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Using Research to Inform the Practice of Teachers, Schools, and School Reform Organizations

The authors describe how a university research center partners with intermediary organizations and high schools to use research methods to support particular goals. These researcher-practitioner partnerships establish goals, articulate effective strategies, and co-construct new approaches to address the challenges of school reform. The article presents two case studies. In the first, the center collaborated with a consortium of innovative secondary schools to build organization-wide capacity to use data to inform school-based decision making. In the second, the center collaborated with a school coach from a high school redesign intermediary to

develop a process for using performance assessment data to spur a cross-disciplinary professional development focus on teaching writing. The cases demonstrate the critical importance of researcher-practitioner collaboration and research partners' responsiveness to the identified goals and emerging needs of partner organizations and of the schools and practitioners with whom they work.

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FOR SEVERAL YEARS NOW, the National Center for Restructuring Education, Schools, and Teaching (NCREST) at Teachers College, Columbia University, has been conducting quantitative and qualitative research to inform the implementation of cutting edge reforms that aim to make breakthroughs in the frequently intransigent area of high school education. Rather than designing a study and then presenting a set of

findings, NCREST works collaboratively with practitioners to use research methodologies and a shared analysis process to address the issues they confront. NCREST's approach draws upon the work of several researchers (Donmoyer, 1996; Hiebert, Gallimore, & Stigler, 2002; Richardson, 1994) who noted the too frequent irrelevance of research to practice, and of Robinson (1998), who attributes this irrelevance to a "mismatch between educational methodologies and the generic features of practice" (p. 17). Researchers, asserts Robinson, need to understand the stance of the practitioner and see teaching practices as strategies for solving problems.

NCREST's work to make research a meaningful contributor to high school reform has taken place in the context of our role as a *research partner* with several intermediary organizations. Increasingly, private foundations are contracting with intermediary organizations to spearhead and implement their education reform initiatives. In the 1990s, the National Annenberg Challenge for School Reform, and more recently the Bill and Melinda Gates Foundation, have funded intermediary organizations to create educational change. Intermediaries are external partners to schools and districts, often community based groups, cultural or higher education institutions, and other, usually, nonprofit education organizations.

As these intermediaries attempt to tackle historically challenging problems, such as high school reform, there is no clear blueprint for success. Rather, new approaches need to be invented. The process of invention is at once promising and frustrating, as it can lead to important breakthroughs, but also to disappointing results. Effective inventions require engagement in a process to clearly and accurately define problems, establish goals, and articulate strategies. The strategies must be well-implemented and then assessed for effectiveness if they are to produce the intended results. As this article demonstrates, research has a critical role to play in this process of reform.

At NCREST, we assert that research can become relevant, which we take to mean actionable—i.e., able to be translated by practitioners into actions that they apply in educational

settings—when a particular set of conditions are in place. These conditions include: a trusting, respectful, and credible practitioner-researcher partnership where each party believes that the other contributes uniquely to the issues under investigation; a collaborative and co-constructivist approach to the issues the intermediary organization or school wants to deal with and the research methodology that will be used; the willingness to engage in an ongoing conversation about the work; and a value on mutual ownership of the work.

In the following two case studies from our collaborative work with intermediaries and schools, we describe particular examples that point to both lessons and challenges that have emerged from the partnerships. Our analysis of these cases seeks to contribute to the knowledge base of research organizations, intermediaries, and schools engaged in work to improve student experiences and outcomes.

Middle College–Early College High Schools Case

The 25-year-old Middle College National Consortium (MCNC) is a national network of high schools situated on community college campuses that provide under-performing youth with access to college. MCNC supports schools in implementing six design principles that are intended to promote student success in high school and their matriculation into higher education. Building on this history, the MCNC—with support from the Gates, Ford, Kellogg, and Carnegie Foundations—has recently begun creating Middle College–Early Colleges that redefine the boundaries between high school and the community college in order to create *blended institutions*. Students in these small high schools are given the opportunity to graduate in 4–5 years with a high school diploma and an Associates degree. A total of 30 such schools will be open by 2010.

Since 2002, NCREST has served as MCNC's strategic partner to provide the organization with feedback intended to support its effectiveness,

strengthen its implementation, assess student outcomes against desired goals, and inform policy decisions. To that end, NCREST has documented its design, development, and operation. Typically the documentation involves:

- 1) Identification of focus areas and the formulation of questions that target what MCNC wants to know.
- 2) Collection of different types of data that illuminate the focus area (e.g., what implementation of the design principles looks like at individual schools around the country) and respond to the questions formulated. Both qualitative and quantitative research methods are used.
- 3) Collaborative analysis of the data, with a focus on obtaining evidence, for example, of schools' fidelity to the MCNC design principles, service to the target student population, and attainment of desired outcomes.
- 4) Collaborative generation and analysis of possible strategies for more effective achievement of desired outcomes, based on research findings, the collective experiences of key stakeholders, and an examination of the implications and consequences of actions.
- 5) Further data collection to assess whether these strategies are having the intended impact.

In recent years, this process has yielded, among other things, the co-construction of a set of benchmarks to track school progress in the implementation of MCNC design principles, analysis of student performance from student transcripts, and the use of surveys and focus groups to learn about student perspectives on their experiences.

Data Use and Math Improvement Project

In the fall of 2005, Consortium leaders began discussing the need to find better ways to use school and student data. The Consortium leaders realized that school leaders received data from different external sources, as well as frequent pressure to use them more effectively,

but competing priorities and limited time often relegated their analysis and use to a low priority.

When Consortium leaders wanted to build the capacity of their organization and member schools to use data to inform decisions, MCNC asked NCREST to collaborate with a working group of staff from three invited schools to develop a strategy to focus its schools on how to best engage in data-driven decision making. The working group's purpose was to develop practices and/or a model for data-driven decision making that could be used by Early and Middle College high schools for the purposes of improving school and student outcomes. As discussions on how to do this began, a second, related purpose emerged: to improve instruction and support for student learning and achievement in mathematics.

Specifically, NCREST's role was to collaborate with working group members to develop effective practices or models for using data, as well as effective practices or models that other schools could use to improve mathematics instruction. In order to achieve those goals, NCREST took the working group members through a process that helped them to (a) immerse themselves in a dialogue about their students' performance in math, (b) frame a problem based on their school's math outcomes, (c) identify and consider contributing factors to the problem, (d) decide on a goal that they hoped to achieve related to the problem, and (e) identify strategies that would lead to goal attainment. Each step of this process involved the use of data to make choices and examine the results of the choices. Some of the data were provided by NCREST; others were derived from the schools themselves and other sources. Where data were missing, NCREST was available to discuss strategies for finding or creating it. To support the process, NCREST also analyzed all 2004–2005 Middle College–Early College student high school transcripts to provide information on the typical math course sequence at each school, actual courses taken, grades earned, how students' math performance compared to overall high school grade point average, how students fared in different math courses, and

how the math performance of girls compared to that of boys.

Important challenges presented themselves during the course of this initiative. Members of the working group had different degrees of experience and comfort analyzing and using different types of data. The reality of having to frame and analyze problems and design strategies when data were incomplete or missing sometimes generated frustration. As working group members became more immersed in data, they sometimes succumbed to the temptation to switch the focus from mathematics to other data that interested them, such as attendance rates. These and other challenges demanded real time responses from NCREST, such as providing additional data and refocusing of the group.

Nonetheless, each school in the working group developed a preliminary plan for further discussion with others in their school. Both NCREST and MCNC staff followed up with the leadership of each school to discuss progress. Each school now has plans to make major changes to its math program. NCREST's next step will be to work with each school individually to co-construct a system to evaluate and revise the math reforms, based again on the use of data.

We at NCREST and the MCNC have noted some benefits to schools that derive from using data for decision making:

- Using data can support schools to develop new, more accurate habits of problem analysis, identification, and solving. Requiring discussants to provide evidence for their problem analyses helps schools to differentiate between knowledge and beliefs and values (Patton, 2001) and break the pattern of designing solutions based on unexamined assumptions.
- Involved staff can learn that data are often incomplete but not necessarily insufficient to make responsible decisions. They also become invested in gathering important additional data that are missing.
- Using data can focus discussions on desired outcomes rather than on individual teachers. One principal commented that the use of data

focused discussions on boys' difficulties with fractions, rather than on who is to blame.

- Data can be a source of political leverage. One principal intended to use her data to obtain additional resources from the school district. She believed the data would influence the district to be more responsive to her school's needs.
- Using data can make complex problem-solving more manageable. One principal who was initially overwhelmed by the issues surrounding math performance at her school found that using data gave her entry points for problem solving.

ISA Case Study

The Institute for Student Achievement (ISA) is a nonprofit educational intermediary organization with a 15-year history of supporting underserved and underperforming high school students. Over the last 6 years, ISA has partnered with school districts to start up small high schools and convert large ones into small learning communities (SLCs) organized around a set of seven research-based principles that assist all students to graduate from high school and succeed in college.

Central to the ISA model is a dedicated team of teachers and a counselor who work together to plan curriculum; develop structures to support students' academic, social, and emotional development; and engage in ongoing professional development and continuous organizational improvement. ISA's instructional principles include inquiry-based instruction and literacy and numeracy across the curriculum. ISA provides each school or SLC with a coach, an experienced small schools educator, to support the school in implementing its principles in ways that make the most sense for its context and needs.

NCREST has been ISA's strategic partner since the inception of its efforts in high school redesign, 6 years ago. NCREST collects, analyzes, and reports on data from student surveys, site visits, and performance assessments in writing and mathematics. The purpose for the data

collection and reporting is to provide ongoing feedback to the schools about how effectively they are implementing these principles, and to ISA to inform their decisions on supporting the efforts of the schools.

As part of this data collection and reporting, NCREST has developed performance assessments in writing and math that ISA schools administer at the beginning and end of 9th grade and the end of 10th grade.¹ The specific purpose of the assessments is to provide schools with data in two academic areas that are critical gatekeepers for college admission and success so that schools can assess and improve instructional practices in those areas. After each assessment is administered and scored, NCREST provides reports to schools on students' baseline performance and changes in performance. The reports analyze students' performance holistically and on specific skills; they are intended to provide entry points for faculty conversations about instruction.

In developing a performance assessment system that would be useful to the schools without imposing an added burden on them, and one that would provide ISA with data to assess the effectiveness of their support, NCREST has faced a number of challenges. These challenges include:

- Negotiating competing priorities about what is worth teaching and what is worth testing. Gaps in alignment between researchers' knowledge and understanding of what is worth teaching and testing, and education agencies' assertions of what is worth teaching and testing as embodied in end-of-course and graduation tests, can cause conflict for some teachers. That conflict must be negotiated. NCREST modified its ISA mathematics performance assessments to include the kinds of skills and problems found on state graduation examinations, as well as the National Assessment of Education Progress (NAEP). Where the assessments are in close alignment with state end-of-course-graduation exams, as is the case with NCREST's ISA writing assessments, teachers more frequently use the instrument as the researchers intended.

- Finding entry points to encourage the use of data to improve instruction: If data are delivered in unexpected formats and at unaccustomed times during the year, the data may go unused because the schools have not developed entry points into their work for the regular use of data. For example, if schools receive data on students' writing in November, they may not use it because November is the middle of the term and they are used to using data only at the beginning of the term.
- Promoting the value of external data: Some practitioners are unused to examining data that comes from outside their classroom; in some cases, they may question the credibility of the data.

In addressing these challenges, NCREST regularly collected feedback from schools and ISA coaches. This allowed NCREST to adjust the kinds of items included on the assessments (including developing an entirely new math instrument); revise the report templates so that they are clearer and more accessible for school-based users, for example, by separating methodological information from results data (i.e., providing a separate technical report); and aligning the assessment schedule so that it provides schools with data earlier in the school year and in time for the ISA Summer Institute, when school teams and ISA coaches have significant chunks of time to review data as part of their planning for the upcoming year. NCREST has also provided ISA coaches with formal professional development, as well as in-school advisement to support them in working with school teams to understand data reports and use them to inform instructional decisions. These supports have included modeling discussions of data reports with teams. NCREST staff members also meet with school teams at their request to discuss the meaning and implications of the data.

The design for the ISA writing performance assessment, especially, reflects NCREST's efforts to provide schools with a practical tool to support ISA's focus on literacy across the curriculum. The assessment consists of a single writing prompt on a controversial topic related to students' lives

such as, for example, changing the start/end times of the school day to coincide with adolescents' energy levels. Students are instructed to choose a position on this topic and support it with evidence from the context provided and their own experience. The persuasive essay/letter task and the scoring rubric correspond to the New York State Regents and NAEP writing assessments. However, the rubric is simplified to encourage its use in and adaptation for supporting students' writing development in courses across the curriculum.

Twice each year, ISA convenes scoring writing conferences during which teachers from different disciplines, ISA coaches, and NCREST researchers come together to score student papers. NCREST researchers lead intensive small group workshops on using the writing rubric to score the students' papers during which participants read, score, and discuss sample student papers. Although the workshops prepare teachers to score student samples individually—each paper is scored by two scorers independently—the emphasis of the conference is on practitioners learning about assessing student writing as professional development for their practice in their own classrooms and within their instructional teams.

A School Develops the Habit of Examining Student Work as Data

ISA partner, Hillcrest² High School, a small school serving some of New York City's most vulnerable students, was in the first year of its transition from a transfer school for students who had experienced failure in other high schools to a regular college preparatory high school, which ninth grade students (and their families) could choose to attend.

The new principal had made progress in transforming the climate of the school to a more orderly one for students and teachers, for example, one in which students were expected to be in classrooms rather than in the hallway. However, progress in developing the school's professional culture came more slowly, posing challenges for

the ISA coach and, ultimately, opportunities for using NCREST data and resources. Key challenges included:

- Teachers worked largely in isolation from one another;
- There were no structures or mechanisms for collaboration among faculty around questions of instruction, let alone instances of peer review or critique;
- Teachers were wary of allowing colleagues into their classrooms or of sharing their work with others in faculty professional development sessions.

With the encouragement of the school's ISA coach, teachers at Hillcrest had participated in the ISA scoring writing conferences described above. The ISA coach, a former teacher and experienced school-based researcher, met with an NCREST researcher to discuss possibilities for leveraging the results from the ISA writing performance assessment and the positive response of the Hillcrest teachers to the scoring conferences; they agreed that data from the writing assessment and the workshop process used during the ISA scoring conferences might provide entry points to creating professional discourse about writing instruction within the school.

After reviewing their students' data on the writing assessment, the school's ISA coach and members of the newly created faculty Professional Development (PD) Committee developed a plan for the whole faculty to focus on strengthening literacy, especially in terms of students' writing, in the content areas. They would begin with a review of student writing samples from the ISA performance assessments and eventually expand to examining teachers' writing assignments and student work in classes across the curriculum. Mindful of the challenges identified above, but eager to get teachers reviewing the work of their own students, they decided to use student work from the NCREST-provided writing prompt. This would allow teachers to focus on evidence of their own students' writing skills without exposing any Hillcrest teacher to

critique from colleagues about the assignment or their instruction, because the prompt came from outside the school.

The ISA coach and NCREST researcher discussed a structure for the first professional development session. The structure that emerged was modeled on the one used at the ISA scoring conferences: Teachers read the prompt, brainstormed what a high quality student response would look like, familiarized themselves with the scoring rubric, and then read and scored three to five samples from the Hillcrest students provided by NCREST. In the small group discussions that followed, teachers identified strengths in the student writing but also significant weaknesses in how students organized and supported their positions. The teachers recognized that although, in general, students were able to identify their position on the issue as called for by the prompt, they struggled to elaborate their position with examples and evidence.

In the first follow-up session, teachers discussed different ways of giving feedback to students on their writing, including using rubrics, editing marks, model papers, and narrative comments from teachers. At the next session, teachers met in departments to discuss the opportunities they created for students to write within their individual classes and reviewed possible writing activities, including some they already do and some they might try.

Although the school had made progress in moving towards professional collaboration, the ISA coach recognized that teachers were still mostly sharing practices and not yet engaging in a critical analysis of student writing and how teachers' assignments supported students' development of writing skills. Again, in discussions with the NCREST researcher, the coach was able to identify ways to use the research organization as a resource to further the school's goals in respect to improving writing instruction across the curriculum.

The school's Professional Development Committee invited the NCREST researcher to facilitate a whole-faculty discussion on assessing and supporting student work in which a Hillcrest teacher would present a writing assignment and

student work samples for collegial feedback. The ISA coach and NCREST researcher determined that this would be a good opportunity to model a process for examining student work samples from a teacher's assignment as data for formative feedback on how the assignment might be improved. The coach identified a teacher who would be willing to present an assignment and the student writing samples that resulted for feedback.

In the Tuning Protocol process (McDonald, Mohr, Dichter, & McDonald, 2003) they used, a young social studies teacher presented ways that she supported students through the process of developing research papers on world religions. Following the protocol, staff members offered the presenting teacher "warm" and "cool" feedback (McDonald, Mohr, Dichter, & McDonald, 2003) on how the students achieved her goals for research skills and writing development. In their feedback on the session, teachers were appreciative of the courage of their colleague who put her work out there for critique and signaled their interest in continuing with this approach to professional development.

In a follow-up session, nearly half the teachers from a range of disciplines used the protocol to present assignments and student writing from their own class and receive feedback from colleagues. After the implementation of this initiative, the school saw gains in students' scores on the ISA writing assessment from the beginning of 9th to the end of 10th grade. Hillcrest has continued to use protocols as a tool for teachers to examine their instructional practice and offer each other feedback for its improvement. Recently, the PD Committee invited the NCREST researcher to facilitate a protocol at an all-faculty retreat at which Hillcrest staff examined instructional materials for evidence of inquiry-based instruction that had been collected by committee members from every classroom on one day.

Challenges

Both cases offer useful lessons about the possibilities and complexities of research, prac-

titioner and intermediary partnerships. In this section, we focus on some of the challenges to be confronted to form and maintain strong and high-functioning partnerships. These include:

- **Identifying entry points to effect change.** For change to occur, it is necessary but insufficient for all partners to perceive the need for it. Where to initiate the actions that will be effective in making change needs to be determined. These entry points must be mutually appropriate for the research partner, as well as the intermediary and the school. In the ISA case, the coach was able to establish an entry point by building on her own involvement with the ISA writing assessment, as well as on the participation of a few teachers from Hillcrest in the ISA-sponsored scoring writing conference to gradually develop a school-wide professional development focus on writing. The partnership with NCREST enabled her to use student writing samples from Hillcrest students on the ISA performance assessment to engage teachers in collaborative examination of how they support students' writing development in their own classrooms.

The struggle of the intermediary–research–school partnership that enabled Hillcrest to create the space for using research data to inform change illuminates the obstacles schools must confront to seek entry points for practices they value in the current regulatory context that demands a habit of being reactive rather than reflective.

- **Sustaining momentum.** Although it is easy for schools and intermediaries to become highly motivated to take action when they first engage with a reform, and to develop a strong change initiative, it can be challenging for them to sustain interest with the multiple demands on people's thoughts and time. Most of the MCNC schools involved in math improvement projects have taken intentional steps to sustain momentum, while others are attending to other priorities. Research partners can support schools and intermediaries to develop structures and mechanisms to sustain a focus on data use.

- **Finding cost-effective ways to measure program effectiveness.** Effective data collection and analysis requires the resources of time and funding. Initiating new habits of using data to inform decision making often means additional resources until schools internalize the value of such data use and figure out ways to reallocate existing resources. For example, Hillcrest used existing professional development time to analyze student work. The development of such habits may require the support of external funding that, in these cases, was supplied by the intermediary organizations and facilitated by the research partner.

Conclusion

The described cases demonstrate how NCREST has collaborated with intermediary organizations and school practitioners on the design of research, data collection, data analysis, and reporting processes, and then on professional development support to follow-up on the findings. Equal partners, each with a voice, each with a valued perspective, collaborate to produce new knowledge and new practices, customized to each setting. Researchers do not know better, they know differently.

Creating change by using research is a complex process, as the challenges identified within each of the cases illustrate. NCREST has developed a model in which research becomes an integral part of the process of planning and development in the organizations with which it partners. As a result, it is useful and used, rather than performed to comply with accountability requirements and then shelved.

In the MCNC case, no single model for data-driven decision making was selected, although the approach was informed by existing literature on the topic. Neither was there an attempt to impose a blueprint. Our approach was responsive to the particular project. In this case, we started by creating a structure, providing and reviewing data, setting up time to work together, helping schools to work through their planning and implementation processes, revising the structure,

and providing and reviewing new data. In each cycle, learnings were documented and implemented by the organization; they were also used in developing the next cycle.

In the ISA case, a researcher supported the school's response to the assessment findings by providing resources such as material, processes, and modeling, as well as critical conversations with the school's ISA coach, who was the bridge for the data-use initiative. The researcher also helped the school develop and implement data-use applications, such as protocols, that fit the school context. The school-researcher relationship gained credibility and trust as the practitioners increasingly saw that the researcher envisioned himself as a co-constructor of knowledge and collaborator in the change process, rather than another source of data handed down to the school without regard for local context and needs.

Although the issue of trust is a constant variable in the efforts of researchers to partner with schools, NCREST has learned that continuous dialogue and responsiveness between the partners, working alongside practitioners to seek and craft solutions, and the willingness of researchers to revise the work they are doing with schools can result in schools valuing research and collaborating productively with their research partners.

Notes

1. After 10th grade, schools have data from state tests, such as the New York Regents examinations, to use in tracking student progress and for program improvement purposes.
2. Hillcrest is a pseudonym.

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TIP