing phase resulted in the need to push the original release date back from September 15 to October 25. The partners learned that it is vitally important to define expectations for both process and product as carefully as possible, and to build in extra time for the inevitable complexities of multi-partner work.

In this section, we do not dwell on the complications that arose, but rather we explain the key design thinking and activities that went into this phase. The several processes we describe below occurred simultaneously, rather than sequentially, in

an extended, intertwined manner through series of regular conference calls and emails among the partners, circulations of multiple drafts of different documents as they were drafted and revised, as well as in-person meetings of the partners with the Advisory Committee and with the funders.

Formulating the right message

The partners enacted several key principles associated with message development and writing:

Working on “message” from the beginning. Those whose role was primarily to formulate messages wove their attention to message and audience into the work from the beginning. One partner said:

We stayed in touch with the research team as they went about their own work, with them keeping us informed. Everybody keeping everybody else informed was really important because we started thinking about opportunities for placing this data in the policy context or in reports and summaries.

Importantly, message formation did not drive the research or meaning making; that cart was never put before the horse. Rather, policy and communications partners were continually alert to what possible messages might fall out of the research.

Characterizing the audience. It is not enough to say, “Write for policy makers.” How the writers define that audience shapes the products and affects their impact. The partners entered this phase with a set of strong values about the quality and value of the written products. One partner with more than a decade’s experience working with policy makers described the importance of developing messaging that respectfully serves the people and processes of policy making:

“The policy makers with whom we work are seasoned, intelligent, and discerning and so it... is writing in a way that resonates with them, which has to be on a very high level, because if in fact a member like a pro tem or a speaker or a state superintendent picks this material up, to not have it right and to not be able to defend your data and to have a message that is awkwardly cast, puts them in a terrible position, and so, I feel that we have a responsibility to provide the highest quality information that fits with their highest aspirations for public service.

Additionally, the policy and communications partners kept themselves abreast of the specific concerns that policy makers had and issues they were working on; knowing this about their audience would help them craft a message that linked the research directly to their current decision making.

Developing a “storyline” from the findings. Data analysis and message-development aim at fundamentally different audiences: data analysis speaks to the researchers themselves (“what do the data tell us?”) and message development speaks to others (“What do we want our audience to learn from this research?”) For this project to

have integrity, the message needed to fully and fairly reflect the findings derived from analysis; to have effectiveness, the message needed to be carefully crafted with media and policy audiences in mind.

For the two research groups, contributing to the key message meant weighing in on which research findings were most important and could be stated in the most direct (and actionable) terms. Here, the two research groups needed to work through some tension about the main story. Would it be about the pervasive lack of science instruction? That was the simplest message, with the implication that “more science” would be the solution. Or would the main message be about the lack of *quality* science instruction? The implication here is that “more science” is not a solution if the quality is low; the policy implications are much more complex. Ultimately, the research groups focused on the more complicated message—elementary children are not receiving a quality science education.

While the funder partners were careful to avoid influencing the story line, they did weigh in on which findings they saw as most compelling. For them, the juxtaposition of public opinion and the research on schools formed the most powerful and urgent story: the public—in all its diversity—sees science as a very important subject in elementary grades, both for individual opportunity and collective prosperity, but children are receiving very little.

For the policy and communications experts, the process of developing a compelling message began with an examination of the findings to see if, in the words of one partner, “there is a there there” that might cause policy makers “to pay attention.” In the comment below, this partner explains what stood out in the SSEC research:

In this case, there was a tremendous there there. Science had essentially been pushed out of schools, and the second layer to that was, not just poor schools, we're used to poor kids getting a short shrift and having inequitable education, that would have been news in and of itself...[but] the news was, this isn't just poor kids, this is statewide, this is virtually every school—kids just don't have access to science at all, much less quality science, much less hands-on science.

Forming a message also involves finding links between compelling research findings and what policy makers know and care about. One person described message formation as the art of “being able to shape things in ways so that people [policy makers and the media] will pay attention to them”:

...developing a message from the perspective of first of all, what may resonate with the policy community and that has a lot to do with making a good diagnosis of the policy context...What we try to do with the message is try to grab onto an interest that key members have—and that could be the state superintendent or the governor or the pro tem or the speaker—and then try to understand a little bit more about the nature of their interest, and what they care about and then go back to data and see what aligns, or what could help this policy maker's understanding about the issues that he or she cares about.

Getting the title right. The title is important because, first, it creates the first impression about the message—its content and emotional tone. Second, the title becomes the brand for the message through repeated references. Consider the lasting impression of *A Nation at Risk*. As the SSEC storyline began to form, partners discussed the title by which the release would become known. Some commented that even though nearly all of what they were going to report was “bad news,” the title could not be so “negative” that it would be off-putting. What few memorable words would convey the message? What tone would evoke the desired reaction—a sense of urgency of problem with an opening to policy correction—among policy makers and the media? After some attempts to form a compelling title, the phrase “High Hopes—Few Opportunities” was deemed accurate in message and both urgent and positive in tone. In particular, the shorthand version has become *High Hopes*—a brand for the report that evokes current political themes in American politics.

Developing recommendations for policy

The most important principle this project followed with respect to policy recommendations was to hold firm on a stance of *informing* policy makers about problems of student learning opportunity rather than *advocating* for a particular policy or bill. The funder, a philanthropy that does not lobby, even questioned whether written products should include recommendations. The CFTL, a non-profit that does not lobby, advocates generally for high quality education for all children, but does not espouse positions on any legislation. In their words:

we are, no question, advocating for high quality instruction, and advocating for children to have greater equal opportunities to learn. People understand that. But we are not a typical child advocacy organization that would say ‘we want you to carry a bill on X, Y and Z and we are going to try to put that together with you,’ we don’t do that.

Thus, while they hoped that this project could contribute to legislative efforts to improve policy for science education, they did not offer to participate in the development of new policy.

Formulation of policy recommendations occurred as an extended multi-faceted process beginning in this message-formation/writing phase and extending into the “setting the stage” phase discussed below. The process involved vetting potential policy implications with intermediate audiences in anticipation of refining them for release to the target audiences.

Engaging additional expertise. Early in the project, the partners formed an advisory group to provide expert advice, particularly during the message and recommendation development phase. Forming this group required careful thought: it was important to include recognized science education leaders and stakeholders in the state, while at the same time to form a group that, in the words of one

partner, would “seed quickly” and where there would be no “bullies” or other interpersonal/inter-institutional issues that would block the progress of the project. The partners typically use this kind of group strategically to “give an initiative some air”—that is, to make sure key stakeholders are familiar with the findings and potential recommendations as they are being formed so that when the suite of products is released, there is a higher likelihood that these stakeholders will be prepared to “embed” or use that information within their own organizations. One partner described the role of this expert panel as “really a two-way street. We want to elicit from them sound and reasonable advice, and we hope that they will find the products useful in their own work.”

One partner engaged their consultant on state policy to draft recommendations to put before the advisory group. In order to align with state policy currents, the consultant framed an initial set that would “dovetail with the [state] superintendent’s committee, a blueprint for schools and to place our strategy within that strategy because of the superintendent’s relationship with the president of the state board and his relationship with the governor.” The partners held a meeting of the advisory group to preview findings and to vet initial thinking about policy recommendations. One partner described this opportunity to “test out” what findings and issues were important as a “keystone” moment in the development of the written materials, adding it was important that “we had some pretty good critics in that group.” When the advisory committee considered the findings and the draft recommendations, they expressed concern that the superintendent’s blueprint did not adequately address issues of greatest concern, and they encouraged the partners to take a stronger and more independent stand related to making quality science education a higher priority for the state.

Conversations among the researchers, policy experts, and members of the advisory committee extended over several weeks as the research products were being written and revised. Multiple drafts of the summary document—and the recommendations section, specifically—circulated through multiple review processes until ultimately all partners were agreed that the recommendations were, first, true to the results of the opinion polling and research on conditions of elementary science education, and second, were compelling and potentially valuable to policy makers interested in improving the state education system. One partner described the value of focusing a broad range of expertise on the “outcome” of framing an effective message combining research and recommendations:

the result is much better as a result of those conversations... what you had here in the advisory committee, you had such expertise and such passion and such content knowledge and such depth of experience in the subject, and people on the front lines that, if you put them together with people like me who have a background in strategy, you wrestle with it and then you come to an outcome that is stronger.

Maintaining boundaries between the investor and the message. The funder is the investor and, as such, has a strong interest in the quality and impact of the project. Funders vary in the extent to which they want to have a hands-on *vs.* stand-back role in the work in which they invest. This funder had a preference for playing a somewhat more active role than several of the partners had experienced with other funders. In this writing/message development stage, the funder reviewed preliminary findings and draft reports, offering suggestions on, for example, how to juxtapose the public opinion polling against the survey findings and how to emphasize case study results. This funder's active interest in the written products required that all partners be mindful about limits to the funder's contributions: no one wanted the investor's interest to compromise the integrity of the message or the messengers. Thus, while the funder probed for ways to strengthen the report, they respected the expertise and authority of the researchers and policy experts to determine the power of the research results and the range of recommendations that could be made.

In particular, the funders avoided framing policy recommendations, saying: "I don't think we have any [role]... We are not paying so that we can get our recommendations." At one point the funders questioned whether the project should issue recommendations, or simply present the research and let the policy makers arrive at their own conclusions. They yielded to the partners' view that recommendations should be included, saying "Okay, you guys are the experts, go ahead."

Designing a "suite of products": Meeting audience expectations and serving their various needs

From the beginning, this research and policy communications process was aimed at generating multiple written pieces, what the partners refer to as a suite of products. One partner described them this way [emphasis added]:

*We have that **multi-page full report**, where [policy makers'] staff can look up the original data sources and check on them as they need to. Maybe the state superintendent or whomever gets a question about 'well where did you get this stuff?' and they can look up the answer. That is the most densely packed document. Then we have a **summary report** and the intent of the summary report is to catch the attention of the targeted audience members and to make it so compelling that they want to read the full report. Then, backing up from that, [there is a] **press release** and then backing up from that...**pitch letters**.*

All of these products must flow from the research findings and adhere to the imperative of internal consistency of evidence and message. In a continuation of the quotation above, the speaker explained:

From the pitch letter to the press release to the summary report to the full report, there ought to be a logical progression in terms of complexity, but not message. The message should be consistent throughout all of those documents.

Each product in the suite included elements of content and form (e.g., the length, ordering of points, selection of evidence/details, wording of key ideas, presence or not of recommended actions, mix of text and visuals) that were based on conventions for these genres and also based on assumptions—gleaned from years of experience—about the audience’s needs and expectations. The CFTL involved professional print designers and printers in the final publishing stage. Distinctive features of the different products:

1. *Full research report.* This report presents findings from the surveys and case studies and also includes multiple references to the public opinion poll results. Reaching 76 pages, it includes many graphs and charts, examples and quotations from the cases, references and appendices, as well as the rosters of all partners, authors, and members of the advisory committee. Beyond the findings comprising the main storyline of the summary, the report includes detail on the conditions and resources associated with high quality elementary science teaching.

This report served the project in multiple ways. First and foremost, it legitimized the project as a research study with a familiar looking full and detailed research report. As one partner noted, the key to the success of the whole project is “This is an unbiased full scientific report on the status of science education, period.” A summary without the research report behind it would be suspect in credibility. And substantively, the report served as the “background” or “source” document that readers of the summary and press release could delve into to find more data and finer-grained analysis. The partners assumed some journalists would choose to develop a major story would need detail not found in the press release. Also, staff and state policy makers who found the summary useful for their policy work would need this report for additional information and also as a jumping off point if they wished to summon any of the partners for follow-up interviews or presentations at meeting or legislative hearings.

2. *Summary report and recommendations.* This is a stand-alone summary report under a separate cover that translates the language, tone, and order of points in the full research report into what one partner described as less “academic” and more “hard-hitting” in its directness. Twenty-four pages long, it includes multiple photographs of teachers and students in science learning contexts, carefully selected and enlarged charts and graphs to substantiate key findings, boxed statements and findings from the public opinion poll, and roughly 4,500 words of text in easily readable fonts with strategically used color. This length of text meant that the summary was detailed enough to serve as the core document for many readers.

There are other distinctions between the two major documents: The full research report's 4-page executive summary is not the same as the longer summary document, nor does it include recommendations for policy. Rather, the research report presents the results in a format and tone that its readers would expect of a typical research report; it is copyrighted to the Regents of the University of California (the Hall is part of UC Berkeley). The summary, in contrast, presents the project's message, or argument, about what is important in the research and what should be done as a result; it is copyrighted to the Center for the Future of Teaching and Learning, the policy partner. Photographs in the summary are drawn from stock sources; by symbolizing messages of the report, they have a tonal effect rather than conveying findings. In contrast, the research report shows photographs of science resource centers taken from case study sites, which illustrate the findings. However, with respect to visual branding on the covers (color, images, titles), the full report and the summary look distinguishable from one another but also related, so that readers understand they are different products from the same source.

3. *Press release.* The 1600-word press release begins with a strong statement of findings and selected key data points, includes quotations from key partners, explains the nature of the research study and available reports, and summarizes the recommendations. Like others of its genre, it was designed to be printed as is, easily excerpted, or used by interested journalists to pursue the topic further.

In anticipation of the press release, the communications partner composed "pitch letters," short emails letting key audience members know an important report would be out on a certain date and what its topic would be.

Phase 5. Stage-setting

Serendipitously, the need to delay release of the report pushed the partners to invent a new kind of stage-setting phase focused on policy actors in the state capitol. Based on the value of what occurred during this phase, the partners believe this phase was vitally important to the success of the project, and they would build this phase into their model for future work. For the media-directed component of the release, the partner responsible for that enacted a time-tested and well-honed process of stage setting.

Setting the stage for policy makers

Vetting the message with high-stakes users. Ordinarily, as part of the release phase, these partners provide individual pre-release briefings with senior staff and key state policy makers—for example, the Superintendent of Public Instruction, the Governor's Secretary for Education, the staff to the President Pro Tem and the Speaker, perhaps staff of the State Board of Education. These in-person meetings at the state capitol take place after reports are completed, but before they are released

widely in the media. The pre-release briefings accomplish two ends. One is to begin forming a coalition of interest in the report's message among policy makers. The second, in the words of one partner, is to give policy makers "the courtesy of being able to give a thoughtful response" when journalists call them with questions following the release:

The last thing that we would want to have happen is a member of the press corps to call up Superintendent Torlakson and ask for a quote, and the Superintendent doesn't have a clue what we are talking about. So, we want to make sure that their press people, if they want it, have an opportunity to get a briefing from us.

These pre-release briefings help build a relationship of alliance among the report authors and audiences.

What was different for the SSEC project is that the reports they wanted to share with these stakeholders were not finished because of the obstacles and deadline extension described earlier. However, in anticipation of having completed reports, the policy partners had scheduled the appointments at the state capitol. The partners decided not to cancel the appointments, but rather to re-purpose them as opportunities for senior staff of key policy makers to get a preview of the report's findings and to provide feedback on possible policy recommendations. Partners carried brief handouts with bulleted points.

These in-person meetings turned out to be enlightening. The partners learned that, while fiscal realities would prevent law makers from directing any state funds toward elementary science immediately, policy maker were interested in identifying problems that should be addressed should the economic climate improve. The meetings also clarified policy makers' interest in working toward reform of the state's accountability system; several senior staff people told the partners that the research findings did not surprise them, but rather verified the breadth and urgency of a problem they suspected was there. These discussions helped the partners pinpoint the parts of the storyline that would resonate most strongly in the state and to sharpen the statement of recommendations so they would be more resonant with short- and long-term policy opportunity. The advantage of that, for impact purposes, was that the report became better positioned to provide the policy makers with support they need to move closer to their own policy making goals. This stage-setting phase also served the purpose of the customary pre-release briefings: state policy makers were informed and prepared for the publications when they were ready.

Key expertise: knowing the audience. The expertise and knowledge that go into this phase involve knowing the audience: knowing how policy decision-making works (who is involved and how), and knowing the individuals for whom the communications are intended. One of the policy partners described their approach:

The relationship with member [of legislative offices] staff or the superintendent's staff is just tremendously important, because they are...the ones that are assigned to pursue these issues that their members or their boss is interested in. So, my advice would be for others that want to pursue a research communications and policy model to really take the time to get to know the staff members and understand there are ways of working with them.

Key partners in this project have been communicating research to policy makers for upwards of 15 years. They believe cultivating relationships and keeping the finger on the pulse of policy development is as important as promoting only the highest quality research.

Setting the stage for media: enabling quality stories and promoting widespread distribution

Throughout the project the communications partner had weighed in to help hone the findings into a storyline that would resonate with education journalists and the public. Like the policy-oriented partners, the integrity of the research and the intentions of the funder are paramount to his own role and integrity. From the communications perspective:

The content is really important and it has got to be really well done, well written, and it has got to have some credibility to it. SRI and Lawrence Hall and the Center [CFTL] bring that credibility to that process, and so people are interested in it and they are willing to read it. Without the content, [a communications expert is] nothing.

For the media communications purpose, the goal is two-fold: to generate high quality stories and to achieve widespread distribution in print and on-line in both mainstream and education-related media. Setting the stage for the release of the report involved a three-step process (emphasis added):

*the process is, there is the **advance pitch** and sort of the informal and formal activities to go around that, and then there is the actual **distribution where we send the report out in advance** to reporters and the supporting materials to reporters and follow-up conversations with them, and then I would say there is a coordinating response, either with the principals who [wrote the] report or **coordinating contact and response** with some of the external players.*

Advance pitch. The advance pitch involves alerting key education journalists that the story is in the works to stimulate interest in it and give them time to decide whether to plan a substantial story around it. In this case, for example, an LA Times reporter became interested in developing an extensive investigative local story that this report would become part of. The advance pitch also involves contacting radio and broadcast outlets, letting them know the release date, and inviting them to pre-record interviews if they wish. The communications partner makes the advance pitch through phone calls and emailing the pitch letter to a database of contacts developed over time, as well as through informal networking with key journalists. As with the policy partners, cultivating relationships over

time—and treating them with respect through the integrity of quality content—is an important strategy.

Distributing the suite of final products in advance. Emailing journalists the materials—the final report, the summary, and the press release—about a week in advance of the public release date is critically important. The report must be “embargoed” (banned for publication) until the specified release date, a practice that is well respected by members of the media, who risk future access if they break the embargo.¹⁵ Without the advance distribution, there is almost no chance of media impact, according to the communications partner:

Newspapers have cut their staffs so much and the people that write for papers, their jobs are so hard right now. I am not really interested in a 5-inch story that is buried in the Metro section. I am looking for a story of substance...There is a lot in this [report]—it is not something that you can get at noon and write by 4:00. It is something that you need to think about, and so I try to give them at least 5 days to look at the stuff and read through the reports, because the way it works these days, if I can get 3 to 5 of the bigger papers writing about this, I can spread that story a lot of places. I have to give them time to do it.

The press release was full enough that it would convey the message if all a journalist did was simply print it. The communications partner included a “fact sheet” with it that listed additional key data points that the journalist could plug in without reading the lengthier summary or full report. The fuller documents were for those few journalists who want to gain deeper background knowledge and use it to author an original story.

Coordinating contact and response. The communications partner assumed that some journalists would want to contact the report authors with questions and requests for further information. It was this partner’s responsibility to coordinate contact and response both by helping reporters identify the key report authors or project partners to contact, and simultaneously, preparing the partners likely to be contacted to handle those contacts. Coordinating contact typically involves letting journalists know who to contact for what kind of questions—who to interview about effective science teaching, who to talk to about policy implications, and so on. Coordinating response involves a more in-depth process of helping the partners likely to be contacted to anticipate questions from the media (and from policy makers) and developing strategies for addressing them:

[Questions] range from the radio reporter that calls and says, ‘what is this report all about?’ to more complex and arcane questions that you might get like a reporter at the LA Times asking you.

¹⁵ The communications partner, with many years experience and hundreds of contacts, has had an embargo broken only one time.

Ordinarily, preparing the report authors to respond to questions requires a somewhat intensive workshop, perhaps a day in length. For this project, however, the extreme time crunch leading up to the deadline meant the partners did not have the leisure of this kind of training, but rather met briefly in the margins of another event and talked on the phone. They discovered, however, that the extended process of forming the storyline ingrained the content of the report deeply into everyone's minds "by osmosis." That, along with media trainings the lead researchers had had for prior projects, meant that the short shrift given to preparation for media questions caused no problems.

Knowing the audience. Just as the policy oriented partners must know their audience, so must the communications partner. Developing knowledge of audience involves an ongoing, cumulative effort:

I am reading the newspapers like crazy. I read not just the LA Times, but I am always online reading who is writing what. And I am searching 'science education' or 'science and accountability' and I am watching who is writing what, and looking for new reporters that are interested in it. I'm trying to have some perspective about how issues are playing out and what reporters are writing about other issues and how this fits into that stuff.

Phase 6. Publication/Release

The "release" was a planned set of communication actions that took place on a date specified well in advance, designed to optimize the visibility of the *High Hopes* report, both to the California public and also to a vast secondary audience—those involved in science education improvement everywhere in the nation. Before the SSEC release date, all key state policy makers had received advance copies of the full report and summary with a cover letter identifying the release date.

Setting a release date linked to policy cycles. Key considerations for release dates include the nature of the policy cycle and the timing of other high profile reports that could either compete for or provide complementary attention. The SSCE project also included a middle school component, and the partners took care to time the release of the elementary report so as to set the stage for, but not compete with, the following middle school report that would follow. According to the state policy actors we interviewed, releasing a report such as this when the legislature is out of session (which was the case with the *High Hopes* report) meant that the legislative senior staff members—the primary audience for the report—had more time to read the report, talk with its authors, and strategically position its content into the various strands of policy making work of their bosses. On the other hand, if the report had included specific recommendations for funding (which this report did not), it would have been more strategic to release it during the legislative session when members are in the midst of negotiating allocations.

Facilitating high-impact release in general and education-related media. Whether legislators are in session or in their home offices, they are sensitive to constituents and to hot-button issues in policy areas they specialize in. For both elected and appointed officials, public and professional opinion about education matters. The aim of the media release was therefore to give the report’s message extensive exposure to voters, parents, and the business community, and to give it strong state and national exposure in education-related media.

The communications partner’s role on the day of the release is to “push the story out” for the broadest exposure possible. The strategies to do this include sending the press release to a very large and ever-growing database he has accumulated of print, broadcast, and online media outlets. Online outlets include websites for a wide range of state and national organizations with a stake in science education (e.g. California PTA, the California Manufacturers’ Association, Science News Today, National Academy of Sciences, National Association of Science Teachers, and ASCD). For the purpose of widespread exposure, other important online outlets are “news generator” sites that will distribute the story through multiple other outlets, such as blogs, that will reach multiple audiences. Some news generators, such as webwire.com and pr.com, are paid sites, while others, such as the blog Educated Guess, generate re-distribution through subscriber activity.

The SSEC release was considered extremely successful by the funders and all partners. It produced articles in all of the state’s major newspapers as well as some 30 local papers, stories on the three largest radio stations as well as several others, stories and re-distributions on thousands of online outlets—what the communications partner reported as over 200,000 website placements based on statistics from a paid placement site—as well as a story in *EdWeek*, the largest national periodical on education, and *Times* magazine’s online education newsletter.

Phase 7. Follow-up

The partners believe that a follow-up strategy is important; as one partner pointed out, “We got the science report out, now what do we do with it?” They assume that the burst of professional conversation that immediately follows a release lasts for a few days, until the next “big story” comes out. The follow-up strategy has to do with trying to keep the message of the report “in the spotlight” through presentations and appearances at hearings. The tactic is to decide what steps to take with different specific groups:

Who do we talk to, and what kind of presentations do we want to make? You start separating—what can be done without legislation? What can be done administratively? What can be done with respect to use of existing and potential federal funds? What can organizations that represent administrators, teachers, school board members—what do they need to know and what would we suggest that they do? Should we try to get before the legislature for an information hearing? Should we try to get in front of the state board?

Just as with message-formation, the follow-up strategy requires making a bridge between the message of the report and the realities and current concerns of the audience. The partners know there is no additional state funding to direct to the problem of elementary science education right now, so they need to find other policy opportunities to “hook” the report to. One partner described the strategic thinking related to the problem of accountability and the prospect of new science standards on the horizon:

It is easy for policy makers to say, ‘oh thanks very much for this report, but there is no money.’ Well you don’t let them do that. And sometimes it will take awhile for sufficient resources to be generated to address some of the key issues here, but so much of the information has to do with the ways we have shot ourselves in the foot [with the accountability system] in California. Other states haven’t necessarily gone down these paths...Then the other part of the context, which is exciting, but a challenge, is the common core standards and so, we have separate conversations going on... You have to kind of lay it out in a way that they understand, and talk in terms of systems and how those systems could be modified.

Again, because the partners are not lobbyists but rather research and information groups advocating generally for high quality education, the aim is not to offer to draft and promote specific legislation, but rather to motivate policy makers to use their understanding of the problem as it is spelled out in the report to make changes where they have jurisdiction.