

# Recruiting Participants for Large-Scale Random Assignment Experiments in School Settings

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# Executive Summary

Recruitment is a key challenge for researchers conducting any large school-based study. Random assignment studies, however, can pose greater challenges than others because of the degree of control that researchers often require. Teachers and schools are accustomed to autonomy and reluctant to give up control, even in part.

Control is needed not only over the condition participants receive, but also over how the intervention is implemented, and may include restrictions in other areas of school and classroom functioning. Further, to have sufficient statistical power to detect at least medium-sized effects (effect sizes of .20 standard deviations or larger) and allow for attrition, researchers typically need to obtain samples of 30–60 teachers or schools.

We report here on our experiences in recruiting participants for random assignment experiments in public primary and secondary schools, often across midsize and large school districts. Our perspective is based on over twenty current and completed randomized controlled trials (RCT) in K–12 school settings conducted by SRI International, including studies of educational technology, literacy, mathematics, science, instructional materials, teacher professional development, and student behavioral supports, following What Works Clearinghouse standards for RCTs.<sup>1</sup> A list of such studies appears in the Appendix, with an abstract for each study. Considering our experience across these studies, we reflect on how we approached the recruitment problem and what worked during our efforts. In general, recruitment rarely goes according to plan, often runs into unexpected challenges, and typically requires more resources than originally anticipated. Project leaders are often called upon to respond creatively to these challenges. As we examined our own projects as case studies of how project leaders manage the problems, patterns of successful projects emerged. Given the paucity of information on the challenge of recruiting, we were unable to apply a formal literature review or research method to organizing our effort, which is essentially a synthetic analysis of common patterns in multiple cases. We acknowledge limitations of this method. We aim to stimulate a broader conversation about recruitment, rather than to definitively answer questions. At the same time, the preliminary insights reported here may be of some value to others in the field who face similar challenges.

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<sup>1</sup> [http://ies.ed.gov/ncee/wwc/pdf/reference\\_resources/wwc\\_procedures\\_v3\\_0\\_draft\\_standards\\_handbook.pdf](http://ies.ed.gov/ncee/wwc/pdf/reference_resources/wwc_procedures_v3_0_draft_standards_handbook.pdf)

Our comments are organized in six topics corresponding to the aspects of an overall recruitment process:

1. Study design
2. Intervention packaging
3. Planning a recruitment process
4. Designing recruitment messages
5. Running a recruitment campaign
6. After recruitment.

Although we describe these topics in a linear manner for clarity, in fact the recruitment process can have parallelism and include iterative cycles. Further, the process of recruitment usually requires attention to multiple levels (e.g., districts, schools, teachers) simultaneously because individual participants are nested within classrooms, schools, and districts and buy-in must occur at each level. The conclusion summarizes our recommended phases of a recruitment process and suggests that research proposals and peer review processes pay more attention to the details of recruitment. The following page summarizes our recommendations.

# SRI Education Recruitment Recommendations

## Design:

Key recruitment considerations during design of a study are

- Unit of randomization
- Sampling from a population
- Finding a balance between a desired intensity of intervention and ways to contain the intervention to only a portion of a teachers' work life
- Reducing data collection burden
- Considering using multiple cohorts
- Design options that give all participants the intervention at some point.

## Intervention Packaging:

It is important to package the intervention to ensure a strong fit with the structure and policies of schools or districts and needs of teachers while still maintaining the core of the intervention and meeting the researchers' goals for the study. Considerations may include:

- Managing the productivity issues associated with participating
- Highlighting alignment of participation with broader goals
- Designing financial incentives to offset perceived extra costs.

## Planning the Recruitment Process:

During the planning of the recruitment process, we find it worthwhile to

- Consider the multiple levels of K–12 school systems
- Get an early start to recruitment in tandem with a well-articulated plan
- Leverage local connections
- Tap in to professional networks.

## Designing Recruitment Messages:

We have found the following valuable in planning recruiting messages:

- Communicate the value of the study in ways that will resonate with recruits, convey a clear image of the program, highlight costs and benefits, describe layers of reasons to participate, identify requirements and expectations, and address typical concerns raised by participants
- Develop a consistent approach to talking about random assignment
- Support consistent messaging in a variety of useful formats, including handouts, presentations and demonstrations, a website, and video
- Create an appropriate level of commitment by requiring application to the study.

## Campaign:

During a campaign, important elements include:

- Weekly team conference calls
- A shared recruitment database
- Following a sales pipeline metaphor
- Operating on both broadcast and interpersonal fronts simultaneously
- Assigning interested participants to a consistent point of contact
- Remaining flexible and adaptive in face of emerging recruitment experiences
- Maintaining team spirit and motivation through dispiriting times.

## After Recruiting:

After recruiting, it important to follow through on details such as:

- Prompt notification of participants
- Inducting the participants into the study
- Building rapport and relationships

# Study Design

In our experience, successful recruitment begins while the study is being designed because the design informs all aspects of the recruitment process. During the design stage, researchers need to balance factors that could improve the quality and value of their study with what is being asked of participants, which is a central issue in how easy or difficult recruitment will be. Issues to consider are the unit of randomization, sampling, balancing intervention intensity with the burden on participants, and data collection burden. Many of these, if not all, are decisions that should have been made at the proposal stage. After discussing these issues, we describe two design options that can sometimes ease recruitment challenges by enabling all study participants to receive a desired intervention. Other non-design-dependent factors such as the location of the study, the structure of district and school decision-making, and other ongoing initiatives also affect the recruitment process, and those are discussed later. Please note that we will sometimes use the word “program” and sometimes the word “intervention” in describing what the experiment is manipulating; in different study contexts, one or the other term fits best.

Other framing issues such as ethical and legal considerations may rise from the beginning of a project, during the recruitment stage. The top ones would be voluntariness, privacy, and confidentiality. Additionally, there are also the ethical issues around equity of participation, making sure that we, researchers, are providing something of use and value to the participants during the studies, without doing any harm. Some school districts also have human subjects policies that need explicit compliance. Although these issues are highly important, they go beyond the scope of this white paper and we will not discuss them in further detail.

## Unit of Randomization

The research design must specify the unit of random assignment—most likely students, classes, teachers, or schools or, less commonly, districts. There are design trade-offs ranging from the size of the study (if randomization is at a higher level) to contamination and crossovers (if randomization is at a lower level) to implications for how to manage communications during recruitment.

If the data are clustered (because of the nested nature of students within teachers within schools), then the highest level of the clustering hierarchy drives statistical power. Therefore, studies with randomization at higher levels (e.g., schools or districts) often have to be at



larger scale (and therefore have larger recruitment efforts) than studies with randomization at lower levels (e.g., students). On the other hand, if students or teachers will be randomly assigned, contamination is a concern because students or teachers within the same school are somewhat likely to share resources regardless of which condition they have been assigned to. This problem can be most acute if randomization is done at the classroom level, with teachers giving both treatment and control conditions to different classes. Before deciding to randomize at a lower level, researchers need to pay special attention to whether their intervention can be rolled out in such a way that these risks can be contained. Special procedures to avoid contamination may also make recruitment harder because asking teachers or students to avoid sharing may violate school norms. When schools are randomized, procedures to avoid contamination are less of a recruitment concern because less sharing occurs between schools.

In addition to decisions that affect the scale and quality of the study, design decisions have implications for how the study may be perceived and, therefore, the likely challenges of the recruitment effort. If students will be randomly assigned, a challenge for recruitment will be obtaining school buy-in to allow researchers to assign students to specific teachers, specific materials, or specific instructional programs. Such assignments are typically controlled by schools and are subject to parents' involvement. Concerns about fairness often come up during recruitment; people are reluctant to volunteer for situations they believe are not fair. Such concerns may be greater when random assignment is at lower levels as participants in treatment and control groups may be aware of each others' condition, (e.g., if some teachers or students in the same school receive something that others do not). If some schools will be in a business-as-usual condition and others will receive something new, however, fairness concerns can arise even when random assignment is at higher levels. Overall, regardless of the level of random assignment, we have found it important to build buy-in across all levels (e.g., students and their parents, teachers, school principals and district leaders).

## Designing a Sampling Strategy

It goes without saying that larger samples are more difficult to recruit than smaller ones. A related consideration is allowing for attrition; if participants are likely to leave the study after random assignment, recruiting more participants will be necessary. Consequently, care is needed during the design of large-sample studies to keep attrition low and sample sizes reasonable.

Randomly sampling participants from a population during recruitment is extremely rare in education studies (e.g., choosing which schools in Texas to recruit by random selection from a list of all schools). In practice, a sample population is recruited purposefully but non-randomly (with random assignment occurring among the units within that sample). Important technical issues include considering whether there are subpopulations for which you might want to

estimate treatment effects, and/or if you might want to generalize the findings to particular populations. These come into play in identifying the strategy for purposeful sampling. Careful consideration of such issues can pay dividends in terms of the generalizability of findings.<sup>2</sup>

While making these choices, study designers consider what characteristics of a broader population should be represented in a study sample to support desired generalization. Choices about who to sample can also affect the ease or difficulty of recruitment. For instance, in a recruitment effort conducted by the SimCalc research team in Texas, regional differences were considered important. Therefore, the researchers decided to recruit in particular regions including two urban areas (Austin and Ft Worth), the remote western region of Texas, and the unique communities of the Rio Grande Valley near Mexico. The team also wanted to include Houston or Dallas, which have larger African American populations and very large school districts, but both declined to participate. In recruiting for the ASSISTments study in Maine, regional differences were less important; the researchers sought schools of different sizes (public school sizes in Maine vary widely) and different levels of mathematics achievement. How the target for sampling is defined can make the recruitment more or less challenging. In Texas, a very large state, it was easier to concentrate on defined regions than on the whole state; in Maine, the focus on school size and prior achievement reduced the need to include very remote regions of the state, which would have imposed travel burdens and were not expected to respond to the intervention differently from other schools of similar size and similar prior mathematics achievement.

Sometimes, especially in efficacy (as opposed to effectiveness) studies, it may be important to consider selecting a sample that is conducive to implementing a program with fidelity. For example, the purpose of the Evaluation of the College-Ready Writer's Program is to assess the efficacy of a new program the National Writing Project developed in response to the Common Core State Standards. For this recruitment effort, the researchers invited Local Writing Project sites to apply to participate in the study and selected those that had experience offering other similar professional development programs to increase the likely implementation fidelity.

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2 Tipton, E., Hedges, L. V., Vaden-Kiernan, M., Borman, G. D., Sullivan, K., and Caverly, S. (2014). Sample Selection in Randomized Experiments: A New Method Using Propensity Score Stratified Sampling. *Journal of Research on Educational Effectiveness* 7:114–35.

## Balancing Duration, Intensity, Impact and Participant Burden

Often researchers expect to see a relationship between the duration and intensity of the intervention and the magnitude of expected impacts. A longer duration and greater intensity intervention may increase expected impacts, thereby reducing the necessary sample size. However, it clearly is far more difficult to recruit (and retain) teachers for an experiment that lasts longer and involves more substantial changes in work practice than it is to recruit college sophomores for a lab study that lasts 2 hours. Further, it may be more practical or participants to engage in a high intensity of a new practice over a shorter period of time. In the design phase, researchers must carefully consider the likely benefits of higher duration and intensity and balance them with the increased demands they place on participants and the corresponding challenges in recruiting and retaining them.

In all the example studies that we considered, teachers who were assigned to the treatment condition were expected to make substantial changes to their work practice (e.g., switch to an entirely new curriculum or change the way they assign and review homework). In these cases, assignment to condition constrained teachers' choices of how they did their jobs, and this is an important burden for researchers to consider. For studies in which the control group is a business-as-usual condition, the control group may face fewer constraints, which may ultimately be perceived as a benefit to the less enthusiastic participants who are assigned to it.

For long-term, more intrusive experiments, we have found it valuable to consider how the intensity of the intervention might be faithfully implemented within reasonable bounds for the implementing teacher. For the SimCalc research, the team wanted teachers to adopt a fairly radical change in how they taught the mathematics topic of “proportional reasoning” using a novel technology, but the team was willing to limit the duration of the change. Consequently, a replacement unit model was used, in which the intervention was positioned as a one-for-one replacement for the materials usually used to teach a particular unit for 2–3 weeks. Having a limited duration reduced teachers' need to make a long-term commitment to change in instruction and made recruitment easier, but the length of time was long enough for measuring substantial effects and observing realistic implementation difficulties. For the ASSISTments research, the intervention developer focused on a particular instructional practice, homework. Here again, a fairly intensive change was sought but only to a slice of a teacher's overall daily routine, homework assignment and review, leaving other classroom practices untouched.

Of the studies discussed here, the Reasoning Mind efficacy study is the most ambitious. The researchers are asking teachers to switch from the curricular materials they use to teach fifth-grade mathematics to technology-based, integrated instruction and practice materials for an entire school year. The rationale for studying the full package of Reasoning Mind was that the

likelihood of the program achieving its desired impacts through implementing all the integrated components outweighed what was being asked of participants and the recruiting challenges the design posed. Further, schools are adopting new mathematics curricula to comply with the Common Core standards; the offer to use a completely new curriculum at no cost was received favorably by schools. We imagine that schools will be less receptive in a few years, after they have already committed to the selection and purchase of particular materials for the Common Core. (Indeed, another concern we encountered is that schools worry that they may later be charged for materials they initially receive for free.)

One concern about studies of program effects is that they are often conducted before teachers and students have had sufficient time to master the use of the new program; measuring effects while participants are still coming up to speed on a program can result in under-measurement of the eventual effect. RCTs may be especially prone to this because it is difficult to require participants to “stay in condition” for a longer period time. However, novice implementers may in turn reduce the quality of implementation and undermine the interpretation of the study.

This was an important consideration for the researchers on the Project-Based Inquiry Science Efficacy study, who recruited schools that were new to the curricular intervention. The study team knew from prior research that typically two rounds of implementation are required for teachers to become familiar with new instructional materials and the pedagogy underlying them. For this reason, assignment to condition for schools and teachers had to last 2 years.

In the ASSISTments and Reasoning Mind experiments, the intervention developers similarly wanted a full warm-up year for teachers to get used to the technology platform and master the new pedagogy, so the measurement of the main contrast was designed to occur in a second school year with a different cohort of students. Therefore, as in the Project-Based Inquiry Science Efficacy study, assignment to condition for teachers or schools had to last 2 years. The researchers concluded that the benefits of measuring impacts during more mature implementation outweighed the challenges of conducting a longer study. To help ease the burden of this design, the research team reduced the amount of data collected during the warm-up year.

## **Demands of Data Collection**

An RCT addresses the extent of measurable impact. When a study can collect valid measures of implementation, key mediators and moderators, and multiple outcome measures, it can also support program and theory development and also answer the basic questions of whether, how, and for whom the intervention works. The National Writing Project’s SEED (Supporting Effective Educator Development) grant provided elementary school teachers with 45 hours of

professional development on writing instruction to support them in shifting their instructional practices to align with Common Core State Standards. By measuring implementation, proximal outcomes (impacts on teacher practice), and distal outcomes (impacts on student writing), the evaluation was able to trace the causal chain from program to teachers to students. However, this required substantially more data collection in the form of teacher participation and teacher surveys and interviews, in addition to pre- and post-testing of students, than if the study had narrower goals. The design period is critical for balancing the potential breadth of the study with participant burden because as for duration and intensity, the more that is asked of participants in terms of data collection, the greater the challenge in recruiting them and the higher the risk of attrition during the study.

## Using a Multiple-Cohort Approach to Make Recruitment More Manageable

Doing recruitment all at once is difficult, and sometimes research designs can be adjusted to spread recruitment across multiple years. One such design option is staggering recruitment. In the SimCalc research, the team decided to recruit for the seventh- and eighth-grade studies separately in different years, staggering individual studies over time. With the lessons learned from seventh-grade recruitment, eighth-grade recruitment was much easier. In the ASSISTments study, the research team planned a two-cohort design. The first pool of schools was recruited and randomly assigned in the first year. The second pool of schools was recruited and randomly assigned in the second year, staggering the experiment in two cohorts. Assuming no major contextual changes in the 2 years (an assumption that should be carefully considered), the data collected from both cohorts can be combined to reach the desired sample size, and a single analysis can be conducted to estimate the overall impact of the intervention.

## Designs Where Every Study Participant Receives the Program

Another design consideration is to make sure that every participant receives something perceived to be of value during the experiment (if plausible) or eventually. Financial incentives (considered later) help but alone are often not enough to secure teachers' participation. Much more typically, schools and teachers see the offered program as addressing an existing need and want the opportunity to try it. To accommodate this, in several studies (e.g., the SimCalc seventh-grade study, ASSISTments, the SEED Evaluation, the Evaluation of the College-Ready Writers Program, and the efficacy study of Project-Based Inquiry Science), we used a *delayed treatment* design. Schools or teachers were randomly assigned to receive the intervention

immediately or to wait for some time to gain access to it. From the experimental perspective, those who were waiting maintained business-as-usual practices that would provide the needed contrast. This proved to be especially attractive to the 42 schools participating in the Project-Based Inquiry Science Efficacy study. The schools were all in one large urban school district and randomly assigned either to the treatment condition that received a new comprehensive curriculum with teacher materials and accompanying science materials for students or to the business-as-usual control condition. District leaders were initially hesitant to join an RCT that they assumed would benefit some participating schools but not others. Once introduced to the delayed treatment design, they viewed it as a fair approach that would make participation of value to all schools.

In the SimCalc eighth-grade study, we took a different approach, giving teachers one of two equally valuable offerings. In the replacement unit design, the investigators believed they could safely assume that the learning outcomes of the two instructional units on linear functions and data analysis were relatively independent of each other, and highly desirable professional development was available for both topics. The experiment was thus designed to randomly assign teachers to one or the other replacement unit and associated professional development. Teachers participating in the data analysis intervention served as the control group, and the other group of teachers implementing the linear functions replacement unit was considered the treatment group.

Yet a third choice was made in the Reasoning Mind study. Here, the belief was that schools would find the offer of 2 years of free access to the Reasoning Mind curricular product valuable but might not want to participate at all if they could end up in a control group and have to wait 2 years to use the product. The focus of this study was fifth grade. We decided to randomize schools to have free access to either the fifth-grade (treatment condition) or the second-grade (control condition) version of the product. This way, all schools in the study would get something they perceived to be very valuable right away. The availability of the second-grade product in the control group schools would have no impact on the learning outcome in the fifth grade during the two experiment years.

From high-level research design perspective, the considerations we discuss above, such as duration, intensity, multiple cohort approach, or where each participant receives the program all fall into the broad and critical topic, that is, the design of counterfactual.

# Intervention Packaging

We posited that one factor that may make recruitment more challenging in RCTs than in other study types is researchers' need to control the intervention received by each participant. Because participants will have less control, reducing the burden they experience is important, and this falls to the researchers to understand and address.

Consequently, running an experiment in schools may involve packaging an intervention to fit local circumstances and to make implementation and research less burdensome. This does not mean redesigning the intervention. In fact, this packaging *must* retain the core features of the program to be tested; otherwise, the study will not have external validity. Yet from our experience, it would be a mistake to consider an intervention fixed and unchangeable. Three key issues in intervention packaging—productivity, alignment, and extrinsic incentives—must be addressed in an iterative cycle in designing the study and the recruitment approach. At the heart of all three is identifying the incentives—intrinsic and extrinsic—that are critical to recruiting participants. To accomplish this goal, researchers need to think from participants' perspective and offer something that is truly valuable, minimally intrusive and aligned with their needs. Sometimes the program developers may resist talking about packaging the intervention, but typically we have found that once they understand the extra burden to participants for being part of a study, they recognize the need to consider how to ease the effort for participants. Overall, we have found that modest changes around the edges of the intervention can make recruitment and implementation much easier and can also lead to a higher quality research design.

## Productivity

One key issue in introducing a new intervention, especially when data collection will require additional participant time, is that teachers have a set amount of time to accomplish all their normal teaching responsibilities. Although researchers can sometimes offer teachers nominal compensation for participation, they cannot create more time for teachers to do the additional work. A key task in intervention packaging therefore is for researchers to think of strategies to enable teachers to ramp up on the new intervention while also fulfilling their regular teaching duties and participating in the required data collection.



In the ASSISTments study, it was fairly easy to make a good case to teachers that the technology could reduce work compared to their typical ways of assigning and grading homework. (This is unusual; many technologies introduced into schools tend to make more work for teachers in the short term if not long term as well.) The ASSISTments platform is web based, and every individual student already has access to a laptop because of Maine's one-on-one computing initiative. The use of ASSISTments can also open up class time for teacher instruction through a quicker start to class and more focused homework reviews because students receive immediate feedback on their homework and teachers have the opportunity to review a report on students' homework performance before or at the beginning of class. Although we knew these potential productivity gains would be attractive to teachers, we were worried that the amount of time it would take to enter homework into the ASSISTments system could be perceived as burdensome. Thus, the developers collected every textbook used by participating schools and entered all the possible homework problems for the teachers, saving them weeks of potential work.

The SimCalc studies did not have this inherent productivity benefit, and teachers needed to take additional time to install the software and arrange for access to computers in a lab or laptop carts. Therefore, we directed much effort to planning logistics, making it as easy as possible for teachers to do each step necessary for conducting the study. This included providing the teachers with a box containing everything they would need for implementation and data collection (e.g., workbooks, packing tape and prepaid mailing labels for returning data to researchers), just-in-time supports, and coherent instructions presented through multiple media. Every step of the process was considered, and the team worked with the developer to package materials for clarity and ease of use.

For the Ready to Learn Prekindergarten Transmedia Mathematics study, support for the teachers was considered essential. It was understood that the integration of new technology along with the curricular supplement would certainly require a teacher's time and an added commitment to learning about a technology product the teachers most likely had never encountered. Therefore, the study design included on-demand technical support and ongoing coaching.

These examples show how researchers worked with intervention developers to increase teachers' productivity (or at least minimize the decrease in productivity) during their initial program implementation. Such adaptations are common in efficacy studies where programs are implemented under supportive conditions. Reporting on studies in which teacher burden was meaningfully reduced should be clear about how the intervention differed from typical use scenarios, for example, to support others in making appropriate generalizations.



## Alignment

A related and highly important issue during intervention packaging is alignment with broader mandates within districts or states. Schools and teachers choose to participate in studies that will enable them to be better aligned with the directions their districts or states are heading and avoid studies when they sense a conflict. Designers often have choices in framing a study that can heighten perceived alignment. For example, “SimCalc” originally meant “simulations for calculus,” which was appropriate for its original higher education focus but not for the intended middle school mathematics experiments. Consequently, the study team never told participants that “Calc” meant calculus for fear they would see it as misaligned with their teaching goals. The team went to great lengths to focus the intervention on the middle school topic of “rate and proportionality,” a topic that most teachers would recognize as very important, that was clearly called for in the Texas state standards, but that was known to be hard to teach. Indeed, the team chose to conduct the study in Texas in part on the basis of the quality of the alignment of the intervention with the statewide goals. Highlighting this alignment made recruitment much easier.

Likewise, for ASSISTments, the team could have highlighted “intelligent tutoring” as an advanced technology, but states do not directly call for intelligent tutoring – and thus this might have been seen by schools as potentially irrelevant to their mission. However, Maine has had a statewide one-on-one computing program for almost 10 years under which every middle school student receives a laptop and may take it home for homework. Despite the availability of the devices for homework, the state does not provide any software to make homework on the laptops easier or more valuable. Hence, the team communicated the purpose of the ASSISTments study as improving the effectiveness of homework practice and making good use of student laptops. The focus on a state-specific issue or challenge can be more compelling than a focus on a more general advance.

## Financial and Other Potential Incentives

Our philosophy across all studies has been that financial incentives offset additional costs that teachers would otherwise bear for their participation but are not a primary reason to participate. Through extensive experience conducting research across a range of designs, we have come to see that the intrinsic value of participating in research (e.g., to voice an opinion, to try a new strategy that may improve performance, to participate in a new program with colleagues, or to get help with an established need) are a much stronger incentive than any financial compensation researchers can typically afford. Instead of thinking of financial compensation as an enticement, we use financial incentives to counter the *disadvantages* of participating. Accordingly, we have tended to peg the incentive amounts to the approximate number of hours

teachers will spend doing extra work for the research (e.g., completing surveys, distributing materials, participating in professional development) multiplied by a reasonable hourly rate in the teachers' home state. For example, teachers are paid \$25 per hour for participating in ASSISTments training and Reasoning Mind offers up to \$1,000 for teachers who fulfill all professional development and certification requirements.

An important consideration in designing financial incentives is to make sure incentives compensate those who are shouldering the burden of participation. In studies where the initial recruitment occurs at the district level, districts may receive a financial incentive to counter the potentially negative perceptions of being assigned to the control group. A typical example is the Evaluation of the College-Ready Writers Program, in which treatment districts received free professional development and control districts received grants of \$5,000 per year that they could use for any legitimate educational purpose other than writing professional development for grades 7–10. While this might offset district concerns about being in the control group, paving the way for recruitment, teachers bear the time burden for study participation. As a result, the study provided incentives to them as well, tied to completion of major data collection activities, to promote effective data collection. Another twist on the principle of using financial incentives to offset the costs of someone's time is in studies requiring districts to provide relatively extensive extant data for analyses (or some other type of personnel time devoted to supporting the study). In such cases, incentives may go to the district office to support staff time necessary to fulfill the requests.

# Planning a Recruitment Process

Recruitment is a process that unfolds in several stages over an extended period of time and requires the coordinated action of multiple staff members. As such, a good plan for the recruitment process is essential before actual recruiting begins.

## Consider Multiple Layers of the K–12 System

The first factor to consider in recruitment is the number of layers of the educational structure that need to be addressed in the process. In a typical K–12 system, students are organized into classes, taught by teachers who are members of a school faculty, and then multiple schools often make up a district. Here, we consider only districts, schools, and teachers (and set aside the somewhat different issue of obtaining parental consent for student participation). Securing participation at one level may help build support at other levels but is not a guarantee of overall buy-in.

- **Districts**—Attaining district-level support may be the first step in the rollout of the recruitment process because it enables the research team to reach many schools.<sup>3</sup> District approval, however, especially if it is not much more than consent for school and teacher recruitment to proceed, may produce little commitment from other levels to do the work required by the study.
- **Schools**—Principals may exercise substantial discretion and authority within their schools. A supportive principal can facilitate teachers trying new strategies or programs and can address parental concerns if they arise. A supportive principal can also be an asset later in the study, for example, if problems occur with teachers' compliance to data collection requirements. However, principal support is not always indicative of teacher buy-in.
- **Teachers**—Teacher-level recruitment has the benefit of securing the commitment of those who will probably do the bulk of the work in the study. Given their place in hierarchy, however, teachers may not have the authority to ensure supportive conditions for

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<sup>3</sup> Districts sometimes have specific policies or requirements regarding IRB, research data collection and data use, or resource allocation. In such cases, it would be most efficient to learn early on about such policies or requirements to ensure the recruitment process (and later on the study) goes smoothly.

implementation (e.g., time on the school calendar or substitute teachers so that teachers to attend required professional development).

Because the interests of actors at each level are not always aligned yet all can play key roles in ensuring study success, multiple parallel strategies at different levels need to be implemented and coordinated.

Once the levels required for a particular study are understood, the next step is determine where to start. Knowledge of district and school decision-making patterns, which differ by state and context, is crucial for making a sound decision. For example, in Maine and West Virginia, where the ASSISTments and Reasoning Mind study teams recruited, teachers have a considerable voice in instructional decisions, so the teams approached teachers first and then quickly included their principals and district superintendents. However, in Texas where the SimCalc team recruited, the law requires obtaining district superintendents' approval before recruiting on the teacher level. The Project-Based Inquiry Science Efficacy study team sought to recruit schools within very large urban districts that had centralized decision-making processes. In that case, working top down was the only viable and perhaps the most efficient and effective approach. In other projects, a dual recruitment approach where the team notifies schools and generates interest while simultaneously reaching out to the districts with research applications has proven beneficial. At times, starting with the schools first has created the momentum for securing buy-in so that district approval, if needed, is more of a formality.

## **Determine When to Commence Recruiting**

The second consideration is when to begin recruitment. We have typically worked backward from when teachers or schools need to be assigned to conditions. Often the first professional development workshop is held in the summer before the school year when the intervention needs to be implemented. Teachers therefore need to be randomly assigned and notified of their conditions by early May so they can be prepared to attend the summer workshop. Recruiting a large sample of participating schools or teachers may take up to a year depending on such factors as the required sample size, the intervention, and nature of the experiment. Thus, the latest time we would recommend for beginning the process is January (4–5 months in advance). For the first cohort in the ASSISTments study, the project started in spring (which is unusual) because of specific situations in the state of Maine. This left only 2 months for recruitment, which was a struggle. We had too few schools in the first cohort but made up for it by recruiting more in the second cohort through a 1-year-long recruitment effort. For the Reasoning Mind study, we began in October and allowed 8 months for recruitment.

## Leverage Local Connections

The frontline recruiters must be chosen wisely. We found this to be one of the most critical elements of getting the recruitment to work. We have often sought to choose partners for this role early at the proposal stage, partners who are credible with the target populations and may already have trusted relationships. The best local contacts can also leverage their relationships in the community to gain the attention of target audiences. An outsider cold-calling a school or sending emails to people they have not met is less likely to receive a response than someone local who can work through his or her professional network. In SimCalc, the team partnered with regional Educational Service Centers (ESCs) in Texas to do recruitment and provide the professional development workshops. ESCs had two advantages as recruitment agents: They had established relationships with teachers in their region (and thus were not viewed with suspicion) and were already credible service providers to the schools. Each ESC was given a contract with clear recruitment quotas. This strategy worked very well. In Maine, representatives from the University of Maine did some of the recruitment on the basis of relationships they had with educational leaders in the state. The intervention developer hired as the other main recruiter an experienced local teacher who was also a veteran user of the intervention; he spoke to teachers with empathy for their jobs and with conviction about the benefits of the program. In West Virginia, for the Reasoning Mind study, the state Department of Education was willing to send all schools an introductory email about the study, which generated interest from some principals.

A related consideration is how to take advantage of existing communities, organizations, and events in the target population. Getting the word out through existing networks and at existing events is much easier than through new ones. Thus, while planning a recruitment process, we recommend considering where target school leaders and teachers naturally congregate and how they typically get news. For example, in Texas the team identified TASM (Texas Association of Supervisors of Mathematics) as an important organization with a key event we could attend. In Maine, we checked the calendars of similar gatherings of school principals and of mathematics instructional leaders. School news often makes the local papers in Maine and is well read (this is less true in Texas); an early article in the Bangor Times was helpful in getting the word out to teachers and principals. The Project-Based Inquiry Science Efficacy study team created brochures that they handed out at national and regional professional conferences, such as those sponsored by the National Science Teachers Association.

Finally, incentives can be considered for teachers or principals to help recruit their peers. Given the two-cohort design of the ASSISTments project, the team encouraged treatment principals and teachers in the first cohort to share their experience with potential recruits for the second cohort. Teachers and principals who did so received a referral bonus for each school that applied to the study upon their recommendation.

# Designing Recruitment Messages

The framing of a research study to convince peer reviewers to rate a proposal highly has almost nothing to do with the best framing to attract recruits. Considerable thought must be given to the messaging for research study participants before recruitment begins and as recruitment proceeds. A metaphor for this would be shift from a “research” orientation to a “customer service” orientation, regarding the participants as the customers to be served. This is also a time when the project leader should consider if any new kind of staffing or capabilities you need for this—e.g. graphic designer, practitioners to help shape the messaging, or someone with marketing expertise.

## What Should Be in the Messages

In our experience, the recruitment messages must convey five points. First, as with all selling, people are motivated more to relieve pain than to make their world a little bit nicer. Thus, it helps to frame the study in terms of teachers’ perceived problems and important, immediate needs. The message should be clear about how the study will address these problems and needs. For SimCalc, the perceived problem was the difficulty of teaching particularly challenging and important curricular topics well. For ASSISTments, it was making homework less burdensome and more valuable. In these two recruitment efforts, the teams tended to avoid broad pronouncements (such as national needs to close achievement gaps) and instead pinpointed specific local needs and concerns.

Second, the message also must give a clear image, in jargon-free language, of what the intervention will do for the participants. For example, the team characterized participation in ASSISTments research as “making homework more productive and effective” rather than “trying out an intelligent tutoring system.”

Third, potential costs and benefits should be summarized in the message. ASSISTments is free, and the Reasoning Mind curriculum is provided to participating schools at no charge during the study. Consider also nonmonetary benefits of participation, such as the provision of high-quality professional development or making the analysis results available to all (e.g., in the case of ASSISTments, best practices for making homework more effective).

We have tended to identify specific benefits at several levels: for the individual teacher, for the students and their schools, and for others in the state and country. For example, teachers will receive professional development and tools to support formative assessment or differentiated instruction; students will receive better support for learning; schools will gain insight into what similar but higher performing schools use as best practices; the state and nation will benefit from good research on homework (a somewhat controversial and pervasive issue). Ancillary motivation can arise when participants feel they are playing a role in important research funded by well-known agencies, such as the National Science Foundation, Department of Education, or the Bill & Melinda Gates Foundation.

Fourth, requirements to participate (e.g., only seventh-grade mathematics teachers) and expectations of participants (e.g., teachers are expected to teach seventh grade for 2 years in a row during the study) should be succinctly stated.

Finally, messages should be designed to address the typical concerns of participants. Additional concerns can include:

- Alignment and fit with local mandates and context
- Opportunities to customize and adapt the intervention
- Expected ease or difficulty of implementation
- Continued availability of the product after the study ends
- Availability of support during the study
- The opportunity cost associated with potentially ending up in the control condition (or whichever condition is considered less preferable)
- Privacy and protection of teacher and student
- Ability to drop out of the study later (all our studies have had voluntary participation, as is required by IRB).

## **Communicating about Random Assignment**

In our experience, planning how recruiters will talk about random assignment deserves discussion ahead of time. We strive for explanations that make both conditions equally desirable, to the extent possible. Advantages of a delayed condition, for example, include the opportunity to use the program after it has been better tested and further refined. Advantages of a control condition can include the need to do less work, the opportunity to share



established and potentially highly effective practices with researchers (the control condition, after all, may work better), and the value of the data about the school that will become available through participation in the study. We also emphasize the importance of random assignment as a scientific procedure and the contribution a participant makes by participating. We also seek to make it clear that suitable incentives are provided in both conditions, so neither is more financially rewarding.

## Message Formats

In all our studies, preparing consistent and coherent messages in a variety of formats has been useful. One-page flyers, postcards, or short brochures are mailed to teachers, principals, or district administrators or handed out at meetings. Face-to-face presentations are usually an essential aspect of recruiting, often with demonstrations. A simple website can serve as a central place for sharing information about the study, collecting email addresses of potential recruits, and providing application forms for people who are interested in participating to download and submit. Sometimes, a short video about the study can also be very useful in getting a consistent message out to the target audience. Along with any of these bulk messaging techniques, following up in person with potential recruits is always important.

Formatting messages as templates has advantages for personalization and consistency. Recruiters can personalize templates without needing to write their own message. Using templates keeps messages clear and consistent and gives every recruiter an equal opportunity to make a good first contact.

As many recruiters will have to answer these and additional questions, preparing a “frequently asked question” list can be very valuable and helpful.

## Applying to Participate

Finally, in many of the studies referenced in this paper, we have required recruits to go through the formality of applying to the study and being accepted (even if, in reality, almost all will be accepted). The main reason for this is to develop commitment to the project. We design application forms so that thought is required to complete them, and we require signatures from both administrators and teachers as an indication of commitment. (The signatures are nonbinding because participants are all volunteers who can drop out at will.)

An example of how we made sure we were recruiting well-informed districts is from a study of Common Core-aligned professional development on teaching writing (See the College-



Ready Writers Program in the appendix). Local professional development providers recruited districts willing to partner with them for 2 years of professional development. As part of the initial recruitment process, SRI required a senior district administrator to sign a form that explained the program and requirements of each condition, thereby indicating a willingness to be randomly assigned to either condition. Senior researchers then scheduled a 20-minute telephone call with the administrator in each potential district to go over the information, explain the random assignment process, and enable the administrator to ask questions and raise concerns about the program or the assignment conditions. The formal sign-off coupled with the open conversation provided leverage later on in the study when districts considered withdrawing. This frank, up-front discussion of randomization has been critical to supporting the conduct of the RCT.

In the SimCalc project, we required teachers to have their school leaders co-sign their application to make sure they have talked together about the study and agree. For ASSISTments, we refined this to produce an application package, with separate forms for the district superintendent, the principal, and each seventh-grade teacher in the school. The application lays out expectations of participants, as well as the financial incentives, so teachers can confirm they are aware of what they are signing up for. Further, the application collects some further basic data about the school and the teachers to ensure the school meets recruitment requirements, such as availability of technology and policies that align with the study requirements (e.g., for a homework study, that the school requires students to do homework) or whether the characteristics of the school or teacher meet the sampling criteria. An application is either submitted or not, making a school's participation status clear to both the school and the researchers, avoiding miscommunication and disappointment on either side.

# Running a Recruitment Campaign

Recruitment can best be understood as a campaign. As in an election campaign, the goal is challenging, the process unfolds as unforeseen obstacles arise, and many people must work together in a coordinated manner to make it happen.

At the center of the campaign, we have typically held weekly conference calls among all the key stakeholders—the frontline recruiters, the intervention provider, and the researchers (who sometimes include partners beyond SRI). This is necessary to handle emergent issues and to keep the work appropriately coordinated. Recruiters often need clarification on what they can say or cannot say to teachers or schools and help in addressing questions from potential recruits. Training frontline recruiters, especially if all is done by phone/email, helps with consistency and clarifications. The intervention provider can help clarify the intervention and its implementation in school and may need to make additional information or support materials available as issues emerge. Researchers need to respond flexibly to recruitment challenges, considering what best preserves the overall intent of the research given that perfection is out of reach. A crucial component of the weekly coordination meeting therefore is to share information across the team on what is working, what obstacles have been encountered, and what adjustments are recommended.

A successful campaign, in our experience, operates on many simultaneous fronts but does not overwhelm the target participants. One front may be broadcast-oriented, seeking visibility through various media outlets, mention in newsletters from networks that schools participate in, and presence at events and conferences. Another front may involve substantial time on the ground, for example, driving from district to district and meeting one-on-one with key decision makers. Some activities may be led by the intervention developer (who may already have access to some target populations); yet particular activities (such as reassuring district officials about the integrity of the research) are best done by the research team. Determining what the important work currently is and coordinating assignment of that work among the project staff is a key function of the weekly conference calls. In addition, once communication is established with a potential recruit, providing a single point of contact for the study is helpful. This streamlines communications and avoids confusion with messaging.

An essential tool is a shared database of all schools (or potentially each teacher) in the target participant population. The database should contain relevant demographic information on each school, such as state standardized test performance, AYP (Adequate Yearly Progress), Title 1 school

or not, and enrollment size. Early in the process, this database can help recruiters focus on particular groups of schools. For example, in the SimCalc study, the team gave each ESC a prioritized list of schools in its region to help it focus on recruiting the diverse population we were seeking. In the ASSISTments study, the team examined the database repeatedly to see what kinds of schools might be under- or over-represented in the recruitment achievements to date and to retarget efforts to obtain the desired variability in the sample. As the recruitment process goes on, the database can be used to track the demographic and educational data of recruited schools that should be reviewed against the sampling plan on a regular basis.

We also have found it helpful to follow a sales pipeline metaphor in recruitment by tracking schools through multiple levels of engagement. At the beginning of the pipeline, we might include schools or teachers who have made any sort of favorable comment or expressed interest in the intervention by any means, regardless of how slight. Then we move on to focus on principals or teachers who have spoken personally to a recruiter and discussed the project or have attended a demonstration or presentation about the project. We set up a database to track schools or teachers who have indicated intent to apply (or not to apply) and their application status to date. The team reviewed regularly the numbers of applications intended and numbers of conversations needed, given the expected hit rate. Tracking this pipeline from leads to commitments can help recruiters to prioritize their work to both reach out broadly enough and to close the deal with the most promising prospects. In Reasoning Mind and the AP Science Impact Study recruitment efforts, the team set up explicit milestones and used Salesforce to literally implement a sales pipeline model, along with sophisticated lead tracking.

We have found that running successful campaigns requires flexibility and adaptability. Some plans may not work, so other plans must be made. The success of particular plans may vary by school. Some schools may be immediately interested and sign up five classrooms, whereas other schools may require many communications and offer just one classroom to participate. A plan that worked on a previous project may not work for a different one. In such cases, we have had to increase incentives or add features like the school-referral bonus. As the team discusses what is working and what is not working, changes to the messaging may be needed. Further, the team may learn that certain conditions in districts or schools are favorable or unfavorable to recruitment and thus may retarget its efforts.

Keeping team spirit and motivation up is also crucial during the campaign. Recruitment can often be dispiriting, and every recruitment effort goes through times when hopes of meeting the target recede. Thus, we periodically remind everyone on the team of why recruitment is so important—for example, that the developer of the program wants the best chance of measuring an effect and that requires an adequate sample size. It is also important to celebrate incremental victories, to listen to war stories of problems in the field, and to respond to challenges quickly. Resources often must be allocated quickly (e.g., to host a booth at an event), and prompt decision-making keeps everyone focused on the action rather than waiting for decisions to be made.

# After Recruitment

Although the whole team needs a celebration at the end of a successful recruitment campaign, the effort is hardly over. Random assignment must be done promptly and participants need to be notified.

Of primary concern to teachers is prompt notification of which condition they have been assigned to and entering obligations for summer professional development workshops onto their calendars before school year ends. In the ASSISTments and Reasoning Mind studies, we randomly assigned schools to condition in batches (after matching schools on key student demographics and prior performance) so that early recruits would not have to wait for late recruits. In matching participants before random assignment, the batches should be large enough to allow for reasonable matching of participant pairs; in our practice, batches of 8–10 schools have been sufficient.

Schools or teachers may change their minds and drop out of the study upon learning about the results of assignment to conditions or even during the study. This is another critical stage when the “customer service” orientation is important in order to guard against attrition. Following through during the intake process of the study is important to prevent attrition. Not only is a warm welcome important, but ongoing communication (especially among business-as-usual participants) is also key to prevent attrition. Keeping teachers engaged with reminders and notes of appreciation helps maintain a connection and sense of commitment to remain involved. We often talk about the Two Rs, namely, rapport and relationships. Building and maintaining the Two Rs are essential in preventing attrition, especially in longer studies where the contexts under which participants joined (e.g., district or school leadership, policies that the intervention is designed to address) may change over the course of the study. To build rapport and relationships in the ASSISTments study, team members made phone calls individually to all schools that submitted applications, informed them of the assignment results, and made sure they were still on board. One school decided to withdraw from the study when it was notified that it had been assigned to the treatment condition, the representative saying, “Too much is going on in school.”

Luckily, in ASSISTments, our recruitment pool was large enough to accommodate the last-minute withdrawal without needing to recruit more schools, but the situation might be different in other studies. The example does highlight the challenge of crafting messages that are simultaneously attractive to potential participants yet force them to think through what it would actually be like to be included the study.

# Conclusion

Recruiting for an RCT is particularly intense and challenging. Participants must be eager to implement the target intervention and yet equally willing not to implement it, depending on random assignment. Participants must be willing to give up control of an aspect of their school or classroom. Participation often involves obtaining coordinated commitments from multiple levels of a school system: teachers, principals, and district leaders.

For successful recruitment, we have found it necessary to plan and execute a disciplined process over a considerable length of time, with involvement of an extended research and recruitment team. Indeed, a campaign is an apt metaphor for the process.

From our experiences with recruiting for many projects, we have found it useful to conceptualize recruitment in phases, corresponding to (a) study design, (b) intervention packaging, (c) planning the recruitment process, (d) designing recruitment messages, (e) running the recruitment campaign, and (f) following up after recruitment. Each phase has a detailed set of considerations appropriate to its essential work.

Given that recruitment is the foundation of a successful RCT, careful attention to the process from the time the study is conceived until the last pieces of data are in is critical. Consequently, we advocate for more detailed attention to recruitment in research proposals, in the work of peer review panels and pre-award negotiations, and in the work of advisory committees. Our experience indicates that a well-formulated recruitment plan clearly fits the research design; explains how the intervention will be packaged to reduce the burden on participants; describes the overall timeline, staffing, and project management structure for the campaign; gives examples of how messages will be communicated to potential recruits; discusses strategies for handling contingencies that emerge during the campaign; and contains plans for how applicants will be welcomed into the study and retained as participants.

# Appendix: Overview of SRI Education RCTs

In this appendix, we included structured abstracts of the RCTs mentioned in the white paper. Each abstract contains the following information:

- Program description
- Main research question/hypothesis
- Setting—description of the research location and partners (if applicable)
- Population—description of participants in the research: who, how many, key features/characteristics
- Study design—level of randomization, clustering
- Data collection methods—key activities and main measures
- Funder
- Periods of performance (years)
- Subject area: Math, ELA, Science, Early Learning, Pre-service Teachers, etc..

List of Structured Abstracts for Included RCTs:

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[Evaluating the Impact of Professional Development to Meet Challenging Writing Standards in High-Need Elementary Schools on page 27](#)

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[An Efficacy Study of Online Mathematics Homework Support: An Evaluation of the ASSISTments Formative Assessment and Tutoring Platform on page 27](#)

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[Efficacy of an Integrated Digital Elementary School Mathematics Curriculum on page 28](#)

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[Scaling Up SimCalc on page 29](#)

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[Ready To Learn \(RTL\) Prekindergarten Transmedia Mathematics Study on page 29](#)

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[Impact Evaluation of the College-Ready Writers Program on page 30](#)

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[National Evaluation of Writing Project School Partnerships on page 31](#)

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[Project-Based Inquiry Science \(PBIS\) Efficacy Study on page 31](#)

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[Impact Evaluation of the Pathway to Academic Success Project on page 32](#)

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## **Evaluating the Impact of Professional Development to Meet Challenging Writing Standards in High-Need Elementary Schools**

The National Writing Project supported its local Writing Project sites in offering intensive teacher professional development on the Common Core State Standards during the 2012–13 academic year. The professional development was for teachers in grades 3 through 5 in high-need schools and emphasized opinion/argument writing. The study sought to estimate the impact of the professional development on teacher instructional practices and student writing.

The study was conducted in 12 Local Writing Project sites in 10 states across the country. Each Local Writing Project site recruited one to three pairs of schools. SRI randomized schools within each site, resulting in 21 program and 21 control schools.

SRI administered on-demand writing prompts to all third-, fourth-, and fifth-grade students in these 42 schools in fall 2012 and spring 2013 to estimate program impacts on their writing. SRI administered surveys to approximately 400 third-, fourth-, and fifth-grade teachers in fall and spring to learn about their instructional practices and experiences with professional development. Additionally, SRI collected data on teacher participation in professional development and interviewed teachers, school administrators, and professional development providers to learn how individuals experienced the program and how variations in school context influenced participants' uptake of ideas from the professional development.

The study was funded by the National Writing Project under its Supporting Effective Educator Development (SEED) grant from the U.S. Department of Education.

## **An Efficacy Study of Online Mathematics Homework Support: An Evaluation of the ASSISTments Formative Assessment and Tutoring Platform**

ASSISTments is a web-based system that delivers mathematics homework from textbooks to students online, gives students instant feedback on their responses, and provides teachers with reports about homework. The primary research question of Online Math Homework Efficacy Project is whether online homework can lead to increases in seventh-grade students' mathematics scores on Common Core assessments. Further, the study seeks to understand how such impacts are produced, which could be from any of (a) greater homework completion by students, (b) more feedback on homework to students, or (c) feedback to teachers about homework that supports adaptive teaching routines in the classroom.

The state of Maine was selected for this project because it gives a laptop to every student to take home, so students have the equipment to do math homework on a computer. A total of 119 teachers from 49 middle schools are participating in two cohorts; the second cohort started a year later than the first. The schools were sampled from across Maine, with the intention of representing the variation in school size and prior achievement scores that naturally occur in the state.



Schools in each cohort were randomly assigned to either use ASSISTments for online homework or continue in their business-as-usual homework practices. All seventh-grade teachers in a school are therefore in the same condition, and all the seventh-grade students they teach are in the study. All teachers in the ASSISTments program participate in teacher professional development to introduce them to the technology, support their use of it for online homework, and encourage them to engage in adaptive homework review practices based on the data they get from ASSISTments.

The primary outcome measure is the Terra Nova assessment, Common Core edition. Additional measures include interviews with principals and teachers, observations of classroom practices, teacher homework logs, and a unit test on one key topic in seventh-grade mathematics. The ASSISTments system also collects data automatically about homework assignments, student performance on homework, and teacher use of reports.

## **Efficacy of an Integrated Digital Elementary School Mathematics Curriculum**

Reasoning Mind offers a complete technology-based curriculum for fifth-grade mathematics and includes substantial teacher professional development and implementation support. The curriculum is aligned with the Common Core. The technology is intended to motivate student engagement, give students immediate feedback, adapt the pace and pathways of instruction to student needs, and give teachers feedback they can use to target their teaching activities to student needs. The study seeks to determine the impact of a full-year blended curriculum for fifth-grade mathematics on the Smarter Balanced assessments relative to business-as-usual curricula and supplementary digital products.

The state of West Virginia was selected for this study because it has invested in broadband and technology for its schools but has low mathematics achievement, and technology offers important hope to rural communities in improving mathematics achievement. Within the state, a population was recruited both to capture the rural character of much of the state and to sample midsize population centers, which are found in both rural and nonrural states.

One cohort of 50 schools was selected. Schools were randomly assigned to either use Reasoning Mind as their fifth-grade core curriculum or continue with business-as-usual curricula and technologies. To balance incentives, schools in the business-as-usual condition will have a different Reasoning Mind product for use in second grade. Because the second-grade students will not reach fifth grade during the study, the threat of contamination from this procedure is low, and ensuring that every school gets a version of Reasoning Mind for one grade is a substantial incentive.

The primary outcome measure is the Smarter Balanced assessment, as required by West Virginia. Additional measures are teacher interviews, classroom observations, implementation fidelity reports, measures of teacher knowledge, and automatically collected system usage data.



## Scaling Up SimCalc

SimCalc is an integration of mathematics software, paper curriculum modules, and teacher professional development aimed at replacing how teachers instruct students on two to three topics in seventh- and eighth-grade mathematics. SimCalc features multiple representations, including motion and graphs, that support student conceptual understanding of challenging mathematical ideas, such as rate and proportion. The primary research question in the SimCalc studies was whether this integration increases student performance on advanced algebra-relevant concepts and skills as well as performance on more basic items typical of the Texas statewide assessment.

Texas was selected for this study because of its diverse population and its stable and well-established system of standards and accountability. Further, four regions of Texas were selected to represent more urban and cosmopolitan areas, more rural areas, and areas near the Mexican border. A total of 95 teachers were recruited for the seventh-grade study, and 63 teachers were recruited for the eighth-grade study through the Educational Service Centers, which ordinarily provide teacher professional development in these regions.

Schools were randomized to condition, but most schools had only one participating teacher. The seventh-grade study featured a delayed treatment design, whereby the control group was offered SimCalc after a 1-year delay. The eighth-grade study was a simple SimCalc or business-as-usual comparison.

Measures included a researcher-designed assessment with scales related to algebra and to the Texas state test, a test of teachers' mathematical knowledge for teaching, interviews, observations, and teacher self-report logs.

## Ready To Learn (RTL) Prekindergarten Transmedia Mathematics Study

The RTL Prekindergarten Transmedia Mathematics Study is a principal part of SRI and Education Development Center, Inc.'s summative evaluation of Ready To Learn. RTL is a U.S. Department of Education-supported initiative that aims, in partnership with the Corporation for Public Broadcasting and PBS, to develop media-rich learning resources for young children from economically disadvantaged communities.

The goal of this randomized controlled trial was to evaluate the impact of the RTL transmedia math supplement on young children's mathematics learning, its influence on teacher attitudes and beliefs about early mathematics education and the use of technology/media to support mathematics learning, and the successes and barriers teachers encountered in implementing the curriculum supplement.

The study took place in 92 classrooms (46 in New York City and 46 in the San Francisco Bay Area) in preschool agencies and centers serving children primarily from low-income households. Classrooms were randomly assigned to one of three conditions—the PBS KIDS transmedia math

supplement, technology & media, or business as usual—and data from classroom observations, child math assessments, teacher surveys, and weekly teacher and coach logs were collected. A total of 157 teachers participated in the study, and 966 children ages 4 to 5 were randomly selected for assessment, approximately 10 children from each classroom.

The primary child outcome measures were the Supplement-Based Assessment of Mathematics (SBA), an assessment designed during the 2012 pilot study to assess children’s understanding of the concepts and activities in the PBS KIDS Transmedia Math Supplement, and the short version of the Research-based Early Mathematics Assessment (REMA), a standardized measure of preschool children’s early numeracy and geometry skills.

## **Impact Evaluation of the College-Ready Writers Program**

SRI is investigating how professional development aligned with college- and career-ready standards affects writing instruction and in turn student writing performance. The professional development provided by local sites of the National Writing Project focuses on using evidence from text to articulate and support written arguments. In participating districts, 7th- through 10th-grade English language arts (ELA) teachers will receive at least 90 hours of professional development over 2 years. The study will estimate program impacts on writing instruction in 7th through 10th grade and the quality of student argument writing.

SRI is conducting the study in 44 rural school districts, which are partnered with 12 Local Writing Project sites, located in 10 states. SRI randomized the districts to receive the 2-year College-Ready Writers Program beginning in the 2013–14 school year (treatment group) or to receive the first year of the program beginning in the 2015–16 school year (control group).

SRI is collecting longitudinal data in the form of

- Surveys of about 1,000 ELA, social studies/history, and science teachers
- Weeklong instructional logs from more than 300 ELA teachers
- Student writing prompts administered over 2 days to more than 20,000 students
- Records of teacher participation in professional development on writing instruction.

Additionally, SRI is collecting qualitative data through telephone and on-site interviews with district leaders and teachers, as well as observation of professional development and classrooms.

This study will contribute to understanding of what districts can do to improve student writing and how to design effective teacher professional development. The project is funded by the National Writing Project through an Investing in Innovation grant from the U.S. Department of Education.

## National Evaluation of Writing Project School Partnerships

SRI investigated 3-year partnerships between schools and local sites of the National Writing Project that gave schools access to writing professional development. The schools worked with Local Writing Project sites to co-plan the professional development that school leaders thought best met their needs. Local Writing Project sites then provided the professional development. The study sought to describe the professional development and estimate its impacts on teachers and students. A total of 39 schools in 10 states that served middle grades (i.e., included seventh and eighth grade) participated in the study.

SRI randomized 40 schools to either have 1 year of planning followed by 3 years of professional development or maintain a business-as-usual control condition. During the 4-year study, SRI used multiple data collection strategies including teacher surveys, teacher logs, teacher assignments, student work, on-demand writing prompts, interviews, and document review to collect data on partnership implementation and assess impacts on teachers and students. The project was funded by the National Writing Project.

## Project-Based Inquiry Science (PBIS) Efficacy Study

SRI is studying the benefits of a new middle school science curriculum based on contemporary research in science teaching and learning that aligns with the new standards (e.g. the Next Generation Science Standards), provides comprehensive instructional support for teachers, and incorporates the latest research on student learning.

The commercially available curriculum, Project-Based Inquiry Science (PBIS), focuses on standards-based content and uses project-based inquiry units to help students learn. In PBIS classrooms, students investigate as scientists would—through observations, designing and carrying out experiments, building and using models, reading about the science they are investigating, constructing explanations, and so forth—but in ways that are appropriate and meaningful for them and with carefully structured support. With an emphasis on important science content and integrating scientific practices, the PBIS curriculum's design matches well with the new directions in science education.

Funded by the National Science Foundation, SRI is conducting the efficacy study on the benefits of PBIS for supporting science teaching and students' science learning. A unique feature of the study design is an analytic focus on the conditions needed to implement the curriculum in ways that improve student learning in light of the new [Framework for K-12 Science Education and Next Generation Science Standards](#). The study is being performed in collaboration with Michigan State University and the University of Colorado, Boulder.

The study began in August 2012 and involves approximately 100 sixth-grade science teachers and more than 3,000 students from 42 middle schools. This study is the first to examine teachers' and students' use of science curriculum materials with measures that are aligned with the Framework for K-12 Science Education. Moreover, it is one of a handful of rigorously designed impact studies that also examine implementation and effects on teaching practice systematically.

## Impact Evaluation of the Pathway to Academic Success Project

SRI is studying the impact on the Pathway Project on English learners' academic literacy skills. The study will test whether English learners in grades 7–12 whose teachers receive professional development and instructional materials from the Pathway Project are better able to analyze the text and to write a well-evidenced essay based on their analysis. The professional development and instructional materials that constitute the Pathway to Academic Success Project are being provided by four National Writing Project sites. The study is being conducted in seven districts in southern California located in the Writing Project sites' service areas, which serve high populations of English learners.

After students are assigned to classes in the fall of 2014, SRI will randomly assign teachers within schools to receive Pathway during 2014-15 and 2015-16 or 2016-17. Professional development observations and attendance records will enable researchers to assess implementation fidelity. Researchers will assess students' writing using the holistic score from the National Writing Project's Analytic Writing Continuum in the fall of 2014, spring of 2015 and spring of 2016 to estimate program impacts on student writing. Additional student and teacher surveys will enable researchers to estimate impacts on teacher practice. This experiment, funded as a validation grant under the federal Investing in Innovation program runs from 2014-2018.

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